



FCC Test Report

Report Reference No......: HK2407314284-7E
FCC ID.....: 2BBBN-VISIONSYNC
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Jason Zhou

Date of issue.....: Aug. 20, 2024

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: **Hangzhou Tanlink Technology Co.,Ltd.**

Address: Room 701, South Building, Building 3, No.16, Longtan Road, Cangqian Street, Yuhang District, Hangzhou, Zhejiang, China

Test specification

Standard.....: **FCC CFR Title 47 Part 2, Part 27**

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

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Test item description: 4G driving recorder

Trade Mark: Redtiger

Manufacturer.....: **Hangzhou Tanlink Technology Co.,Ltd.**

Model/Type reference.....: VisionSync 10

Series Models: VisionSync 30, VisionSync 30 Pro, VisionSync 50, VisionSync 50 Pro, VisionSync 70, VisionSync 70 Pro, VisionSync 90, VisionSync 90 Pro, LinkStream 10, LinkStream 30

Modulation Type: QPSK, 16QAM

Rating: DC 5V from Type-C

Hardware version: V2.0

Software version.....: V2.0

Result.....: **PASS**



TEST REPORT

Test Report No. :	HK2407314284-7E	Aug. 20, 2024
		Date of issue

Equipment under Test : 4G driving recorder

Model /Type : VisionSync 10

Series Models : VisionSync 30, VisionSync 30 Pro, VisionSync 50, VisionSync 50 Pro, VisionSync 70, VisionSync 70 Pro, VisionSync 90, VisionSync 90 Pro, LinkStream 10, LinkStream 30

Applicant : **Hangzhou Tanlink Technology Co.,Ltd.**

Address : Room 701, South Building, Building 3, No.16, Longtan Road, Cangqian Street, Yuhang District, Hangzhou, Zhejiang, China

Manufacturer : **Hangzhou Tanlink Technology Co.,Ltd.**

Address : Room 701, South Building, Building 3, No.16, Longtan Road, Cangqian Street, Yuhang District, Hangzhou, Zhejiang, China

Test Result:	PASS
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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.



**** Modified History ****

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Aug. 20, 2024	Jason Zhou



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1 TEST STANDARDS

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	:	Jul. 31, 2024
Testing commenced on	:	Jul. 31, 2024
Testing concluded on	:	Aug. 20, 2024

2.2 Product Description

The Hangzhou Tanlink Technology Co.,Ltd.'s Model: VisionSync 10 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	4G driving recorder
Model/Type reference:	VisionSync 10
Series Models:	VisionSync 30, VisionSync 30 Pro, VisionSync 50, VisionSync 50 Pro, VisionSync 70, VisionSync 70 Pro, VisionSync 90, VisionSync 90 Pro, LinkStream 10, LinkStream 30
Power supply:	DC 5V from Type-C
Modulation Type	QPSK,16QAM
Antenna Type	Internal Antenna
Antenna Gain	0.22dBi
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	4.25VDC to 5.75VDC (nominal: 5.0VDC)

2.3 Equipment under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 120V/ 60 Hz	<input type="radio"/> 115V/60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 5V from Type-C



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
- - supplied by the lab

<input type="radio"/>	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
<input type="radio"/>	Multimeter	Manufacturer :	/
		Model No. :	/

2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended filing to comply with FCC Part 27, Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.

2.8 General Test Conditions/Configurations

2.9.1 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	4.25V
	VN	5.0V
	VH	5.75V

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 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 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

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	L.I.S.N.	R&S	ENV216	HKE-002	2024/02/20	2025/02/19
2	L.I.S.N.	R&S	ENV216	HKE-059	2024/02/20	2025/02/19
3	EMI Test Receiver	R&S	ESR	HKE-005	2024/02/20	2025/02/19
4	Spectrum analyzer	Agilent	N9020A	HKE-048	2024/02/20	2025/02/19
5	Spectrum analyzer	R&S	FSV3044	HKE-126	2024/02/20	2025/02/19
6	Preamplifier	EMCI	EMC051845 S	HKE-006	2024/02/20	2025/02/19
7	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2024/02/20	2025/02/19
8	Preamplifier	A.H. Systems	SAS-574	HKE-182	2024/02/20	2025/02/19
9	6d Attenuator	Pasternack	6db	HKE-184	2024/02/20	2025/02/19
10	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2024/02/20	2025/02/19
11	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2026/02/20
12	Loop Antenna	COM-POWER	AL-130R	HKE-014	2024/02/21	2026/02/20
13	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2026/02/20
14	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
15	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
16	RF Automatic control unit	Tonscend	JS0806-1	HKE-096	2024/02/20	2025/02/19
17	High pass filter unit	Tonscend	JS0806-F	HKE-055	2024/02/20	2025/02/19
18	Wireless Communication Test Set	R&S	CMU200	HKE-026	2024/02/20	2025/02/19
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	2024/02/20	2025/02/19
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	2024/06/10	2025/06/09
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2024/06/10	2025/06/09
22	RF Test Software	Tonscend	JS1120 Version 3.1.46	HKE-183	/	/

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4 TEST CONDITIONS AND RESULTS

4.1 Output Power

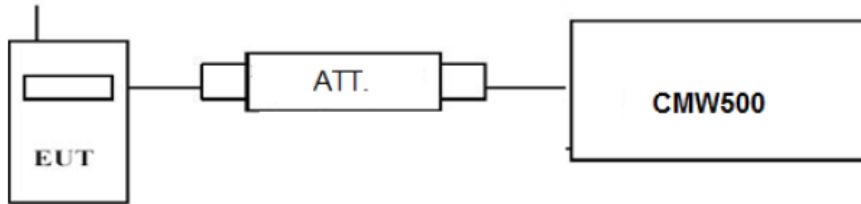
4.1.1 Conducted Output Power

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

Remark:

- 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	20.47	19.63
		1 RB mid	20.62	19.72
		1 RB high	20.58	19.71
		50% RB low	19.60	18.09
		50% RB mid	19.60	18.09
		50% RB high	19.68	18.01
		100% RB	19.78	18.03
	2600.0	1 RB low	20.54	20.17
		1 RB mid	20.65	20.30
		1 RB high	20.69	20.37
		50% RB low	19.71	18.23
		50% RB mid	19.67	18.23
		50% RB high	19.72	18.23
		100% RB	19.80	18.29
	2652.5	1 RB low	20.94	20.61
		1 RB mid	20.84	20.51
		1 RB high	20.94	20.61
		50% RB low	19.92	18.34
		50% RB mid	19.93	18.34
		50% RB high	19.86	18.41
		100% RB	19.91	18.44

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10 MHz	2560.0	1 RB low	20.12	19.28
		1 RB mid	20.15	19.19
		1 RB high	20.21	19.28
		50% RB low	19.36	17.68
		50% RB mid	19.27	17.69
		50% RB high	19.23	17.71
		100% RB	19.27	17.82
	2600.0	1 RB low	20.33	19.90
		1 RB mid	20.30	19.32
		1 RB high	20.33	19.37
		50% RB low	19.29	18.03
		50% RB mid	19.29	18.06
		50% RB high	19.59	18.11
		100% RB	19.36	17.89
	2650.0	1 RB low	20.58	20.06
		1 RB mid	20.78	20.15
		1 RB high	20.82	20.12
		50% RB low	19.64	18.06
50% RB mid		19.64	18.06	
50% RB high		19.63	18.08	
100% RB		19.66	18.09	
15 MHz	2562.5	1 RB low	20.19	19.14
		1 RB mid	20.20	19.27
		1 RB high	20.22	19.21
		50% RB low	19.26	19.26
		50% RB mid	19.26	19.26
		50% RB high	19.26	19.26
		100% RB	19.26	17.85
	2600.0	1 RB low	20.40	19.17
		1 RB mid	20.37	19.26
		1 RB high	20.44	19.22
		50% RB low	19.38	19.38
		50% RB mid	19.38	19.55
		50% RB high	19.49	19.37
		100% RB	19.48	17.95
	2647.5	1 RB low	20.56	19.46
		1 RB mid	20.60	19.72
		1 RB high	20.67	19.65
		50% RB low	19.63	19.63
50% RB mid		19.63	19.63	
50% RB high		19.63	19.63	
100% RB		19.63	18.22	
20 MHz	2565.0	1 RB low	20.18	19.91
		1 RB mid	20.17	19.76
		1 RB high	20.21	19.83
		50% RB low	19.37	17.94
		50% RB mid	19.37	17.92
		50% RB high	19.30	17.93
		100% RB	19.25	17.77
	2600.0	1 RB low	20.49	20.00
		1 RB mid	20.45	19.89
		1 RB high	20.47	20.02
		50% RB low	19.53	18.07
		50% RB mid	19.55	18.08
		50% RB high	19.56	18.10
		100% RB	19.44	17.97

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2645.0	1 RB low	20.41	19.72
	1 RB mid	20.25	19.56
	1 RB high	20.49	19.94
	50% RB low	19.40	17.96
	50% RB mid	19.41	17.96
	50% RB high	19.66	18.19
	100% RB	19.49	18.26

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4.1.2. Radiated Output Power

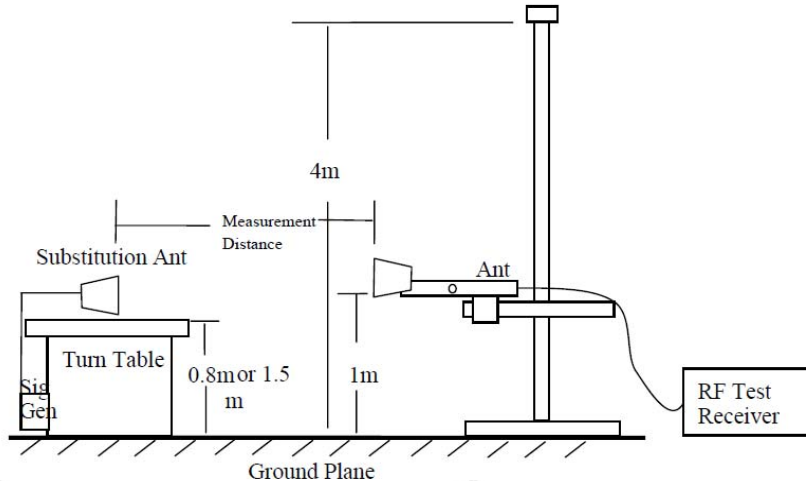
LIMIT

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

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	12.08	3.41	15.12	23.79	33.01	9.22	V
2600.0	12.56	3.49	15.12	24.19	33.01	8.82	V
2652.5	11.33	3.55	15.12	22.9	33.01	10.11	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	12.58	3.41	15.12	24.29	33.01	8.72	V
2600.0	12.72	3.49	15.12	24.35	33.01	8.66	V
2650.0	11.7	3.55	15.12	23.27	33.01	9.74	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	12.15	3.41	15.12	23.86	33.01	9.15	V
2600.0	12.84	3.49	15.12	24.47	33.01	8.54	V
2647.5	11.69	3.55	15.12	23.26	33.01	9.75	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	12.52	3.41	15.12	24.23	33.01	8.78	V
2600.0	12.98	3.49	15.12	24.61	33.01	8.4	V
2645.0	10.96	3.55	15.12	22.53	33.01	10.48	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	12.05	3.41	15.12	23.76	33.01	9.25	V
2600.0	12.29	3.49	15.12	23.92	33.01	9.09	V
2652.5	11.64	3.55	15.12	23.21	33.01	9.8	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	12.34	3.41	15.12	24.05	33.01	8.96	V
2600.0	12.27	3.49	15.12	23.9	33.01	9.11	V
2650.0	11.65	3.55	15.12	23.22	33.01	9.79	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	11.8	3.41	15.12	23.51	33.01	9.5	V
2600.0	12.6	3.49	15.12	24.23	33.01	8.78	V
2647.5	11.43	3.55	15.12	23	33.01	10.01	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	12.72	3.41	15.12	24.43	33.01	8.58	V
2600.0	12.58	3.49	15.12	24.21	33.01	8.8	V
2645.0	11.15	3.55	15.12	22.72	33.01	10.29	V

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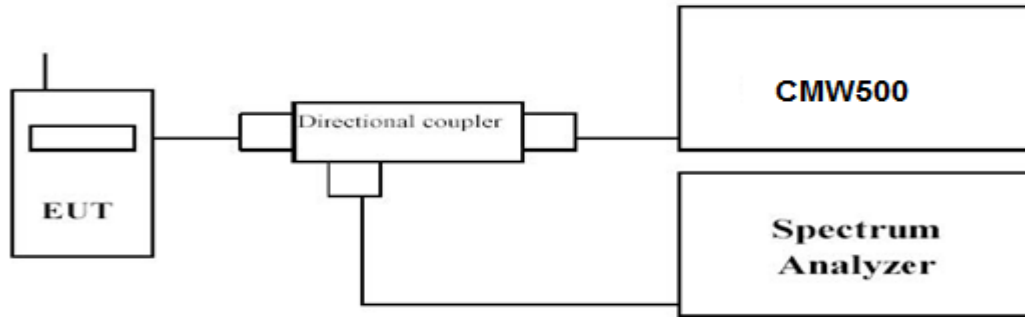


4.2 Peak-to-Average Ratio (PAR)

LIMIT

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

TEST CONFIGURATION



TEST PROCEDURE

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

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	9.41	9.56
	2600.0		9.55	9.70
	2652.5		9.15	9.82
10 MHz	2560.0	1RB#0	9.36	9.58
	2600.0		9.50	9.93
	2650.0		9.28	9.79
15 MHz	2562.5	1RB#0	9.42	9.63
	2600.0		9.60	10.45
	2647.5		9.27	9.67
20 MHz	2565.0	1RB#0	8.66	9.35
	2600.0		9.12	9.83
	2645.0		8.77	9.67

