

FCC PART 22 TEST REPORT Part 22H Subpart E

Report Reference No.: HK2210314830-3E

FCC ID.....: 2AZL7-ZY-G1

Compiled by

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Date of issue: Nov. 11, 2022

Testing Laboratory Name Shenzhen HUAK Testing Technology Co., Ltd.

1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park,

Applicant's name Shenzhen CTV Int Cloud Technology Co., Ltd

Test specification:

Standard FCC CFR Title 47 Part 2, Part 22H

TRF Originator Shenzhen HUAK Testing Technology Co., Ltd.

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Test item description.....: 4G Security Camera

Trade Mark.....::

Shenzhen CTV Int Cloud Technology Co., Ltd Manufacturer:

Model/Type reference....: ZY-G1

ZY-G2, ZY-G3, ZY-G4, ZY-G5, ZY-G6, ZY-G7, ZY-G8, ZY-G9, Series Models:

ZS-GX1S, ZS-GX7S, ZS-GX8S, ZS-GX9S

Modulation Type: QPSK,16QAM

DC 3.7V from battery or DC 5V from USB Rating....::

Hardware version.....:

Software version:

PASS

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TEST REPORT

Test Report No. :	HK2210314830-3E	Nov. 11, 2022
	11R2210314030-3L	Date of issue

4G Security Camera Equipment under Test

Model /Type ZY-G1

ZY-G2, ZY-G3, ZY-G4, ZY-G5, ZY-G6, ZY-G7, ZY-G8, Series Models

ZY-G9, ZS-GX1S, ZS-GX7S, ZS-GX8S, ZS-GX9S

Shenzhen CTV Int Cloud Technology Co., Ltd **Applicant**

601, B Building, No.10, East District, Shangxue Industrial Address

City, Xinxue Community, Bantian Street, Shenzhen, China

Report No.: HK2210314830-3E

Manufacturer Shenzhen CTV Int Cloud Technology Co., Ltd

601, B Building, No.10, East District, Shangxue Industrial Address

City, Xinxue Community, Bantian Street, Shenzhen, China

	Test Result:		PA	SS	
ESTING	TESTING	TESTING	TESTING	TESTING	

The test report merely corresponds to the test sample.

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Report No.: HK2210314830-3E

** Modified History **

-CTI	160, a	(C) (C)	Mr. Ko
Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Nov. 11, 2022	Jason Zhou
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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REGULATIONS.

FCC Part 22Subpart H:PRIVATE LAND MOBILE RADIO 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 971168D01 v03r01 Power Meas License Digital Systems

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2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	Oct. 31, 2022
-STING		-STING
JK TEE	111	WIEL
Testing commenced on	(6)	Oct. 31, 2022
TIME	18	Ung
Testing concluded on	Mrs.	Nov. 11, 2022

2.2 Product Description

Model/Type reference: ZY-G1 ZY-G2, ZY-G3, ZY-G4, ZY-G5, ZY-G6, ZY-G7, ZY-G8, ZY-G9, ZS-GX1S, ZS-GX7S, ZS-GX8S, ZS-GX9S Power supply: DC 3.7V from battery or DC 5V from USB Modilation Type: QPSK,16QAM Antenna Type: QPSK,16QAM External Antenna Operation Frequency Band: UTE BAND 5 Operation frequency: LTE BAND 5:824~849 MHz LTE Release: R8	Jun On
ZS-GX1S, ZS-GX7S, ZS-GX8S, ZS-GX9S Power supply: DC 3.7V from battery or DC 5V from USB Modilation Type: QPSK,16QAM Antenna Type: External Antenna Operation Frequency Band: UTE BAND 5 Operation frequency: LTE BAND 5:824~849 MHz	
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Operation Frequency Band: LTE BAND 5 Operation frequency: LTE BAND 5:824~849 MHz	ES
Operation frequency: LTE BAND 5:824~849 MHz	
LTE Release: R8	
	1
Extreme temp. Tolerance: -30°C to +50°C	
Extreme vol. Limits: 4.25VDC to 5.75VDC (nominal: 5.0VDC)	

2.3 Equipment under Test

Power supply system utilised

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

DC 3.7V from battery or DC 5V from USB

2.4 Normal Accessory Setting

Fully charged battery was used during the test.

2.5 EUT Configuration

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

- supplied by the manufacturer
- O supplied by the lab

0	Power Cable	Length (m):	1	(196)	
	STING	Shield:	FILLING	TESTING	
The ,	HUAK	Detachable :	1	HUAK.	UH ST
0	Multimeter	Manufacturer :	/		
No.		Model No. :	1	n)G	

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2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended filing to comply with FCC Part 22H, Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.

