



RF TEST REPORT

Applicant Huawei Technologies Co., Ltd.
FCC ID QISPAR-LX9
Product Smart Phone
Model PAR-LX9
Report No. R1806H0074-R1V1
Issue Date July 23, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2017)/ FCC CFR 47 Part 22H (2017)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Jiangpeng Lan

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



TABLE OF CONTENT

1. Test Laboratory	4
1.1. Notes of the Test Report	4
1.2. Test facility	4
1.3. Testing Location	5
2. General Description of Equipment under Test	6
3. Applied Standards	8
4. Test Configuration	9
5. Test Case Results	10
5.1. RF Power Output	10
5.2. Effective Radiated Power	15
5.3. Occupied Bandwidth	19
5.4. Band Edge Compliance	30
5.5. Peak-to-Average Power Ratio (PAPR)	42
5.6. Frequency Stability	45
5.7. Spurious Emissions at Antenna Terminals	49
5.8. Radiates Spurious Emission	55
6. Main Test Instruments	60

Summary of measurement results

No.	Test Type	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Radiated Power	22.913(a)(5)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	2.1051 / 22.917(a)	PASS
5	Peak-to-Average Power Ratio	22.913(d)/ KDB 971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 22.355	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 22.917(a)	PASS
8	Radiates Spurious Emission	2.1053 / 22.917 (a)	PASS
Date of Testing: June 29, 2018~ July 9, 2018			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard.			



1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.

General Information

EUT Description			
Model	PAR-LX9		
IMEI	SIM1: 869592030011783 SIM2: 869592030012781		
Hardware Version	HL2PARLM		
Software Version	PAR-LX9 8.2.0.120(C900)		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	LTE Band 26;		
Test Modulation	QPSK, 16QAM, 64QAM;		
LTE category	5		
Maximum E.R.P.	LTE Band 26:	23.72dBm	
Rated Power Supply Voltage	3.8V		
Extreme Voltage	Minimum: 3.6V Maximum: 4.35V		
Extreme Temperature	Lowest: 0°C Highest: +35°C		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 26	824 ~ 849	869 ~ 894

EUT Accessory	
Adapter 1	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Salcomp) Model: HW-059200EHQ SN:K68304J3T03348
Adapter 2	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: BYD) Model: HW-059200EHQ SN:B68331J4E00880
Adapter 3	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Salcomp) Model: HW-059200UHQ SN: K76520J4H09868



Adapter 4	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: BYD) Model: HW-059200UHQ SN: B76549J4C22420
Adapter 5	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Salcomp) Model: HW-090200EH0 SN:K98814J2100215
Adapter 6	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: HUNTKEY) Model: HW-090200EH0 SN:H988K7J3D00176
Adapter 7	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Salcomp) Model: HW-090200UH0 SN: K99201J3Y00029
Adapter 8	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: HUNTKEY) Model: HW-090200UH0 SN: H992K5J3X00029
Battery 1	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: SCUD) Model: HB386589ECW
Battery 2	Manufacturer: Huawei Technologies Co., Ltd. (Manufacturer: Desay) Model: HB386589ECW
Earphone 1	Manufacturer: Merry Electronics Co., Ltd Model: EMC309-001
Earphone 2	Manufacturer: Boluo County Quancheng Electronic Co., Ltd. Model: 1311-3291-3.5mm-229
Earphone 3	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co., LTD. Model: MEMD1632B580C00
USB Cable 1	Manufacturer: Ningbo Broad Telecommunication Co., Ltd Model: WA0002
USB Cable 2	Manufacturer: LUXSHARE Precision Industry Co., Ltd. Model: L99UC093-CS-H
USB Cable 3	Manufacturer: HUIZHOU DEHONG TECHNOLOGY CO.,LTD Model: 330-50362
<p>Note: The information of the EUT is declared by the manufacturer.</p> <p>2. There is more than one Adapter, Battery, Earphone and USB Cable, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1, Battery 2, Earphone 2 and USB Cable 1) will be recorded in this report.</p>	



3. Applied Standards

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

FCC CFR47 Part 2 (2017)

FCC CFR 47 Part 22H (2017)

ANSI/TIA-603-E (2016)

KDB 971168 D01 Power Meas License Digital Systems v03r01



4. Test Configuration

The device has two SIM card slot, and two 2G/3G/4G TX antennas (Main Antenna and Secondary Antenna). Main antenna (Ant1) and Secondary antenna (Ant 2) can't transmit simultaneously which will be chosen based on the RSSI. Only one antenna can be used for 2G/3G/4G transmission at a time.