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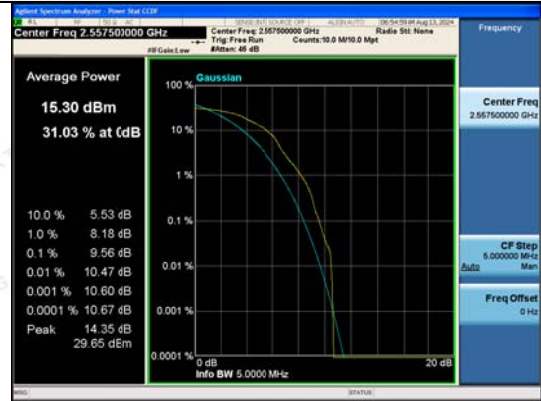
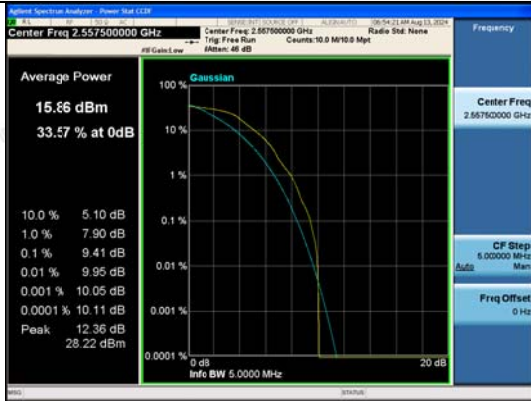


LTE Band 41-5MHz Channel BandwidthPAPR

QPSK

16QAM

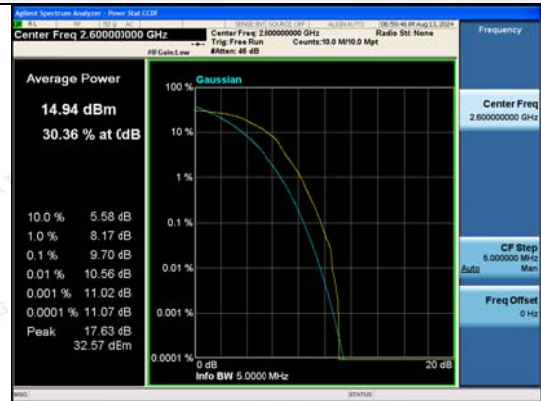
Low Channel



1RB#0

1RB#0

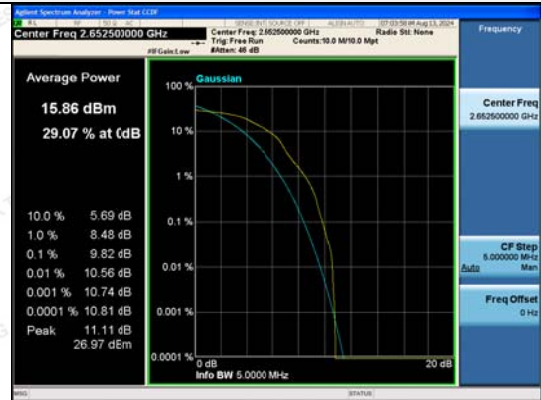
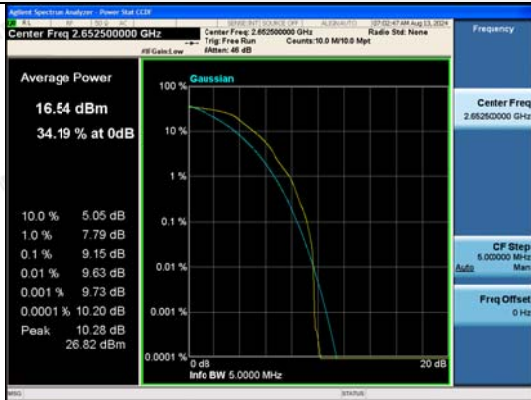
Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0

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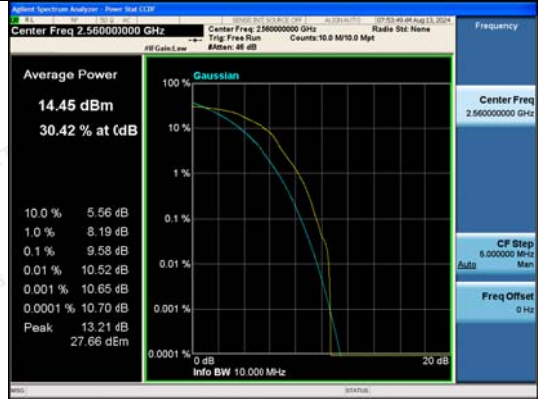
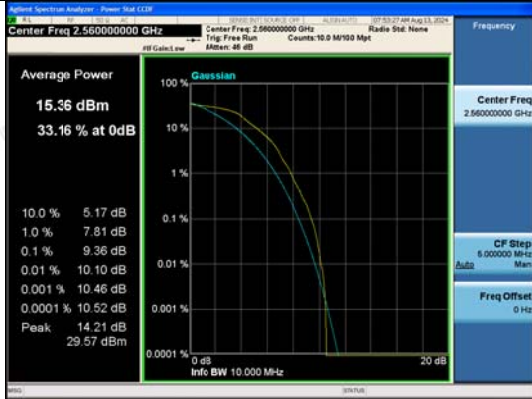


LTE Band 41-10MHz Channel BandwidthPAPR

QPSK

16QAM

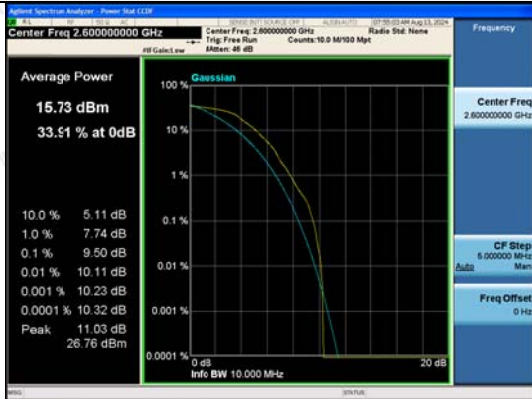
Low Channel



1RB#0

1RB#0

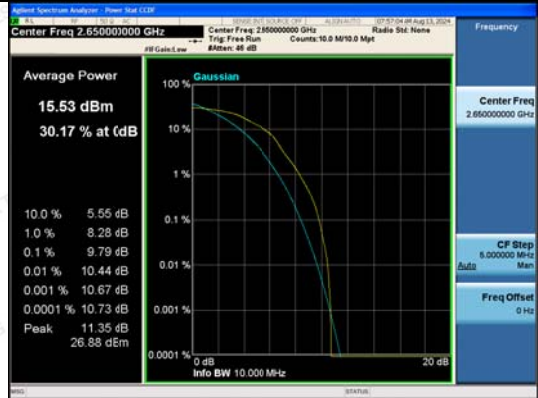
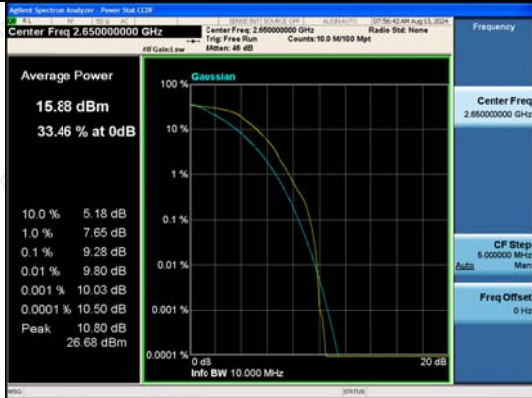
Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0

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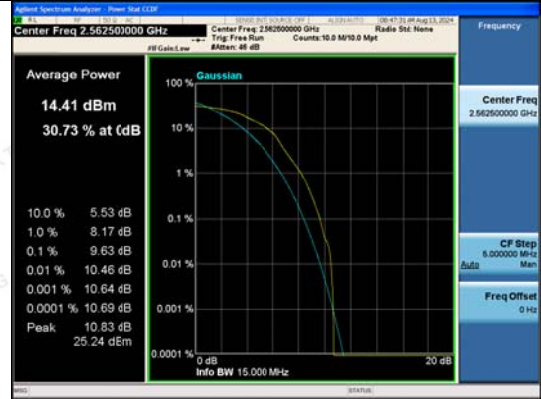


LTE Band 41- 15 MHz Channel BandwidthPAPR

QPSK

16QAM

Low Channel



1RB#0

1RB#0

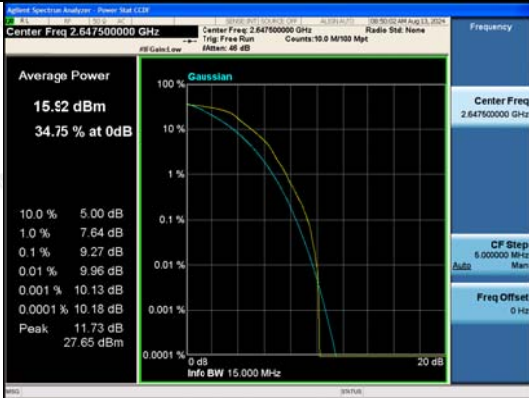
Middle Channel



1RB#0

1RB#0

High Channel



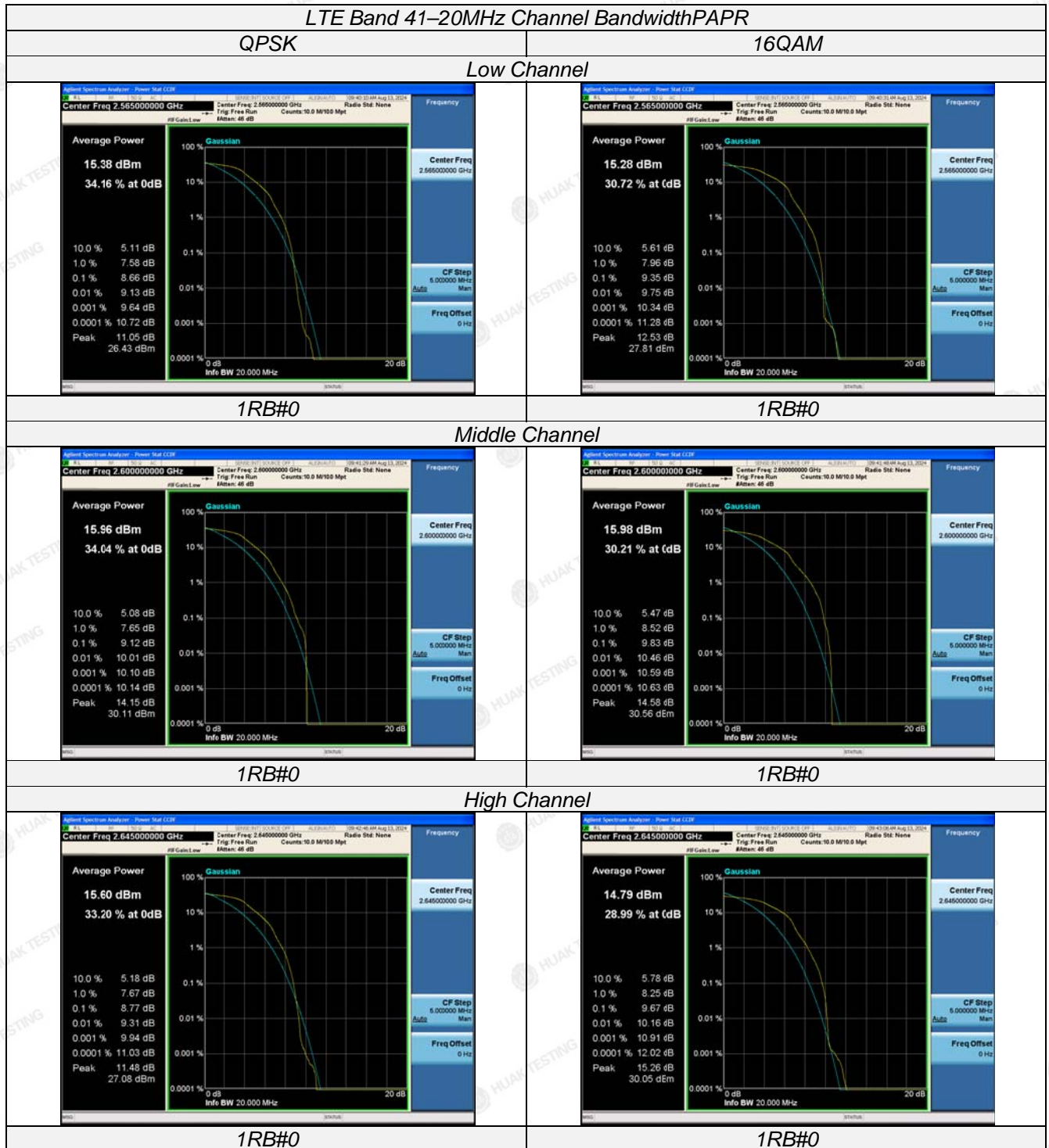
1RB#0

1RB#0

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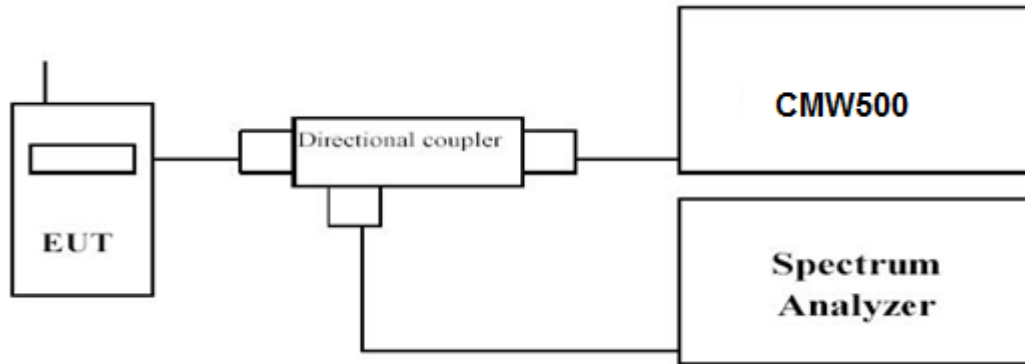