2.8 GeneralTest Conditions/Configurations

2.10.1 Test Environment

EnvironmentParameter	SelectedValue	esDuringTests
Relative Humidity	Amb	pient
Temperature	TN	Ambient
G HUAK	VL HUME	4.25V
Voltage	STIME VN TESTING	5.0V
MAKTE	VH	5.75V

NOTE:VL=lowerextreme testvoltageVN=nominalvoltage VH=upperextreme testvoltageTN=normaltemperature

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3 TEST ENVIRONMENT

3.1 Information of the Test Laboratory

Shenzhen HUAK 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 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
STING	STING
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.3 Test Description

Band 5 (824~849 MHz)

Test Item	FCCRuleNo.	Requirements	Verdict
Effective(Isotropic) Radiated Output Power	§2.1046, §22.913(a)(2)	EIRP ≤ 2W	Pass
Peak-Average Ratio	§24.232(d)	FCC:Limit≤13dB	Pass
Modulation Characteristics	§2.1047	Digital modulation	Pass
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	Pass
Band Edges Compliance	§2.1051, §24.238	≤ -13dBm/1%*EBW, In1MHz bands immediately outside and adjacent to Thefrequency block.	Pass
Spurious Emission at AntennaTerminals	§2.1051, §24.238	≤-13dBm/1MHz, from9kHz to 10th harmonics but outside authorized Operating frequency ranges.	Pass
Field Strength of Spurious Radiation	Clause 7of KDB971168 D01 v02r02	≤ -13dBm/1MHz.	Pass
Frequency Stability	§2.1055, §22.355, §24.235	FCC:within authorized frequency block.	Pass

Remark:

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

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3.4 Equipments Used During The Test

LOK TES		JAK TES JUAK		CAKTES	MAK
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibratior Due Date
LISN	R&S	ENV216	HKE-059	2022/02/18	2023/02/17
LISN	R&S	ENV216	HKE-002	2022/02/18	2023/02/17
Receiver	R&S	ESCI 7	HKE-010	2022/02/18	2023/02/17
Spectrum analyzer	R&S	FSP40	HKE-025	2022/02/18	2023/02/17
Spectrum analyzer	Agilent	N9020A	HKE-048	2022/02/18	2023/02/17
RF automatic control unit	Tonscend	JS0806-1	HKE-060	2022/02/18	2023/02/17
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	2022/02/18	2023/02/1
Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	2022/02/18	2023/02/1
Horn antenna	Schwarzbeck	9120D	HKE-013	2022/02/18	2023/02/1
High gain antenna	Schwarzbeck	LB-180400KF	HKE-054	2022/02/18	2023/02/1
Preamplifier	EMCI	EMC051845SE	HKE-015	2022/02/18	2023/02/1
Preamplifier	Agilent	83051A	HKE-016	2022/02/18	2023/02/1
Preamplifier	Schwarzbeck	BBV 9743	HKE-006	2022/02/18	2023/02/1
Temperature and humidity meter	Boyang	HTC-1	HKE-075	2022/02/18	2023/02/1
High-low	aNG	TNG.	TNG	m/G	THE
temperature chamber	Guangke	HT-80L	HKE-118	2022/02/18	2023/02/1
High pass filter unit	Tonscend	JS0806-F	HKE-055	2022/02/18	2023/02/1
RF Cable(below1GHz)	Times	9kHz-1GHz	HKE-117	2022/02/18	2023/02/1
RF Cable(above 1GHz)	Times	1-40G	HKE-034	2022/02/18	2023/02/1
Power meter	Agilent	E4419B	HKE-085	2022/02/18	2023/02/1
Power Sensor	Agilent	E9300A	HKE-086	2022/02/18	2023/02/1
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	2022/02/18	2023/02/1
Wireless Communication Test Set	R&S	CMU200	HKE-029	2022/02/18	2023/02/1
High gain antenna	Schwarzbeck	LB-180400KF	HKE-054	2022/02/18	2023/02/1
Horn antenna	Schwarzbeck	9120D	HKE-135	2022/02/18	2023/02/1
High gain antenna	Schwarzbeck	LB-180400KF	HKE-128	2022/02/18	2023/02/1
Broadband antenna	Schwarzbeck	VULB 9163	HKE-087	2022/02/18	2023/02/1
Signal generator	Agilent	E4433B	HKE-120	2022/02/18	2023/02/1
Signal generator	Agilent	E4421B	HKE-121	2022/02/18	2023/02/1
Signal gonorator	1 19110111	_ · · · _ · · _	1111-14-1		

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4 TEST CONDITIONS AND RESULTS

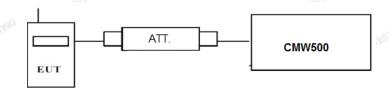
4.1 Output Power

4.1.1 Coducted Output Power

TEST APPLICABLE

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 and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

TEST CONFIGURATION



TEST PROCEDURE

Conducted Power Measurement:

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

TEST RESULTS

compliance *

Remark:

 We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 5;