4.3 Occupied Bandwidth and Emission Bandwidth

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







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						
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	4.5088	4.5107	5.201	5.100
		2600.0	4.4932	4.4864	4.931	4.940
		2652.5	4.5128	4.5157	5.116	5.150
10 MHz	50RB#0	2560.0	8.9920	8.9832	10.31	9.943
		2600.0	9.0226	8.9942	10.31	9.933
		2650.0	8.9944	8.9954	10.17	9.934
15 MHz	75RB#0	2562.5	13.497	13.483	15.97	14.90
		2600.0	13.478	13.505	15.37	15.14
		2647.5	13.468	13.476	14.87	15.12
20 MHz	100RB#0	2565.0	17.968	17.963	19.69	19.70
		2600.0	18.006	17.972	19.79	19.66
		2645.0	17.958	17.938	19.56	19.78

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LTE Band 41-5MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth	
QPSK	16QAM
Low Channel	
 <p>Center Freq 2.557500000 GHz</p> <p>Center Freq 2.557500000 GHz</p> <p>Center 2.558 GHz</p> <p>Occupied Bandwidth 4.5088 MHz</p> <p>Total Power 27.3 dBm</p> <p>Transmit Freq Error -5.287 kHz</p> <p>x dB Bandwidth 5.201 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>	 <p>Center Freq 2.557500000 GHz</p> <p>Center Freq 2.557500000 GHz</p> <p>Center 2.558 GHz</p> <p>Occupied Bandwidth 4.5107 MHz</p> <p>Total Power 25.9 dBm</p> <p>Transmit Freq Error -1.855 kHz</p> <p>x dB Bandwidth 5.100 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>
25RB#0	25RB#0
Middle Channel	
 <p>Center Freq 2.600000000 GHz</p> <p>Center Freq 2.600000000 GHz</p> <p>Center 2.6 GHz</p> <p>Occupied Bandwidth 4.4932 MHz</p> <p>Total Power 27.7 dBm</p> <p>Transmit Freq Error -2.636 kHz</p> <p>x dB Bandwidth 4.931 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>	 <p>Center Freq 2.600000000 GHz</p> <p>Center Freq 2.600000000 GHz</p> <p>Center 2.6 GHz</p> <p>Occupied Bandwidth 4.4864 MHz</p> <p>Total Power 26.1 dBm</p> <p>Transmit Freq Error 1.127 kHz</p> <p>x dB Bandwidth 4.940 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>
25RB#0	25RB#0
High Channel	
 <p>Center Freq 2.652500000 GHz</p> <p>Center Freq 2.652500000 GHz</p> <p>Center 2.653 GHz</p> <p>Occupied Bandwidth 4.5128 MHz</p> <p>Total Power 27.7 dBm</p> <p>Transmit Freq Error -6.783 kHz</p> <p>x dB Bandwidth 5.116 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>	 <p>Center Freq 2.652500000 GHz</p> <p>Center Freq 2.652500000 GHz</p> <p>Center 2.653 GHz</p> <p>Occupied Bandwidth 4.5157 MHz</p> <p>Total Power 26.4 dBm</p> <p>Transmit Freq Error -3.799 kHz</p> <p>x dB Bandwidth 5.150 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -26.00 dB</p>
25RB#0	25RB#0

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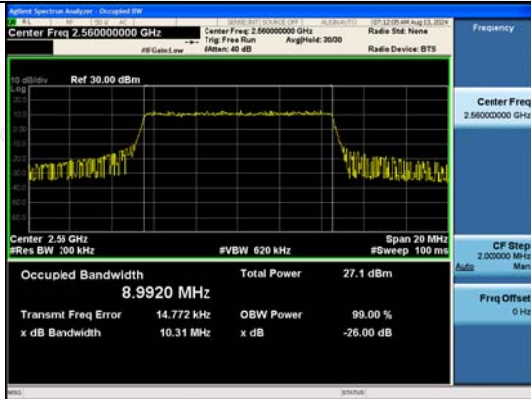


LTE Band 41-10MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

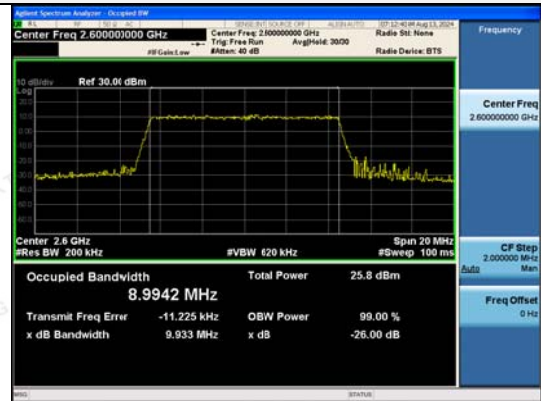
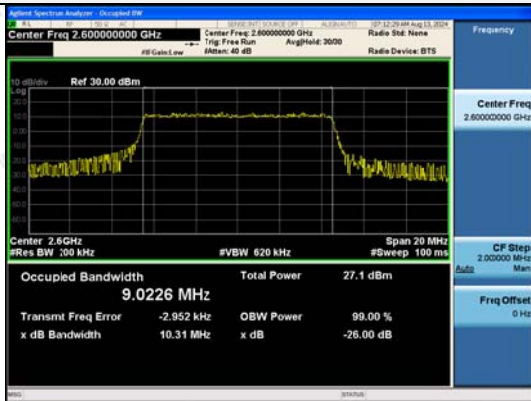
Low Channel



50RB#0

50RB#0

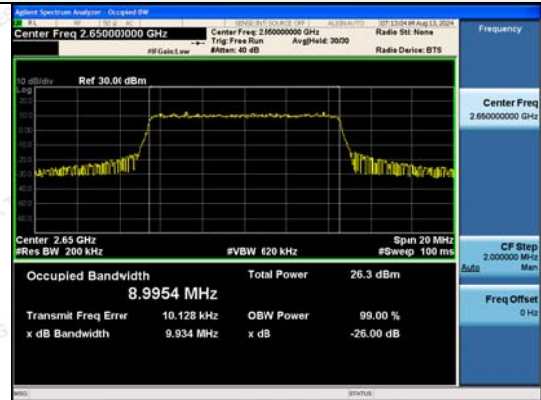
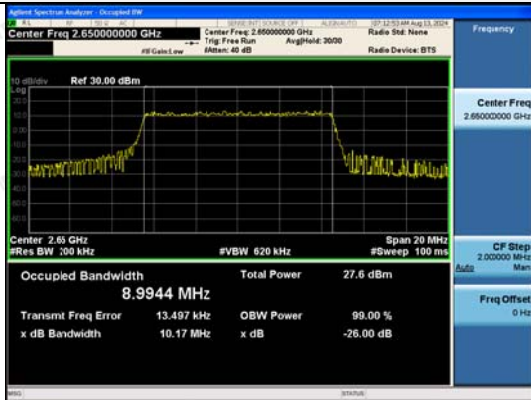
Middle Channel



50RB#0

50RB#0

High Channel



50RB#0

50RB#0

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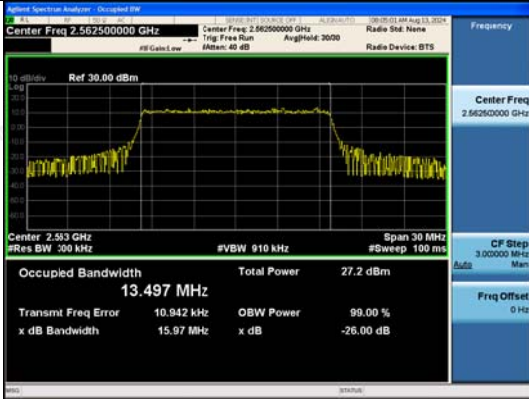


LTE Band 41-15MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

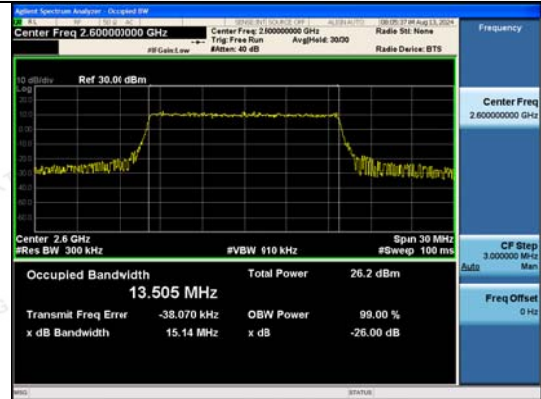
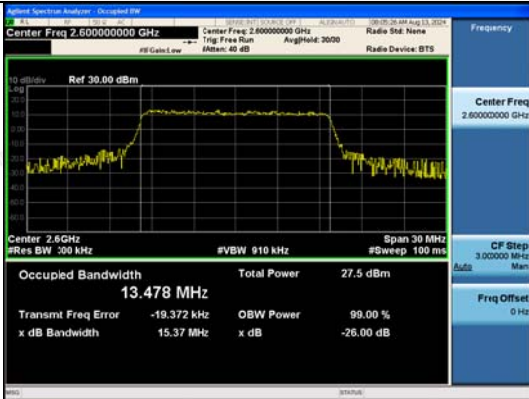
Low Channel



75RB#0

75RB#0

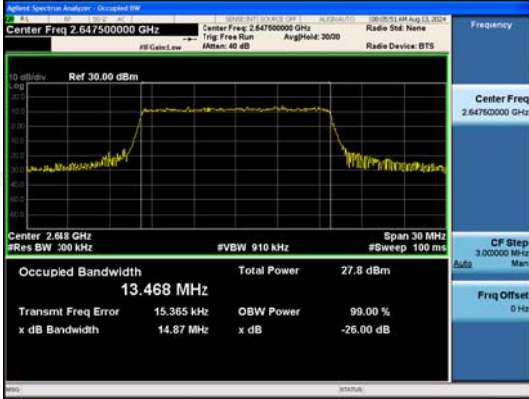
Middle Channel



75RB#0

75RB#0

High Channel



75RB#0

75RB#0

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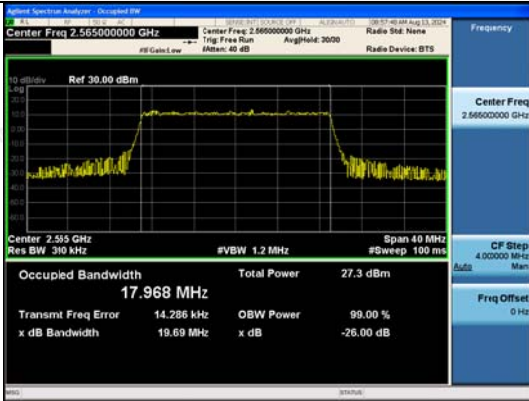


LTE Band 41-20MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

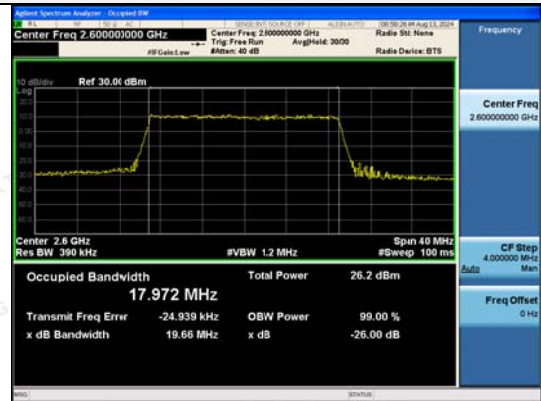
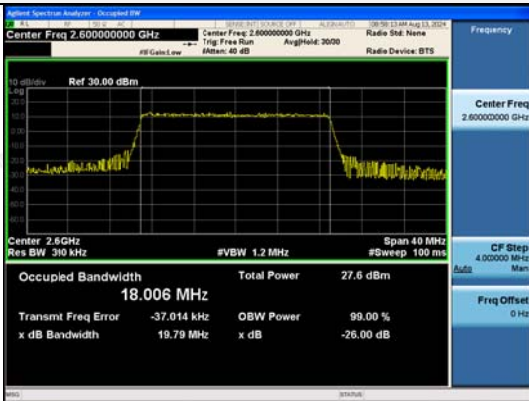
Low Channel