		LTE FDD Band 5		TING
TX Channel	Frequency	DD Size/Offeet	Burst Average	e Power [dBm]
Bandwidth	(MHz)	RB Size/Offset	QPSK	16QAM
		1 RB low	24.74	23.93
TING	924.7	1 RB high	24.89	24.18
-51	824.7	50% RB mid	24.81	24.08
MAKTER		100% RB	24.85	23.75
		1 RB low	24.92	23.65
1.4 MHz	836.5	1 RB high	24.91	23.72
	830.5	50% RB mid	23.94	22.92
TING	TESTING OF "	100% RB	24.88	23.94
TAKTES.	MAK	1 RB low	25.10	24.32
Mo.	040.2	1 RB high	24.94	24.10
	848.3	50% RB mid	25.02	23.73
		100% RB	25.02	23.63
, NG	alG.	1 RB low	24.81	24.08
KTESTIL	NOTES TO A STEEL OF THE STEEL O	1 RB high	25.05	23.88
2 MILE	825.5	50% RB mid	24.86	23.85
3 MHz		100% RB	23.97	23.04
	936.5	1 RB low	23.97	23.04
	836.5	1 RB high	24.05	22.94

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50% RB mid 23.93 23.00 100% RB 25.04 23.96 1 RB low 24.88 23.87 1 RB high 24.93 24.02 847.5 50% RB mid 24.08 23.06 100% RB 24.07 23.06 23.85 1 RB low 24.67 1 RB high 24.90 23.93 826.5 24.93 50% RB mid 23.90 100% RB 23.87 22.81 1 RB low 23.87 22.92 22.81 1 RB high 23.96 5 MHz 836.5 50% RB mid 23.94 22.82 100% RB 24.98 24.01 1 RB low 25.06 23.67 23.98 1 RB high 24.87 846.5 50% RB mid 24.05 22.79 100% RB 24.05 22.99 1 RB low 24.83 24.12 1 RB high 25.22 24.10 829.0 50% RB mid 25.02 24.28 100% RB 23.96 23.10 1 RB low 24.06 22.92 1 RB high 24.07 23.11 10 MHz 836.5 50% RB mid 24.09 23.14 24.90 23.88 100% RB 1 RB low 25.35 24.35 1 RB high 24.92 24.10 844.0

50% RB mid

100% RB

24.06

24.06

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23.13

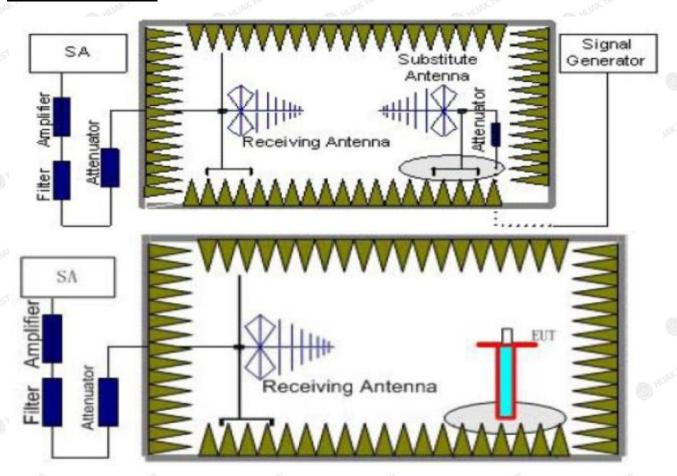
23.13

4.1.2. Radiated Output Power

LIMIT

This is the test for the maximum radiated power from the EUT. Rule Part 22H.232(b) specifies, "Mobile/portable stations are limited to 7 watts e.i.r.p.

TEST CONFIGURATION



TEST PROCEDURE

- 1. EUT was placed on a 0.1 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 0.1m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
- 2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
- 3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
- 4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest isconnected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver.

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- reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
- 6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.

 The measurement results are obtained as described below: Power(EIRP)=P_{Mea}- P_{Ag} P_{cl}+ G_a

 We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below: Power(EIRP)=P_{Mea}- P_{cl}+ G_a
- This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
- 8. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

Radiated Measurement:

Remark:

- We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band
 recorded worst case for each Channel Bandwidth of LTE FDD Band 5.
- 2. $EIRP=P_{Mea}(dBm)-P_{cl}(dB)+P_{Aq}(dB)+G_a(dBi)$
- 3. We measured both Horizontal and Vertical direction, recorded worst case direction.

LTE FDDBand 5_Channel Bandwidth 1.4MHz_QPSK

HI	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Aq} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
<	824.7	-18.84	2.42	8.45	36.82	24.01	21.86	38.45	16.59	V
	836.5	-16.66	3.46	8.45	36.82	25.15	23	38.45	15.45	TING V
	848.3	-19.48	2.53	8.36	36.82	23.17	21.02	38.45	17.43	V

LTE FDDBand 5_Channel Bandwidth 3MHz_QPSK

	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
	825.5	-18.09	2.42	8.45	36.82	24.76	22.61	38.45	15.84	V
400	836.5	-17.21	3.46	8.45	36.82	24.6	22.45	38.45	16	V
	847.5	-19.57	2.53	8.36	36.82	23.08	20.93	38.45	17.52	V

LTE FDD Band 5 Channel Bandwidth 5MHz QPSK

	- 42									
11.	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Aq} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
((826.5	-17.95	2.42	8.45	36.82	24.9	22.75	38.45	15.7	V
	836.5	-17.03	3.46	8.45	36.82	24.78	22.63	38.45	15.82	V
	846.5	-19.47	2.53	8.36	36.82	23.18	21.03	38.45	17.42	V

LTE FDD Band 5_Channel Bandwidth 10MHz_QPSK

				macri romi			4.76			
89	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Aq} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
0	829.0	-18.34	2.42	8.45	36.82	24.51	22.36	38.45	16.09	V
	836.5	-16.9	3.46	8.45	36.82	24.91	22.76	38.45	15.69	V
	844.0	-19.17	2.53	8.36	36.82	23.48	21.33	38.45	17.12	V

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LTE FDD Band 5_Channel Bandwidth 1.4MHz_16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.7	-18.32	2.42	8.45	36.82	24.53	22.38	38.45	16.07	V
836.5	-16.98	3.46	8.45	36.82	24.83	22.68	38.45	15.77	V
848.3	-19.47	2.53	8.36	36.82	23.18	21.03	38.45	17.42	V

LTE FDD Band 5 Channel Bandwidth 3MHz 16QAM

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.5	-17.9	2.42	8.45	36.82	24.95	22.8	38.45	15.65	V
836.5	-17.28	3.46	8.45	36.82	24.53	22.38	38.45	16.07	V
847.5	-19.23	2.53	8.36	36.82	23.42	21.27	38.45	17.18	V

LTE FDD Band 5_Channel Bandwidth 5MHz_16QAM

	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
ſ	826.5	-17.07	2.42	8.45	36.82	25.78	23.63	38.45	14.82	V
ſ	836.5	-16.76	3.46	8.45	36.82	25.05	22.9	38.45	15.55	VG
	846.5	-18.49	2.53	8.36	36.82	24.16	22.01	38.45	16.44	KTESV

LTE FDD Band 5_Channel Bandwidth 10MHz_16QAM

16	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Aq} (dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
	829.0	-17.9	2.42	8.45	36.82	24.95	22.8	38.45	15.65	V
	836.5	-17.19	3.46	8.45	36.82	24.62	22.47	38.45	15.98	V
	844.0	-18.53	2.53	8.36	36.82	24.12	21.97	38.45	16.48	V

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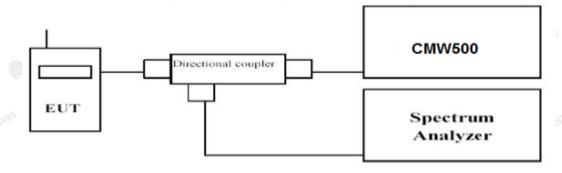


4.2 Peak-to-Average Ratio (PAR)

LIMIT

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

TEST CONFIGURATION



TEST PROCEDURE

- Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function:
- 2. Set resolution/measurement bandwidth ≥ 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

Remark:

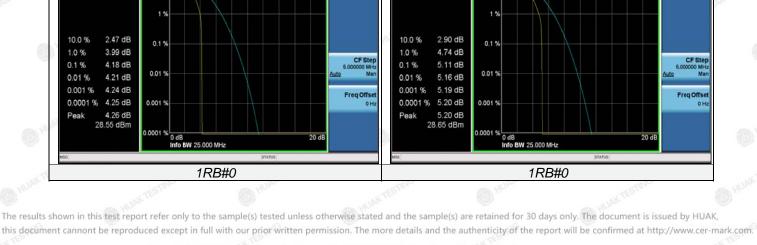
1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 5; recorded worst case for each Channel Bandwidth of LTE FDD Band 5.

NG		LTE FDD Band 5	A)G			
TX Channel	Frequency	RB Size/Offset	PAPR(dB)			
Bandwidth	(MHz)	RB Size/Offset	QPSK	16QAM		
THE HUAR	824.7	HUAR.	3.98	4.93		
1.4 MHz	836.5	1RB#0	4.47	5.42		
	848.3		4.37	5.33		
	825.5	II HUF	3.95	4.72		
3 MHz	836.5	1RB#0	4.52	5.26		
HUAKTA	847.5		4.18	5.11		
	826.5	9	3.93	4.86		
5 MHz	836.5	1RB#0	4.50	5.38		
	846.5		3.74	4.52		
TING	829.0	TING	3.87	4.80		
10 MHz	836.5	1RB#0	4.43	5.33		
(A) HO	844.0		3.86	5.00		