100RB#0

100RB#0

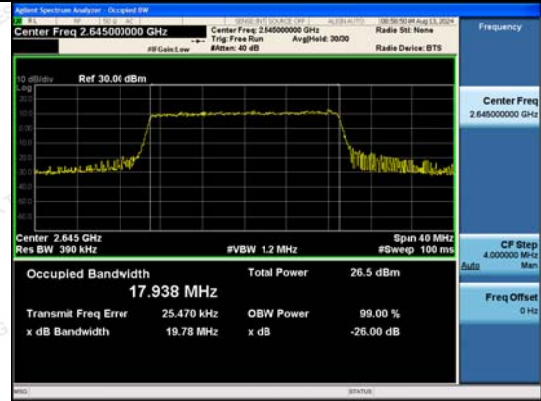
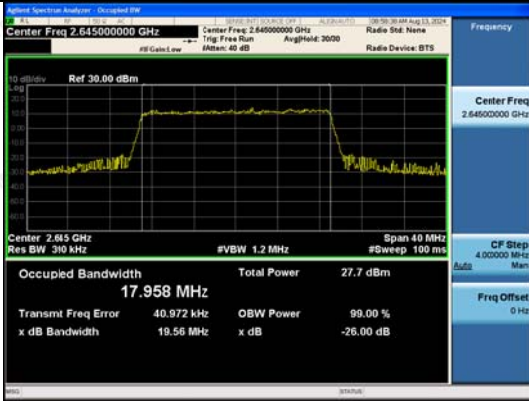
Middle Channel



100RB#0

100RB#0

High Channel



100RB#0

100RB#0

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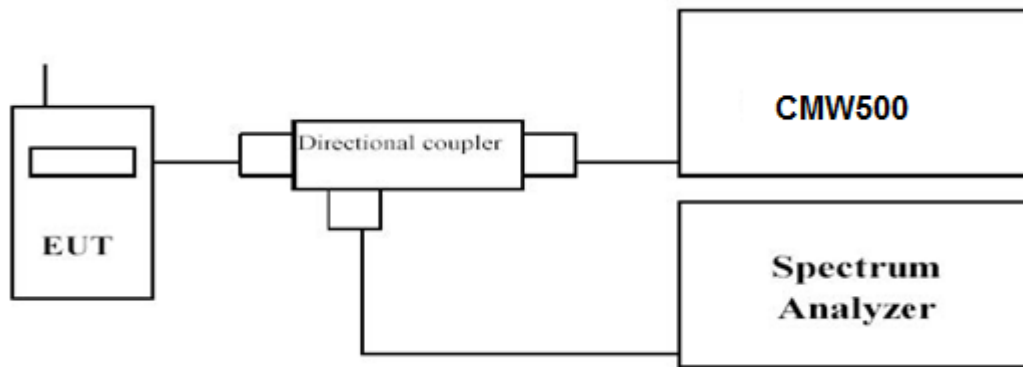
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4.4 Band Edge compliance

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 X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

TEST CONFIGURATION



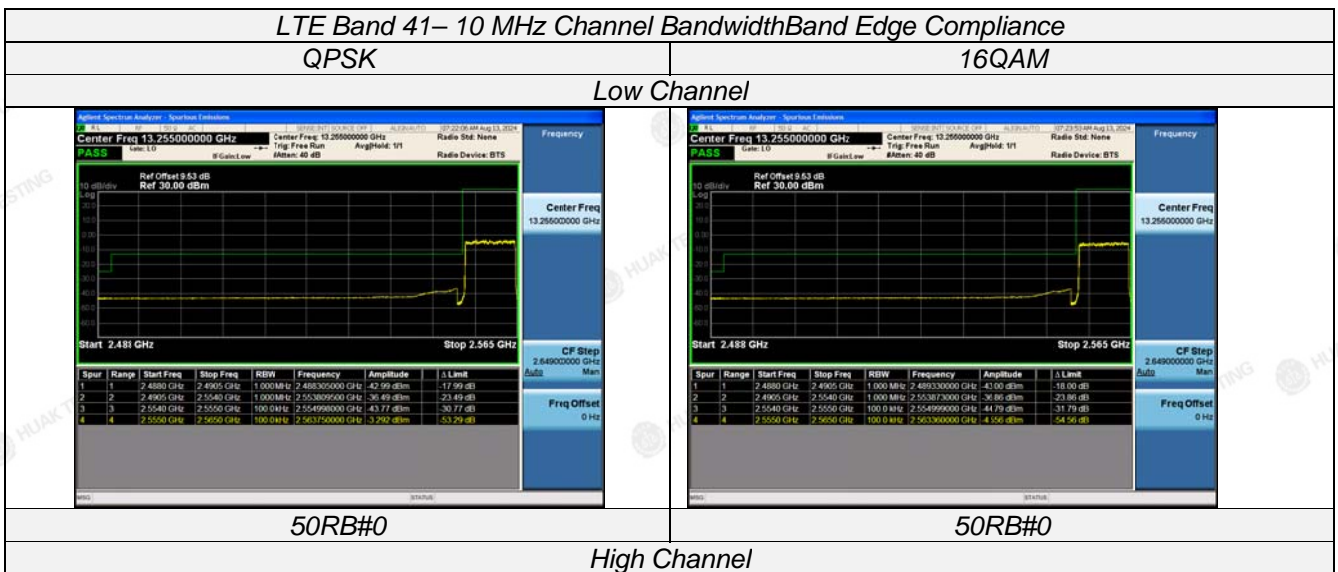
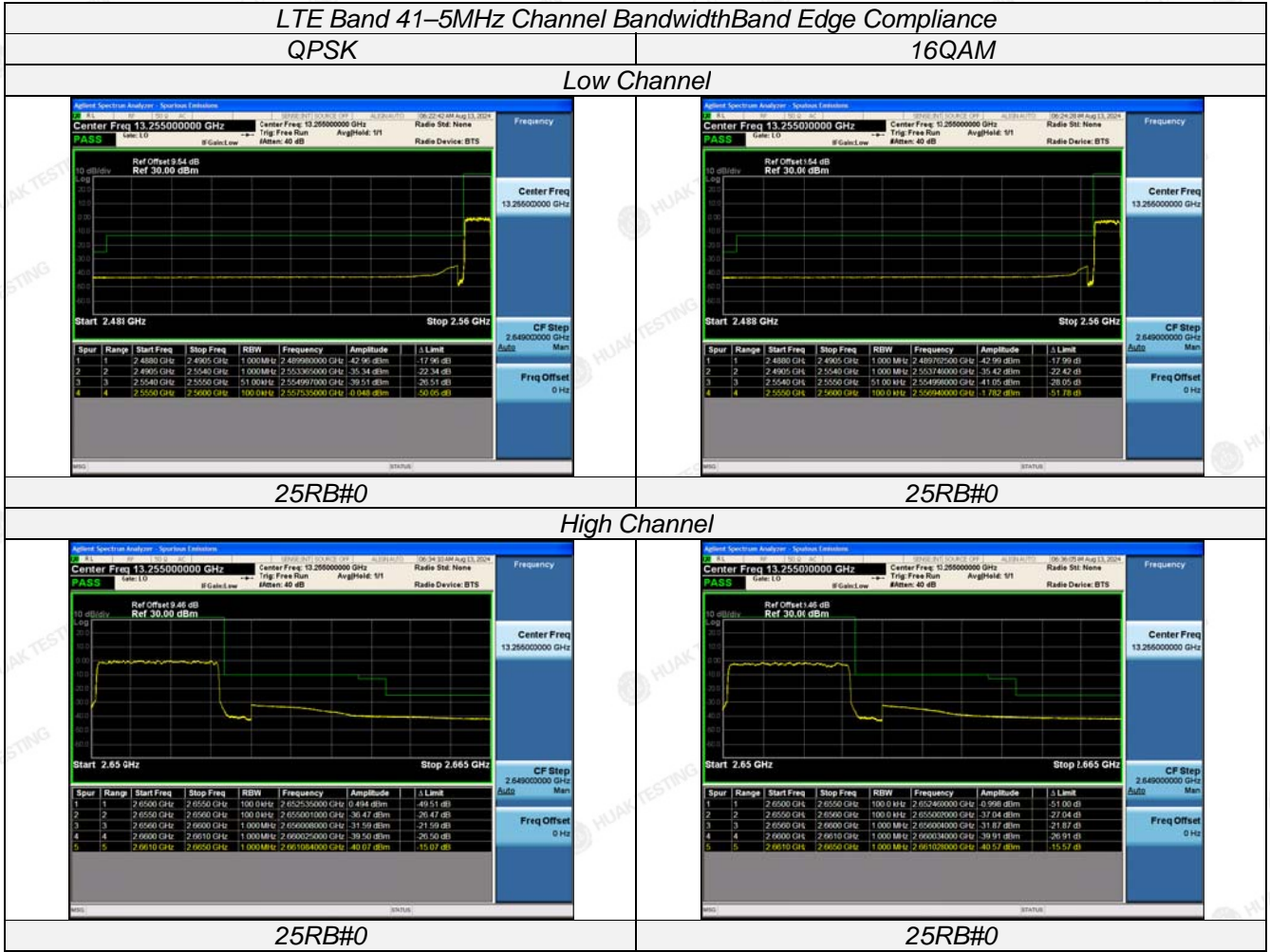
TEST PROCEDURE

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= 50 MHz Peak Detector.

TEST RESULTS

Remark:

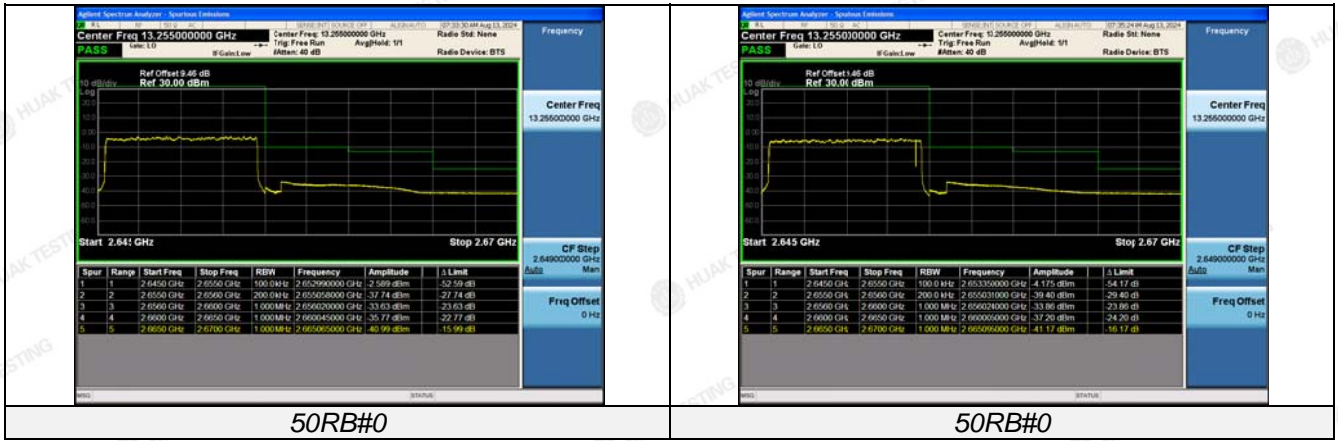
1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.



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LTE Band 41-15MHz Channel Bandwidth Band Edge Compliance

QPSK

16QAM

Low Channel



High Channel



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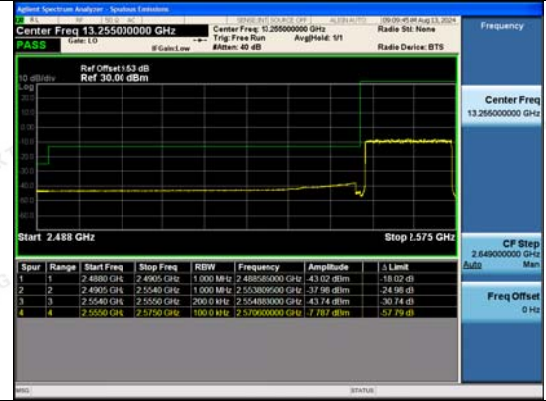
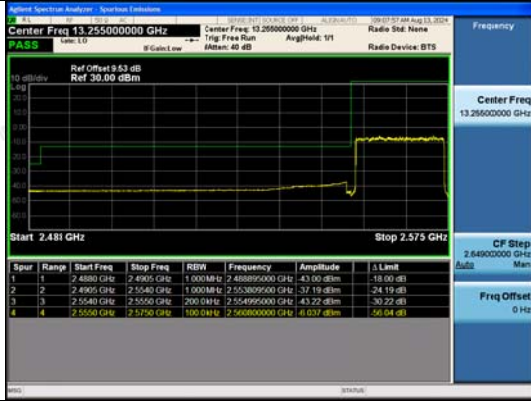


LTE Band 41-20MHz Channel Bandwidth Band Edge Compliance

QPSK

16QAM

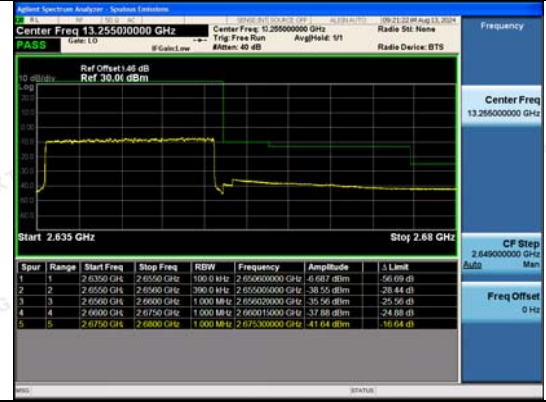
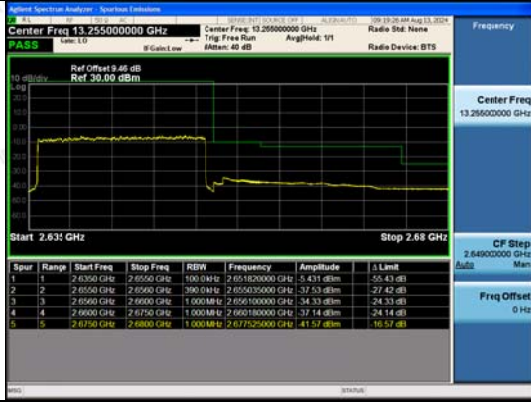
Low Channel