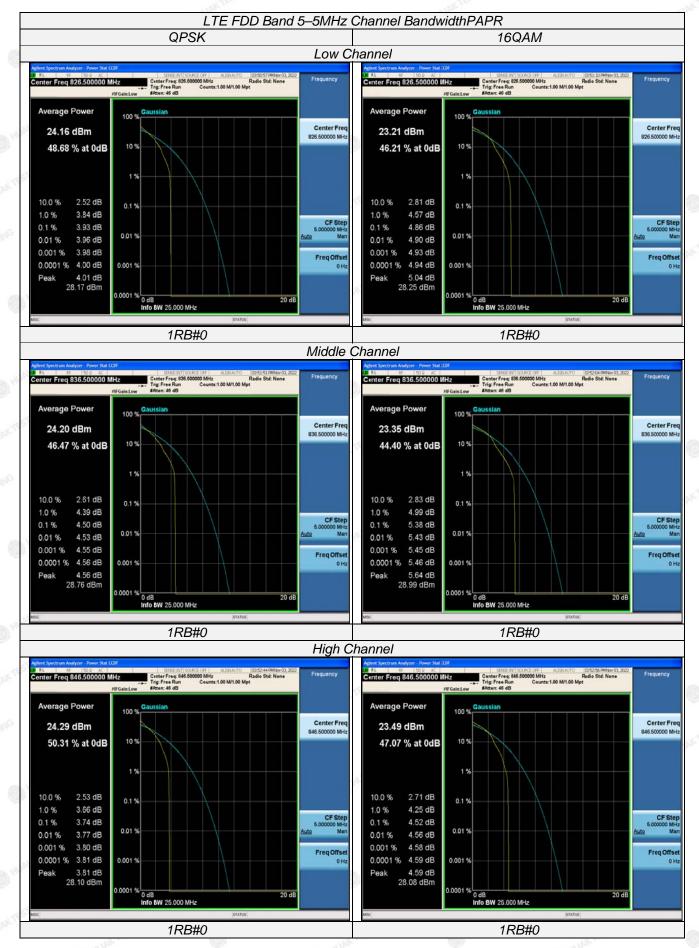
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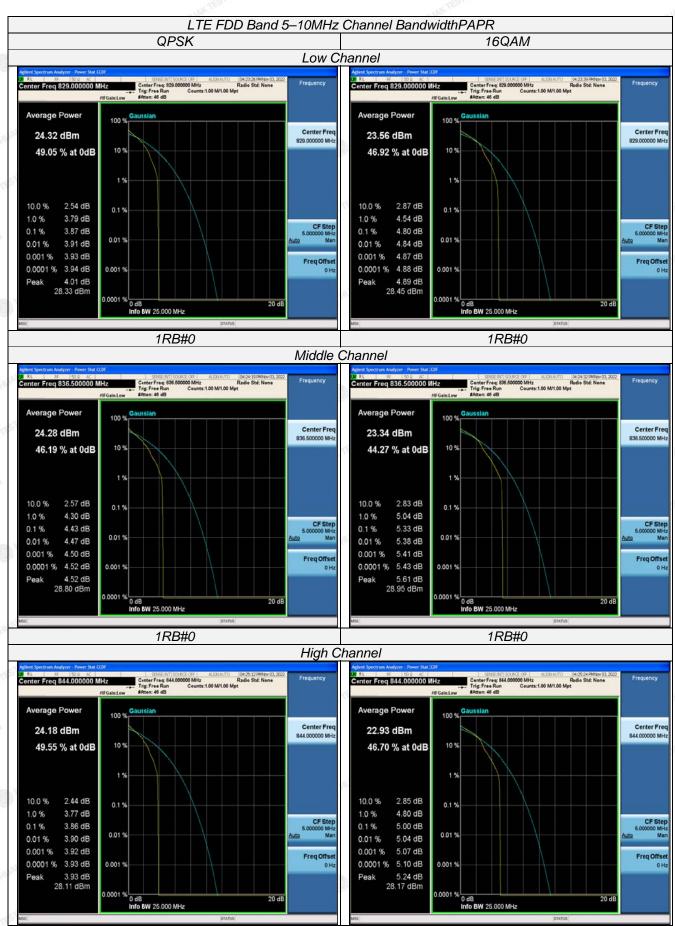
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1RB#0

1RB#0

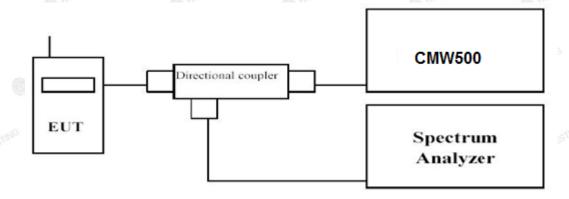


4.3 Occupied Bandwidth and Emission Bandwidth

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 RBWwas 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

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 5; recorded worst case for each Channel Bandwidth of LTE FDD Band 5.

		LTE FDD	Band 5				
TX		Frequency		Emission	99% Occupied bandwidth		
Channel	RB Size/Offset	(MHz)	bandwidth (MHz)		(MHz)		
Bandwidth		(1711 12)	QPSK	16QAM	QPSK	16QAM	
STINE	.7657	824.7	1.304	1.302	1.0927	1.1008	
1.4 MHz	6RB#0	836.5	1.291	1.303	1.0941	1.1004	
/II	IK TE	848.3	1.291	1.292	1.0938	1.0971	
(III)		825.5	2.967	2.960	2.7011	2.6919	
3 MHz	15RB#0	836.5	2.956	2.970	2.6983	2.6925	
	HUAK	847.5	2.976	2.976	2.6961	2.6945	
STNG	TESTING (III)	826.5	5.026	4.992	4.5081	4.5057	
5 MHz	25RB#0	836.5	5.007	4.986	4.5093	4.5048	
9	3) (S) (S)	846.5	4.997	5.026	4.5010	4.5107	
		829.0	9.912	9.870	8.9862	8.9699	
10 MHz	50RB#0	836.5	9.858	9.882	8.9645	8.9409	
ING.	-m/G	844.0	9.940	9.806	8.9593	8.9651	
	· CV	- C- V	15.1	•	JEV.	- EV	

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Page 21 of 62 Report No.: HK2210314830-3E LTE FDD Band 5- 1.4 MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth **16QAM** Low Channel Ref 30.00 dBm Ref 30.00 dBn Center Freq 824.700000 MHz Center Free 824.700000 MH: Span 3 MHz #Sweep 100 ms Center 824.7 MHz FRes BW 30 kHz enter 824.7 MHz Res BW 30 kHz CF St 300.000 k CF Ste 300,000 ki #VBW 91 kHz **#VBW 91 kHz** 31.2 dBm Occupied Bandwidth 30.4 dBm Occupied Bandwidth 1.0927 MHz 1.1008 MHz -3 680 kHz Transmit Freq Error 283 Hz **OBW Powe** 99.00 % Transmit Freq Error ORW Power 99.00 % 1.304 MHz x dB -26.00 dB x dB Bandwidth 1.302 MHz x dB -26.00 dB 6RB#0 6RB#0 Middle Channel Ref Offset 9.25 dB Ref 30.00 dBm Ref Offset 9.25 dB Ref 30.00 dBm Center Fred 836.500000 MH: Center Free 836.500000 MH CF Step CF Ste #VBW 91 kHz 31.4 dBm 30.4 dBm Occupied Bandwidth Occupied Bandwidth 1.0941 MHz 1.1004 MHz Freq Offse Freq Offset 0 Hz Transmit Freq Error 99.00 % -2.937 kHz 99.00 % -55 Hz **OBW Power** Transmit Freq Error **OBW Power** 1.291 MHz 1.303 MHz x dB -26.00 dB x dB Bandwidth x dB -26.00 dB 6RB#0 6RB#0 High Channel Center Freq: 848.300000 MHz Trig: Free Run Avg[Hol #Atten: 40 dB Radio Std: None Radio Std: None q 848.300000 MHz Center Fred 848.300000 MHz Center Fre enter 848.3 MHz Res BW 30 kHz Span 3 MH: #Sweep 100 m Span 3 MHz #Sweep 100 ms CF Ste 300,000 kH CF Ste 300,000 kF **#VBW 91 kHz** #VBW 91 kHz 31.6 dBm 30.5 dBm Occupied Bandwidth Occupied Bandwidth 1.0938 MHz 1.0971 MHz Transmit Freq Error -1.308 kHz **OBW Powe** 99.00 % Transmit Freq Error -14 Hz **OBW Power** 99.00 %

NG

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1.292 MHz

6RB#0

-26.00 dB

1.291 MHz

6RB#0

-26.00 dB

Transmit Freq Error

-1.654 kHz

2.976 MHz

OBW Powe

15RB#0

99.00 %

-26.00 dB

Page 22 of 62 Report No.: HK2210314830-3E LTE FDD Band 5-3MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth **16QAM** Low Channel Ref 30.00 dB Ref 30.00 dBr Center Free 825.500000 MH Center Free 825.500000 MH: Span 6 MHz #Sweep 100 ms enter 825.5 MHz Res BW 51 kHz Center 825.5 MHz FRes BW 51 kHz Span 6 MHz #Sweep 100 ms CF Ste 600,000 kH CF Ste 600,000 ki #VBW 160 kHz **#VBW 160 kHz** 31.8 dBm 30.5 dBm Occupied Bandwidth Occupied Bandwidth 2.7011 MHz 2.6919 MHz Freq Offse Transmit Freq Error 3.348 kHz **OBW Powe** 99.00 % Transmit Freq Error -588 Hz ORW Power 99 00 % 2.967 MHz x dB -26.00 dB 2.960 MHz x dB -26.00 dB 15RB#0 15RB#0 Middle Channel Ref Offset 9.25 dB Ref 30.00 dBm Ref Offset 9.25 dB Ref 30.00 dBm Center Fred 836.500000 MH: CF Step CF Ste 30.8 dBm Occupied Bandwidth Occupied Bandwidth 2.6983 MHz 2.6925 MHz Freq Offse Freq Offse Transmit Freq Error 3.381 kHz 99.00 % 754 Hz 99.00 % **OBW Power** Transmit Freq Error **OBW Power** 2.956 MHz 2.970 MHz x dB -26.00 dB x dB Bandwidth x dB -26.00 dB 15RB#0 15RB#0 High Channel Center Freq: 847.500000 MHz
Trig: Free Run Avg|Hold: 30/30 Radio Std: None 02:55:52 PMNov 03, 2 Radio Std: None q 847.500000 MH: Freq 847.500000 MHz Ref Offset 9.25 dB Ref 30.00 dBm Center Free 847.500000 MHz Center Fre 847.500000 MH Span 6 MH: #Sweep 100 m Center 847.5 MHz FRes BW 51 kHz Span 6 MHz #Sweep 100 ms CF Ste 600.000 ki CF Ste #VBW 160 kHz **#VBW 160 kHz** 31.8 dBm 30.7 dBm Occupied Bandwidth Occupied Bandwidth 2.6961 MHz 2.6945 MHz