100RB#0

100RB#0

High Channel



100RB#0

100RB#0

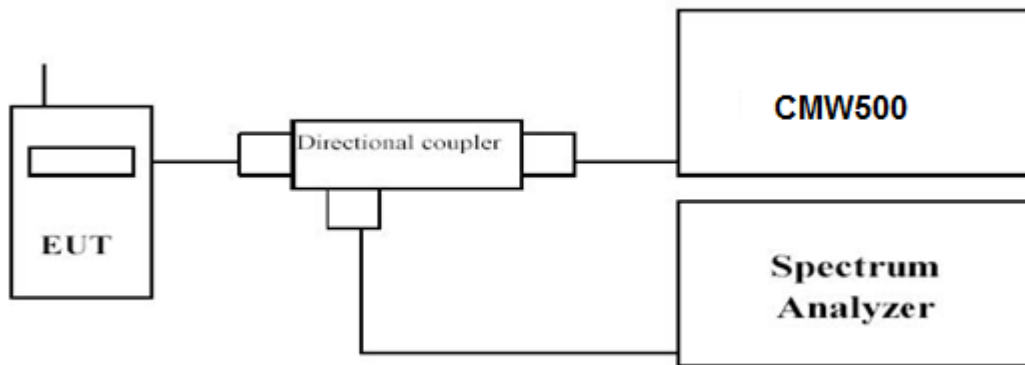
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4.5 Spurious Emission on Antenna Port

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 X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

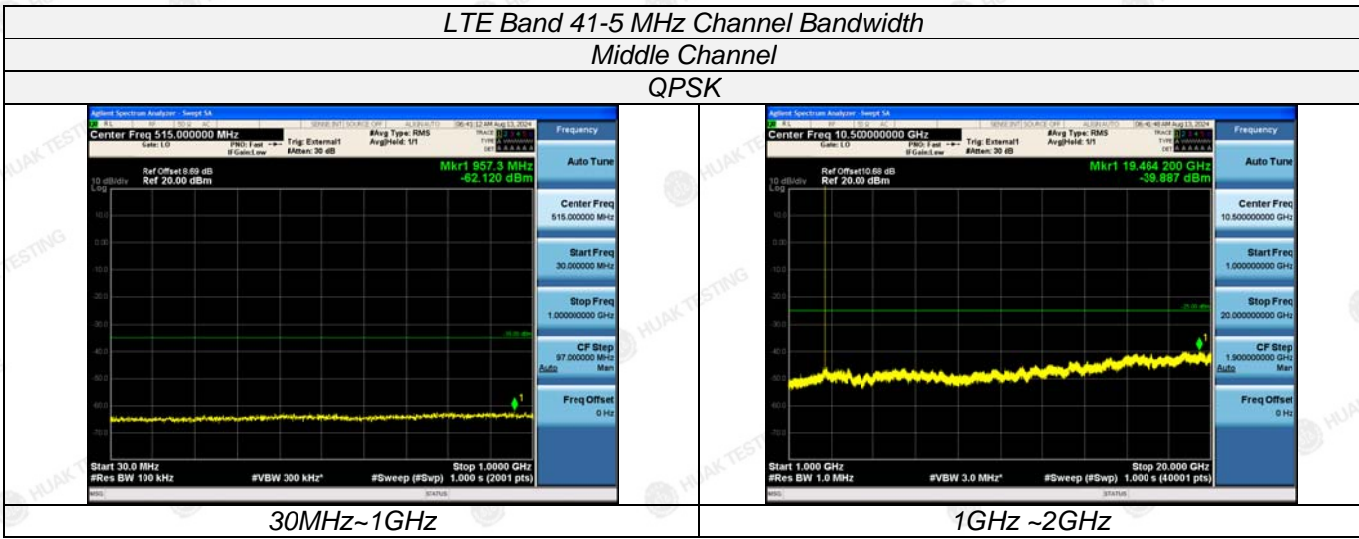
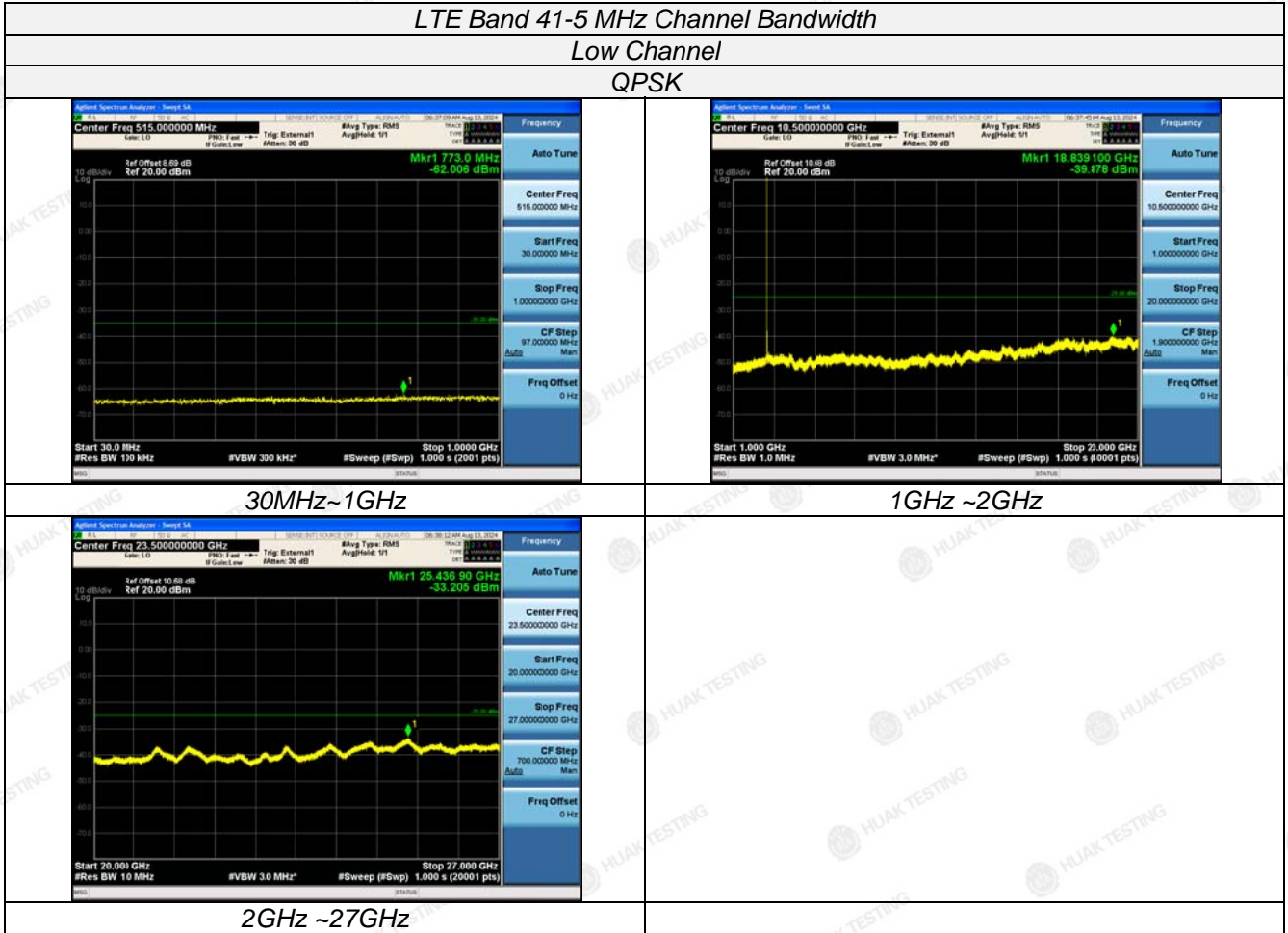
- a. Place the EUT on a bench and set it in transmitting mode.
- b. Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- c. EUT Communicate with CMW500, then select a channel for testing.
- d. Add a correction factor to the display of spectrum, and then test.
- e. The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.
- f. Please refer to following tables for test antenna conducted emissions.

Working Frequency	Sub range (GHz)	RBW	VBW	Sweep time (s)
LTE Band 41	0.03~26.5	1 MHz	3 MHz	Auto

TEST RESULTS

Remark:

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



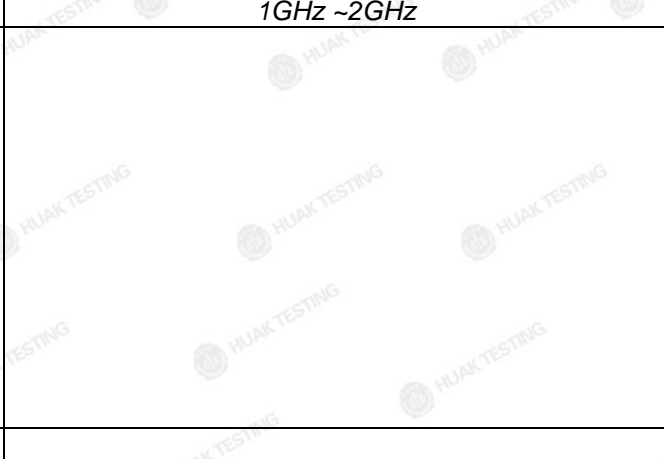
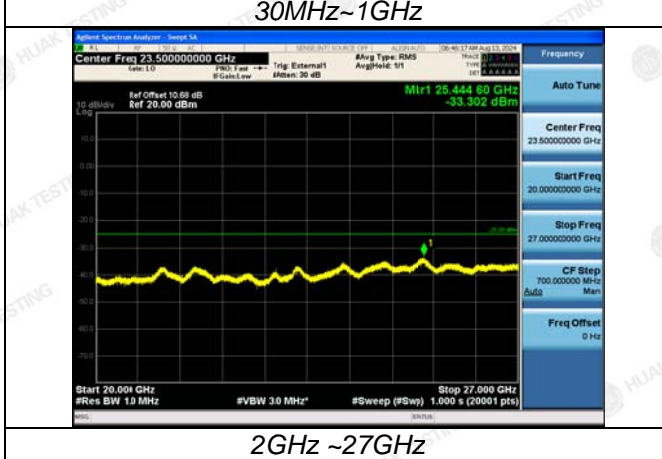
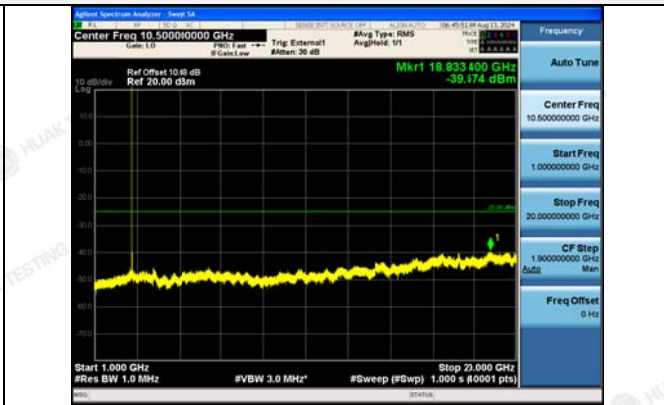
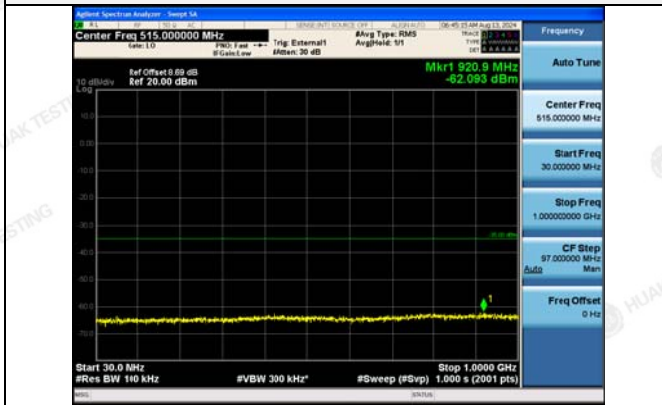
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LTE Band 41-5 MHz Channel Bandwidth
High Channel
QPSK



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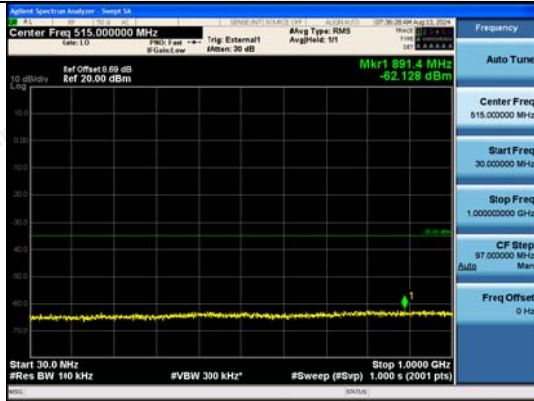
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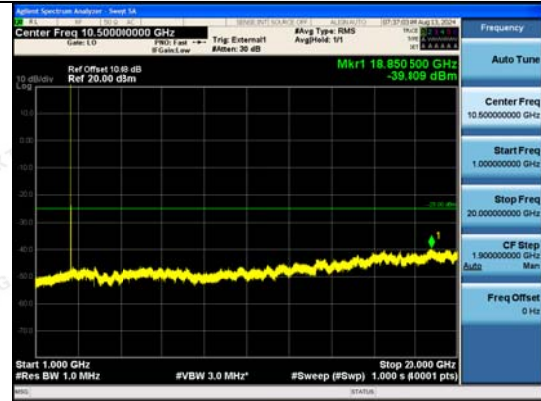
LTE Band 41-10 MHz Channel Bandwidth

Low Channel

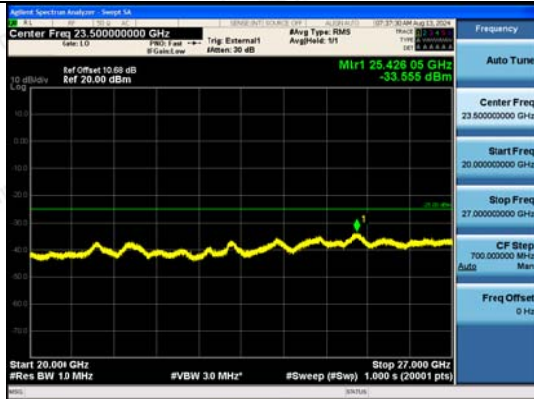
QPSK



30MHz~1GHz



1GHz ~2GHz



2GHz ~27GHz

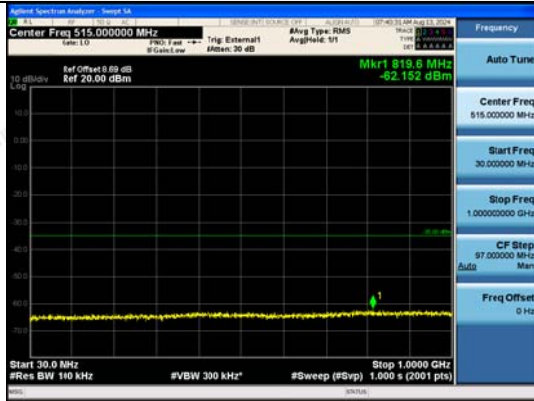
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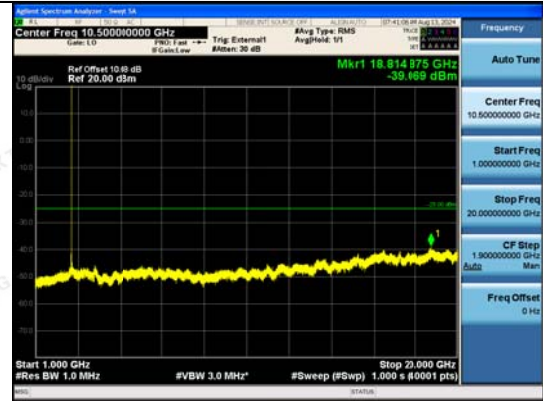
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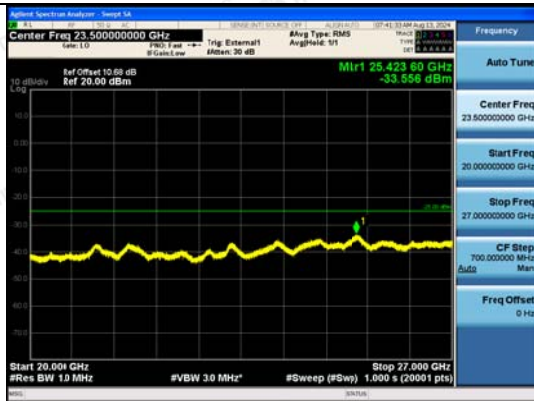
LTE Band 41-10 MHz Channel Bandwidth
Middle Channel
QPSK



30MHz~1GHz

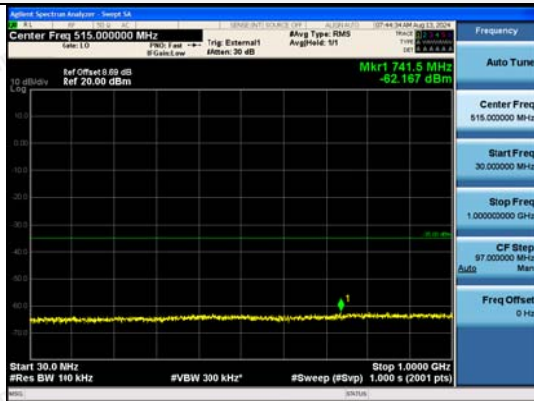


1GHz~2GHz

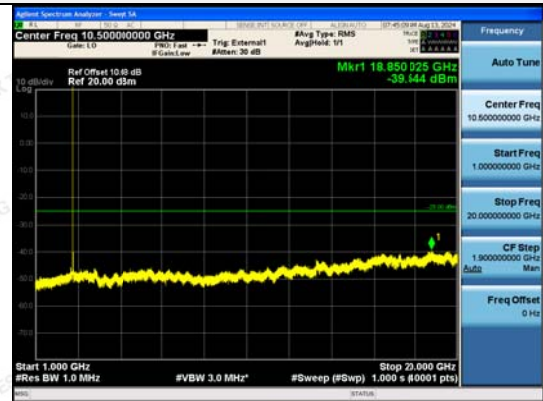


2GHz~27GHz

LTE Band 41-10 MHz Channel Bandwidth
High Channel
QPSK



30MHz~1GHz



1GHz~2GHz

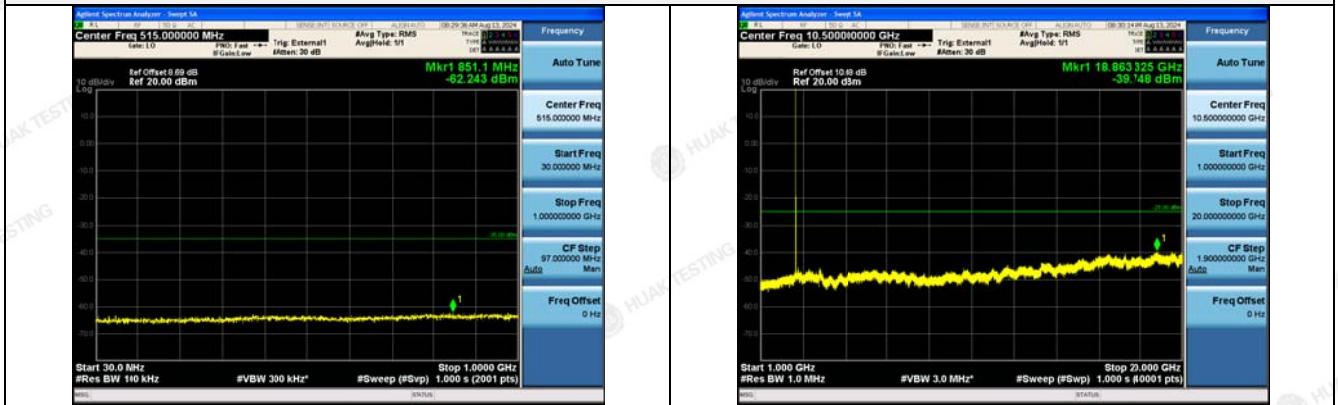
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LTE Band 41-15 MHz Channel Bandwidth
Low Channel
QPSK



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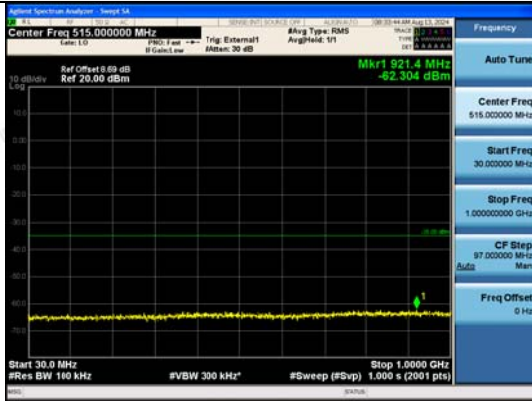
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LTE Band 41-15 MHz Channel Bandwidth

Middle Channel

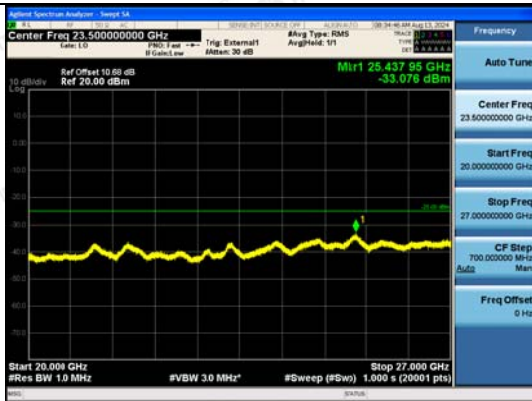
QPSK



30MHz~1GHz



1GHz~2GHz

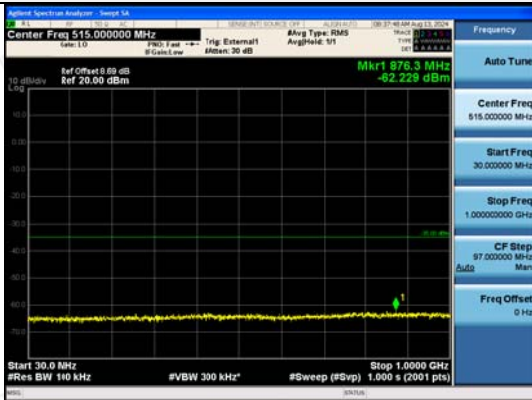


2GHz~27GHz

LTE Band 41-15 MHz Channel Bandwidth

High Channel

QPSK



30MHz~1GHz



1GHz~2GHz

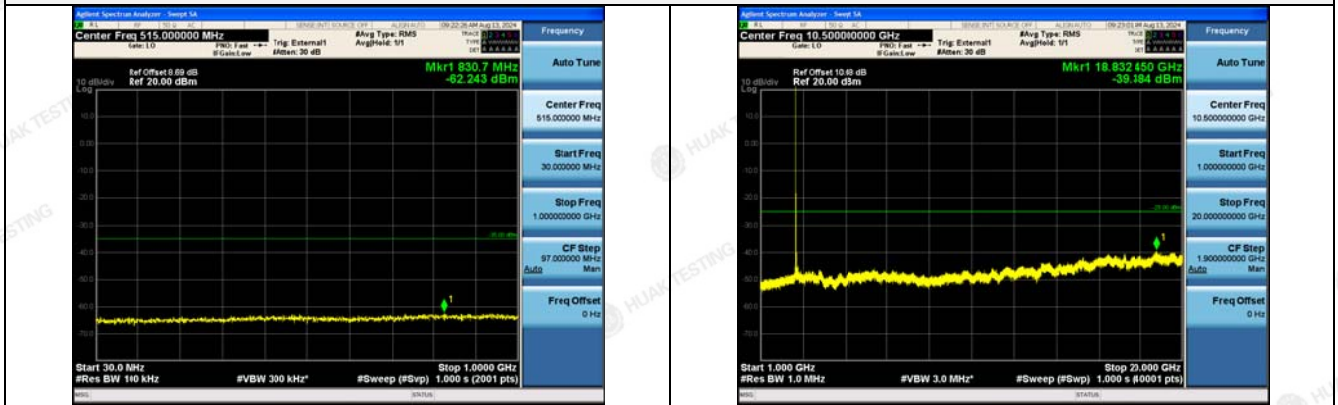
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LTE Band 41-20 MHz Channel Bandwidth
Low Channel
QPSK