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Transmit Freq Error

51 Hz

OBW Power

15RB#0

99.00 %

-26.00 dB

HUAK TESTING Page 23 of 62 Report No.: HK2210314830-3E LTE FDD Band 5-5MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth **16QAM** Low Channel Ref 30.00 dB Center Free 826.500000 MH Center Free 826.500000 MH: Span 10 MHz #Sweep 100 ms CF St enter 826.5 MHz Res BW 100 kHz Center 826.5 MHz FRes BW 100 kHz Span 10 MHz #Sweep 100 ms CF Ste #VBW 300 kHz **#VBW 300 kHz** 32.2 dBm 31.4 dBm Occupied Bandwidth Occupied Bandwidth 4.5057 MHz 4.5081 MHz Transmit Freq Error -6.442 kHz **OBW Powe** 99 00 % Transmit Freq Error -3 866 kHz ORW Power 99 00 % 5.026 MHz -26.00 dB 4.992 MHz x dB -26.00 dB 25RB#0 25RB#0 Middle Channel Ref Offset 9.25 dB Ref 30.00 dBm Ref Offset 9.25 dB Ref 30.00 dBm Center Fred 836.500000 MH: Span 10 MH: #Sweep 100 m CF Step Span 10 MHz #Sweep 100 ms CF Step #VBW 300 kHz 31.4 dBm Occupied Bandwidth Occupied Bandwidth 4.5093 MHz 4.5048 MHz Freq Offse Freq Offset 0 Hz Transmit Freq Error 99.00 % -892 Hz 99.00 % -88 Hz **OBW Power** Transmit Freq Error **OBW Power** 5.007 MHz 4.986 MHz x dB -26.00 dB x dB Bandwidth x dB -26.00 dB 25RB#0 25RB#0 High Channel 03:29:06 PMNov 03, 2 Radio Std: None 03:29:25 PMNov 03, 2 Radio Std: None q 846.500000 MH Ref Offset 9.25 dB Ref 30.00 dBm Center Free 846.500000 MH Center Fre enter 846.5 MHz Res BW 100 kHz Span 10 MH: #Sweep 100 m Center 846.5 MHz FRes BW 100 kHz Span 10 MHz #Sweep 100 ms CF Ste CF Ste #VBW 300 kHz **#VBW 300 kHz**

31.0 dBm 32.2 dBm Occupied Bandwidth Occupied Bandwidt 4.5010 MHz 4.5107 MHz Freq Offs Transmit Freq Error 862 Hz **OBW Powe** 99.00 % Transmit Freq Error 1.880 kHz **OBW Power** 99.00 % -26.00 dB -26.00 dB 25RB#0 25RB#0

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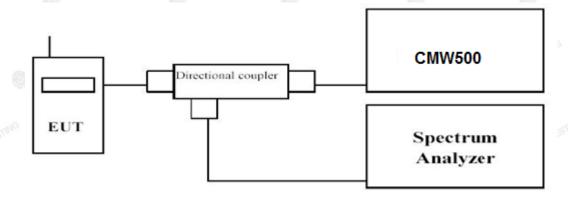


4.4 Band Edge Compliance

LIMIT

Per FCC §24.238 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 + 10log(P) dB.

TEST CONFIGURATION



TEST PROCEDURE

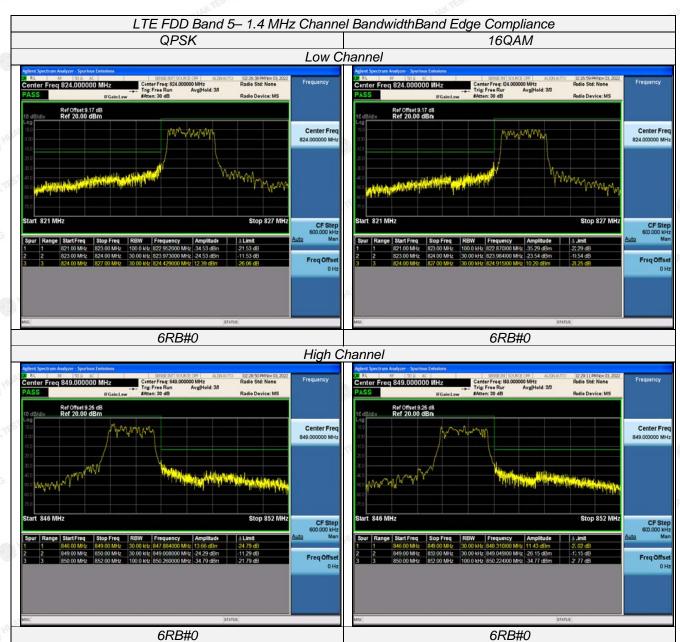
- 1. The transmitter output port was connected to base station.
- The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
- 3. Set EUT at maximum power through base station.
- 4. Select lowestand highest channels for each band and different modulation.
- 5. Measure Band edge using RMS (Average) detector by spectrum.