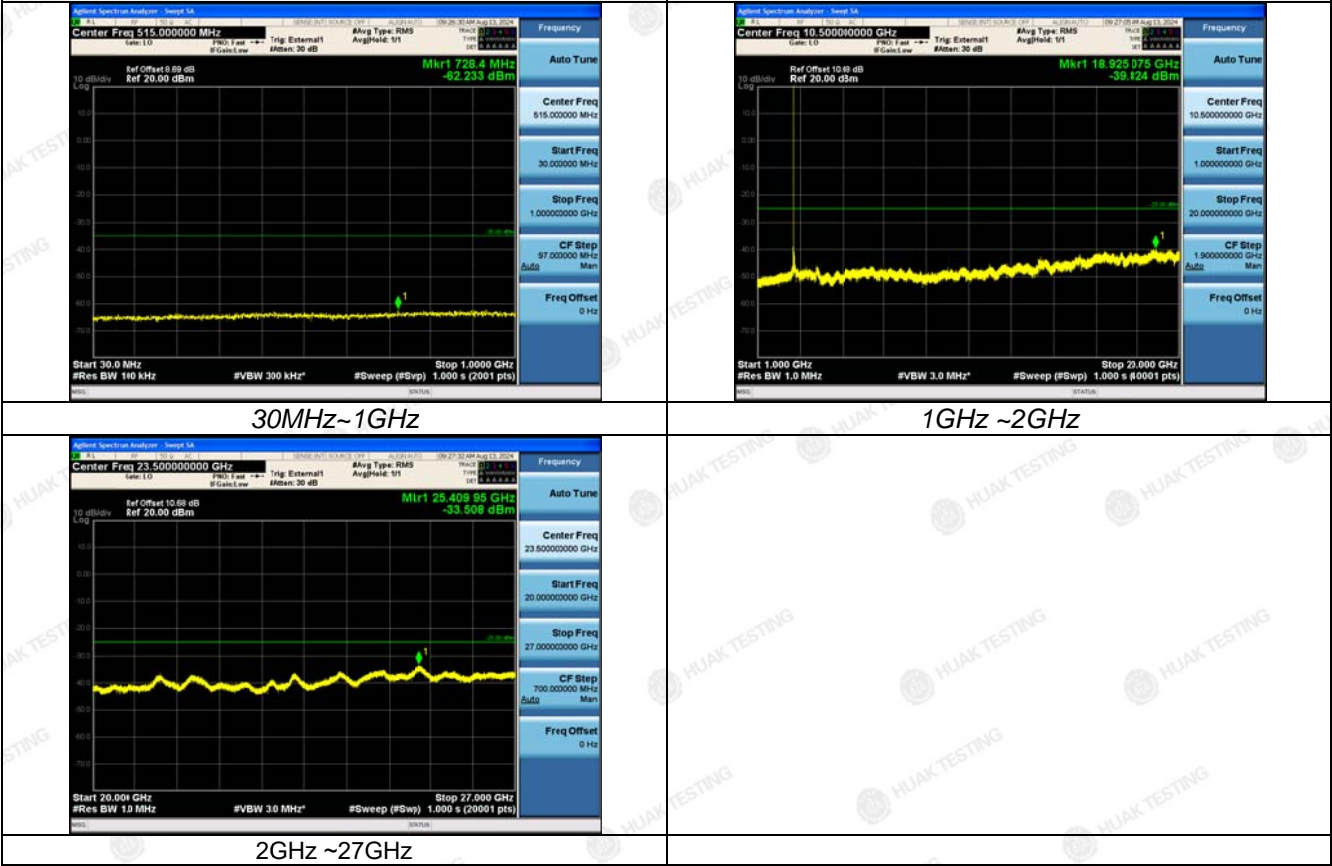
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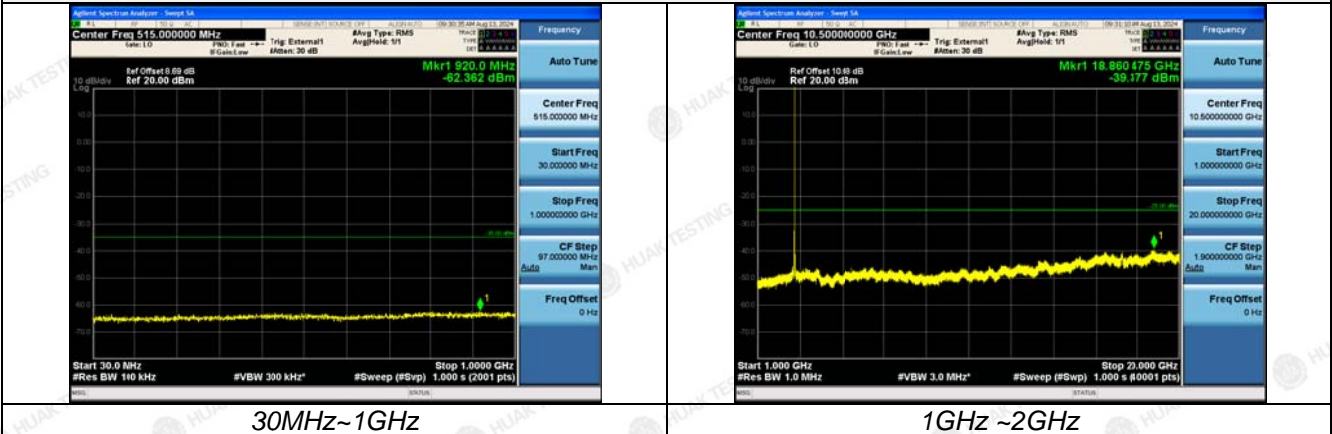
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LTE Band 41-20 MHz Channel Bandwidth
Middle Channel
QPSK



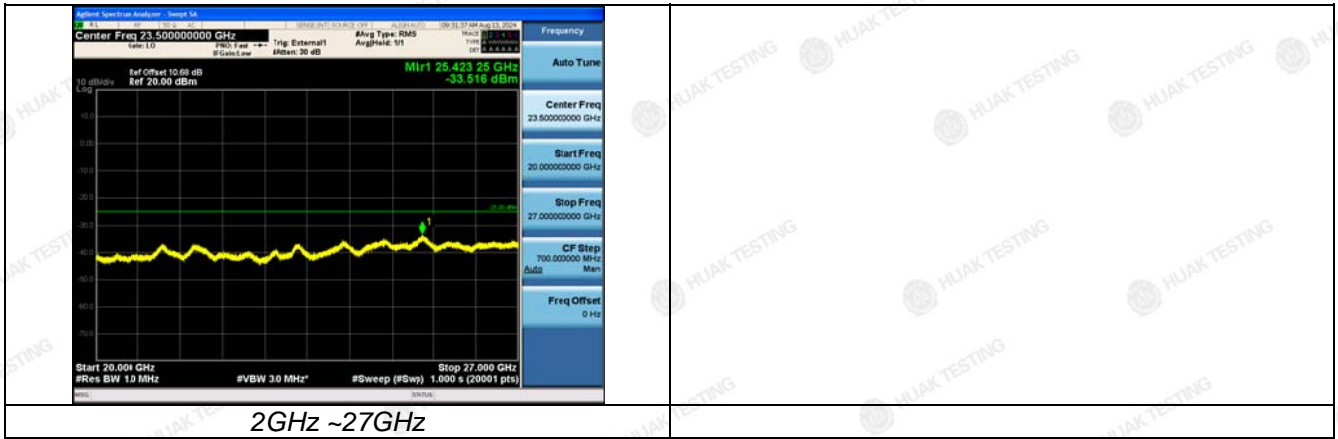
LTE Band 41-20 MHz Channel Bandwidth
High Channel
QPSK



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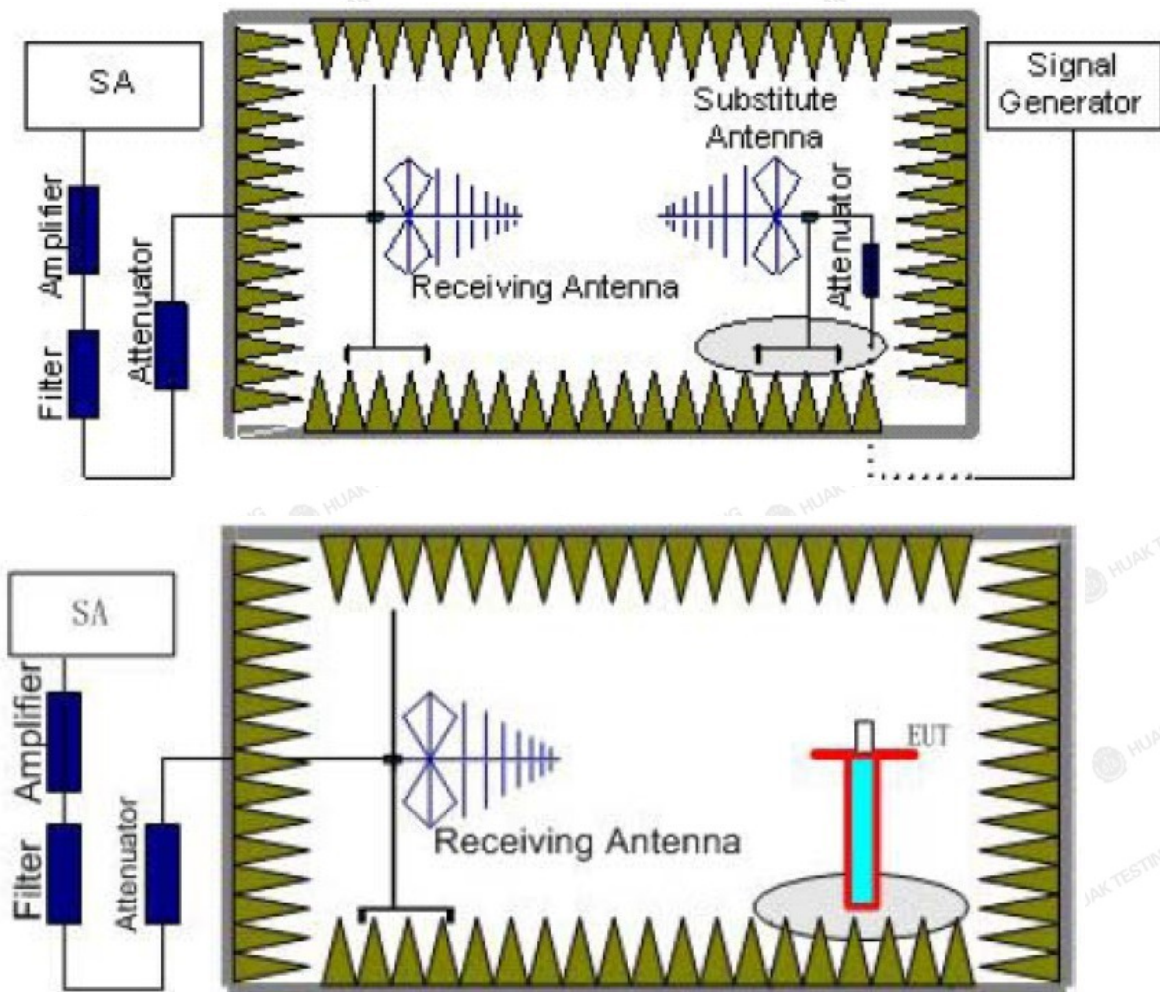
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4.6 Radiated Spurious Emission

TEST APPLICABLE

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 X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

TEST CONFIGURATION



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.



- e. 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.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. 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.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. 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.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. 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.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. 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.
- q. Test site anechoic chamber refer to ANSI C63.4:2014.

Frequency	Channel	Frequency Range	Verdict
LTE Band 41	Low	30MHz -26.5GHz	PASS
	Middle	30MHz -26.5GHz	PASS
	High	30MHz -26.5GHz	PASS

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. Not recorded other points means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. $Margin = Limit - EIRP$

LTE Band 41_Channel Bandwidth 5MHz_QPSK_1RB#0

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	Distance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4997.0	-17.88	4.39	3.00	12.34	-9.93	-25.00	-2.73	H
7495.5	-51.69	5.31	3.00	13.52	-43.48	-25.00	32.00	H
4997.0	-51.57	4.39	3.00	12.34	-43.62	-25.00	30.96	V
7495.5	-54.74	5.31	3.00	13.52	-46.53	-25.00	35.05	V

LTE Band 41_Channel Bandwidth 5MHz_QPSK_1RB#0

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	Distance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-47.11	4.41	3.00	12.34	-39.18	-25.00	14.18	H
7779.0	-49.37	5.38	3.00	13.58	-41.17	-25.00	16.17	H
5186.0	-47.23	4.41	3.00	12.34	-39.3	-25.00	14.3	V
7779.0	-44.21	5.38	3.00	13.58	-36.01	-25.00	11.01	V

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LTE Band 41_Channel Bandwidth 5MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5375.0	-48.36	4.45	3.00	12.45	-40.36	-25.00	15.36	H
8062.5	-45.68	5.47	3.00	13.66	-37.49	-25.00	12.49	H
5375.0	-46.86	4.45	3.00	12.45	-38.86	-25.00	13.86	V
8062.5	-44.21	5.48	3.00	13.66	-36.03	-25.00	11.03	V

LTE Band 41_Channel Bandwidth 10MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5002.0	-17.33	4.39	3.00	12.34	-9.38	-25.00	-3.28	H
7503.0	-51.07	5.31	3.00	13.52	-42.86	-25.00	31.38	H
5002.0	-52.73	4.39	3.00	12.34	-44.78	-25.00	32.12	V
7503.0	-53.29	5.31	3.00	13.52	-45.08	-25.00	33.60	V

LTE Band 41_Channel Bandwidth 10MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-49.42	4.41	3.00	12.34	-41.49	-25.00	16.49	H
7779.0	-49.64	5.38	3.00	13.58	-41.44	-25.00	16.44	H
5186.0	-45.61	4.41	3.00	12.34	-37.68	-25.00	12.68	V
7779.0	-45.66	5.38	3.00	13.58	-37.46	-25.00	12.46	V

LTE Band 41_Channel Bandwidth 10MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5370.0	-48.81	4.45	3.00	12.45	-40.81	-25.00	15.81	H
8055.0	-46.21	5.47	3.00	13.66	-38.02	-25.00	13.02	H
5370.0	-45.3	4.45	3.00	12.45	-37.3	-25.00	12.3	V
8055.0	-44.34	5.48	3.00	13.66	-36.16	-25.00	11.16	V

LTE Band 41_Channel Bandwidth 15MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5007.0	-19.64	4.39	3.00	12.34	-11.69	-25.00	-0.97	H
7510.5	-51.62	5.31	3.00	13.52	-43.41	-25.00	31.93	H
5007.0	-52.09	4.39	3.00	12.34	-44.14	-25.00	31.48	V
7510.5	-54.49	5.31	3.00	13.52	-46.28	-25.00	34.80	V

LTE Band 41_Channel Bandwidth 15MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-48.71	4.41	3.00	12.34	-40.78	-25.00	15.78	H
7779.0	-48.59	5.38	3.00	13.58	-40.39	-25.00	15.39	H
5186.0	-45.73	4.41	3.00	12.34	-37.8	-25.00	12.8	V
7779.0	-45.82	5.38	3.00	13.58	-37.62	-25.00	12.62	V

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LTE Band 41_Channel Bandwidth 15MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5365.0	-48.66	4.45	3.00	12.45	-40.66	-25.00	15.66	H
8047.5	-45.4	5.47	3.00	13.66	-37.21	-25.00	12.21	H
5365.0	-45.13	4.45	3.00	12.45	-37.13	-25.00	12.13	V
8047.5	-45.31	5.48	3.00	13.66	-37.13	-25.00	12.13	V

LTE Band 41_Channel Bandwidth 20MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5012.0	-17.4	4.39	3.00	12.34	-9.45	-25.00	-3.21	H
7518.0	-50.62	5.31	3.00	13.52	-42.41	-25.00	30.93	H
5012.0	-51.46	4.39	3.00	12.34	-43.51	-25.00	30.85	V
7518.0	-54.66	5.31	3.00	13.52	-46.45	-25.00	34.97	V

LTE Band 41_Channel Bandwidth 20MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-49.07	4.41	3.00	12.34	-41.14	-25.00	16.14	H
7779.0	-51.24	5.38	3.00	13.58	-43.04	-25.00	18.04	H
5186.0	-44.93	4.41	3.00	12.34	-37	-25.00	12	V
7779.0	-45.14	5.38	3.00	13.58	-36.94	-25.00	11.94	V

LTE Band 41_Channel Bandwidth 20MHz_QPSK_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5360.0	-47.92	4.45	3.00	12.45	-39.92	-25.00	14.92	H
8040.0	-45.64	5.47	3.00	13.66	-37.45	-25.00	12.45	H
5360.0	-47.05	4.45	3.00	12.45	-39.05	-25.00	14.05	V
8040.0	-46.04	5.48	3.00	13.66	-37.86	-25.00	12.86	V

LTE Band 41_Channel Bandwidth 5MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4997.0	-18.18	4.39	3.00	12.34	-10.23	-25.00	-2.43	H
7495.5	-49.64	5.31	3.00	13.52	-41.43	-25.00	29.95	H
4997.0	-52.73	4.39	3.00	12.34	-44.78	-25.00	32.12	V
7495.5	-53.77	5.31	3.00	13.52	-45.56	-25.00	34.08	V

LTE Band 41_Channel Bandwidth 5MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-49.11	4.41	3.00	12.34	-41.18	-25.00	16.18	H
7779.0	-50.83	5.38	3.00	13.58	-42.63	-25.00	17.63	H
5186.0	-47.29	4.41	3.00	12.34	-39.36	-25.00	14.36	V
7779.0	-46.53	5.38	3.00	13.58	-38.33	-25.00	13.33	V

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LTE Band 41_Channel Bandwidth 5MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5375.0	-47.77	4.45	3.00	12.45	-39.77	-25.00	14.77	H
8062.5	-45.68	5.47	3.00	13.66	-37.49	-25.00	12.49	H
5375.0	-45	4.45	3.00	12.45	-37	-25.00	12	V
8062.5	-45.17	5.48	3.00	13.66	-36.99	-25.00	11.99	V

LTE Band 41_Channel Bandwidth 10MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5002.0	-18.18	4.39	3.00	12.34	-10.23	-25.00	-2.43	H
7503.0	-49.64	5.31	3.00	13.52	-41.43	-25.00	29.95	H
5002.0	-52.73	4.39	3.00	12.34	-44.78	-25.00	32.12	V
7503.0	-53.77	5.31	3.00	13.52	-45.56	-25.00	34.08	V

LTE Band 41_Channel Bandwidth 10MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-49.11	4.41	3.00	12.34	-41.18	-25.00	16.18	H
7779.0	-50.83	5.38	3.00	13.58	-42.63	-25.00	17.63	H
5186.0	-47.29	4.41	3.00	12.34	-39.36	-25.00	14.36	V
7779.0	-46.53	5.38	3.00	13.58	-38.33	-25.00	13.33	V

LTE Band 41_Channel Bandwidth 10MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5370.0	-47.77	4.45	3.00	12.45	-39.77	-25.00	14.77	H
8055.0	-45.68	5.47	3.00	13.66	-37.49	-25.00	12.49	H
5370.0	-45	4.45	3.00	12.45	-37	-25.00	12	V
8055.0	-45.17	5.48	3.00	13.66	-36.99	-25.00	11.99	V

LTE Band 41_Channel Bandwidth 15MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5007.0	-19.22	4.39	3.00	12.34	-11.27	-25.00	-1.39	H
7510.5	-50.27	5.31	3.00	13.52	-42.06	-25.00	30.58	H
5007.0	-52	4.39	3.00	12.34	-44.05	-25.00	31.39	V
7510.5	-55.86	5.31	3.00	13.52	-47.65	-25.00	36.17	V

LTE Band 41_Channel Bandwidth 15MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-48.14	4.41	3.00	12.34	-40.21	-25.00	15.21	H
7779.0	-48.92	5.38	3.00	13.58	-40.72	-25.00	15.72	H
5186.0	-44.87	4.41	3.00	12.34	-36.94	-25.00	11.94	V
7779.0	-45.28	5.38	3.00	13.58	-37.08	-25.00	12.08	V

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LTE Band 41_Channel Bandwidth 15MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5365.0	-47.59	4.45	3.00	12.45	-39.59	-25.00	14.59	H
8047.5	-46.69	5.47	3.00	13.66	-38.5	-25.00	13.5	H
5365.0	-46.4	4.45	3.00	12.45	-38.4	-25.00	13.4	V
8047.5	-45.75	5.48	3.00	13.66	-37.57	-25.00	12.57	V

LTE Band 41_Channel Bandwidth 20MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5012.0	-18.74	4.39	3.00	12.34	-10.79	-25.00	-1.87	H
7518.0	-50.61	5.31	3.00	13.52	-42.4	-25.00	30.92	H
5012.0	-52.9	4.39	3.00	12.34	-44.95	-25.00	32.29	V
7518.0	-53.67	5.31	3.00	13.52	-45.46	-25.00	33.98	V

LTE Band 41_Channel Bandwidth 20MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5186.0	-48.1	4.41	3.00	12.34	-40.17	-25.00	15.17	H
7779.0	-50.12	5.38	3.00	13.58	-41.92	-25.00	16.92	H
5186.0	-47.42	4.41	3.00	12.34	-39.49	-25.00	14.49	V
7779.0	-46.82	5.38	3.00	13.58	-38.62	-25.00	13.62	V

LTE Band 41_Channel Bandwidth 20MHz_16QAM_1RB#0

Frequency (MHz)	Ps (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5360.0	-47.39	4.45	3.00	12.45	-39.39	-25.00	14.39	H
8040.0	-46.01	5.47	3.00	13.66	-37.82	-25.00	12.82	H
5360.0	-46.14	4.45	3.00	12.45	-38.14	-25.00	13.14	V
8040.0	-43.96	5.48	3.00	13.66	-35.78	-25.00	10.78	V

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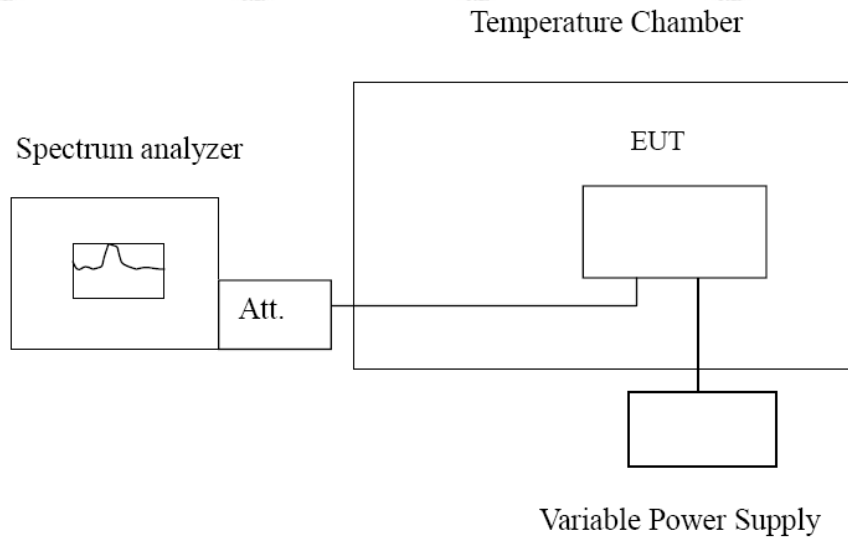


4.7 Frequency Stability

LIMIT

According to §2.1055 requirement, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation and should not exceed 2.5ppm.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

Frequency Stability Under Temperature Variations:

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 41, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.



TEST RESULTS

Remark:

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

LTE Band 41_5MHz bandwidth_QPSK_1RB#0 (worst case of all bandwidths)

LTE Band 41					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	20	-9.41	-0.003679	2.50	PASS
5.0	20	10.53	0.004117	2.50	PASS
5.75	20	-5.84	-0.002283	2.50	PASS
5.0	-30	6.19	0.002420	2.50	PASS
5.0	-20	20.06	0.007844	2.50	PASS
5.0	-10	20.89	0.008168	2.50	PASS
5.0	0	29.11	0.011382	2.50	PASS
5.0	10	39.55	0.015464	2.50	PASS
5.0	20	38.95	0.015230	2.50	PASS
5.0	30	40.20	0.015718	2.50	PASS
5.0	40	55.25	0.021603	2.50	PASS
5.0	50	5.92	0.002315	2.50	PASS

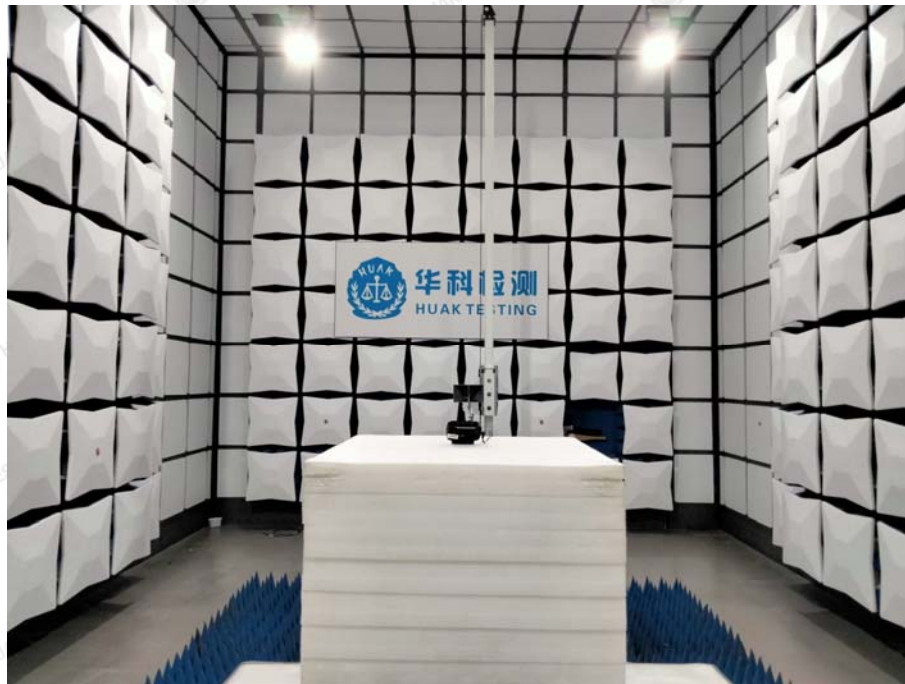
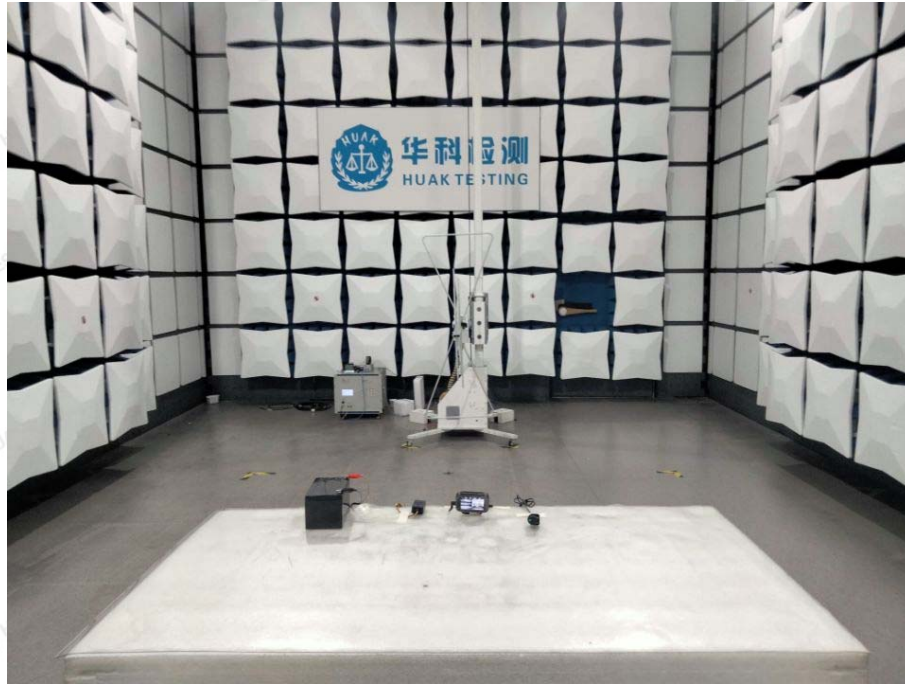
LTE Band 41_5MHz bandwidth_16QAM_1RB#0 (worst case of all bandwidths)

LTE Band 41					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	20	28.75	0.011241	2.50	PASS
5.0	20	48.44	0.018940	2.50	PASS
5.75	20	4.62	0.001806	2.50	PASS
5.0	-30	17.52	0.006850	2.50	PASS
5.0	-20	9.84	0.003785	2.50	PASS
5.0	-10	14.79	0.005688	2.50	PASS
5.0	0	-9.46	-0.003638	2.50	PASS
5.0	10	-25.95	-0.009981	2.50	PASS
5.0	20	-28.05	-0.010788	2.50	PASS
5.0	30	-42.39	-0.016304	2.50	PASS
5.0	40	-54.30	-0.020885	2.50	PASS
5.0	50	-34.80	-0.013385	2.50	PASS

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5 TEST SETUP PHOTOS OF THE EUT



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6 EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Reference to the report :ANNEX A of external photos and ANNEX B of internal photos

.....**End of Report**.....