TEST RESULTS

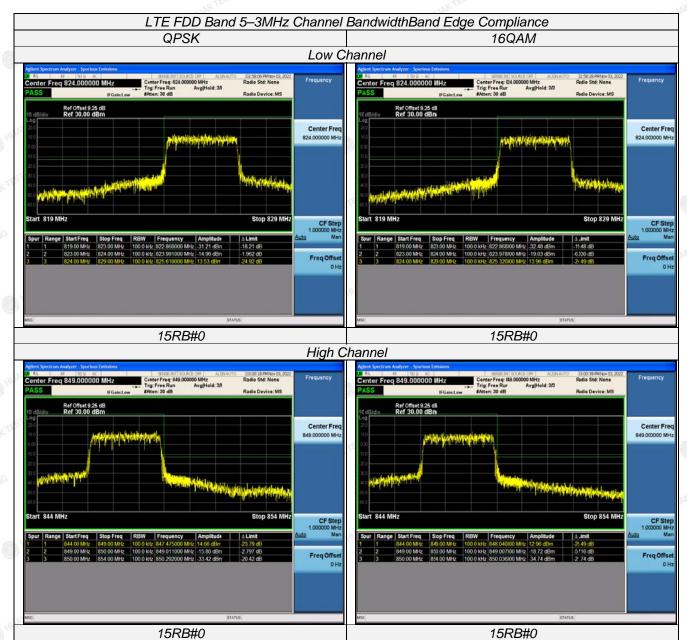
Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE FDD Band 5; recorded worst case for each Channel Bandwidth of LTE FDD Band 5.

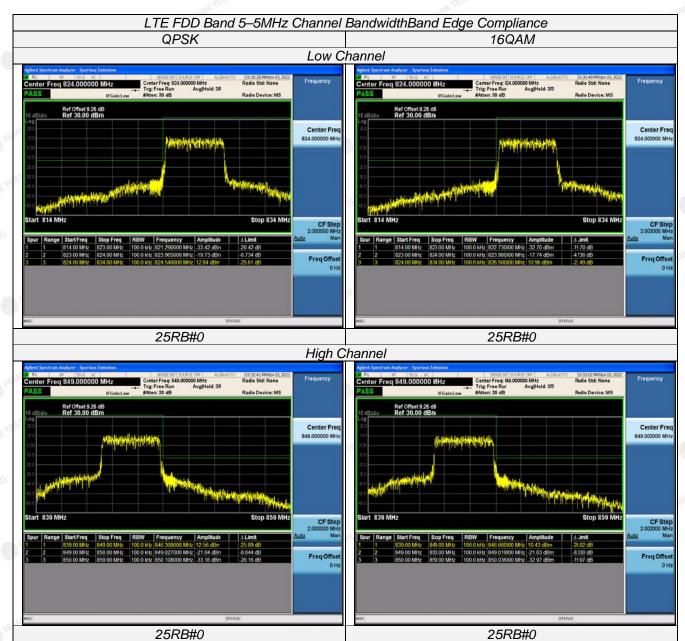
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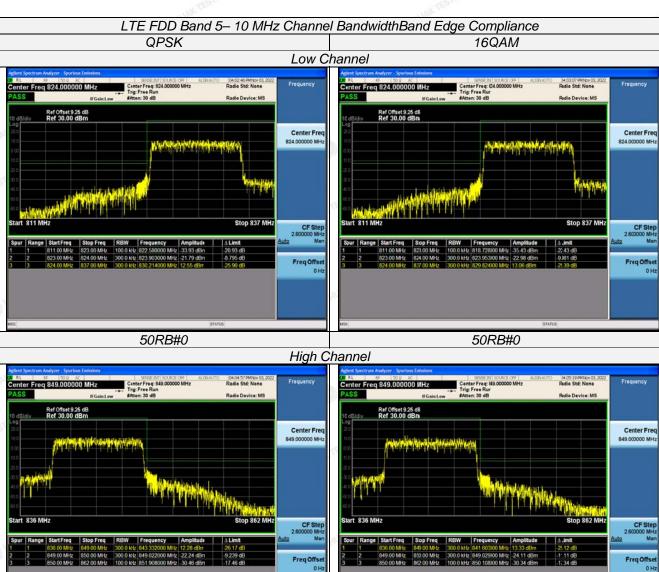


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