For SIM card slot and TX antennas RF test, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) and Main antenna (Ant1) will be recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions were investigated.

The following testing in LTE is set based on the maximum RF Output Power.

Test modes are chosen as the worst case configuration below for LTE Band 26

Test items	Bandwidth (MHz)					Modulation			RB			Test Channel		
	1.4	3	5	10	15	QPSK	16QAM	64QAM	1	50%	100%	L	M	H
RF power output	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Effective Isotropic Radiated power	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Occupied Bandwidth	○	○	○	○	○	○	○	○	-	-	○	○	○	○
Band Edge Compliance	○	○	○	○	○	○	○	○	○	-	○	○	-	○
Peak-to-Average Power Ratio	○	○	○	○	○	○	○	○	-	-	○	○	○	○
Frequency Stability	○	○	○	○	○	○	○	○	-	-	○	○	-	○
Spurious Emissions at Antenna Terminals	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Radiates Spurious Emission	○	-	○	-	○	○	○	○	○	○	○	-	○	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.													

5. Test Case Results

5.1. RF Power Output

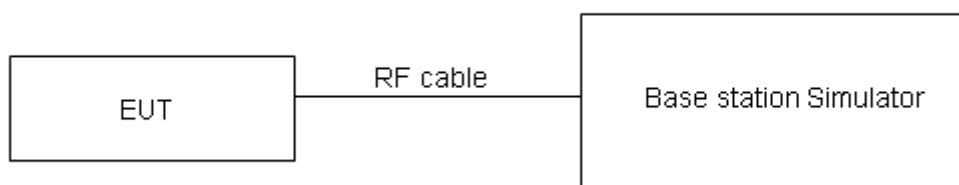
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

Test Results

LTE Band 26				Conducted Power(dBm)		
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				26797/824.7	26915/836.5	27033/848.3
1.4MHz	QPSK	1	0	23.60	23.49	23.54
		1	2	23.71	23.55	23.59
		1	5	23.50	23.38	23.40
		3	0	22.59	22.71	22.61
		3	2	22.57	22.74	22.51
		3	3	22.54	22.63	22.62
		6	0	22.58	22.64	22.55
	16QAM	1	0	22.53	22.77	22.85
		1	2	22.71	22.70	22.92
		1	5	22.43	22.60	22.63
		3	0	21.71	21.61	21.63
		3	2	21.59	21.75	21.54
		3	3	21.54	21.62	21.56
		6	0	21.60	21.55	21.53
	64QAM	1	0	21.45	21.46	21.34
		1	2	21.39	21.32	21.34
		1	5	21.39	21.55	21.33
		3	0	20.67	20.67	20.72
		3	2	20.77	20.68	20.64
		3	3	20.67	20.73	20.72
		6	0	19.70	19.79	19.73
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
3MHz	QPSK	1	0	23.57	23.47	23.50
		1	7	23.69	23.51	23.56
		1	14	23.47	23.33	23.36
		8	0	22.56	22.66	22.57
		8	4	22.55	22.70	22.46
		8	7	22.52	22.61	22.58
		15	0	22.56	22.63	22.53
	16QAM	1	0	22.50	22.73	22.82
		1	7	22.68	22.68	22.89
BW	Modulation	RB size	RB offset	26805/825.5	26915/836.5	27025/847.5



		1	14	22.40	22.58	22.59	
		8	0	21.69	21.57	21.60	
		8	4	21.56	21.70	21.50	
		8	7	21.51	21.57	21.52	
		15	0	21.58	21.51	21.48	
	64QAM	1	0	21.48	21.48	21.37	
		1	7	21.42	21.37	21.38	
		1	14	21.41	21.59	21.36	
		8	0	19.78	19.80	19.84	
		8	4	19.88	19.81	19.76	
		8	7	19.77	19.85	19.85	
		15	0	19.73	19.83	19.76	
	BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
					26815/826.5	26915/836.5	27015/846.5
5MHz	QPSK	1	0	23.59	23.48	23.53	
		1	13	23.72	23.56	23.60	
		1	24	23.49	23.37	23.39	
		12	0	22.59	22.71	22.61	
		12	6	22.58	22.75	22.50	
		12	13	22.54	22.65	22.63	
		25	0	22.64	22.65	22.57	
	16QAM	1	0	22.52	22.76	22.84	
		1	13	22.71	22.72	22.92	
		1	24	22.43	22.60	22.62	
		12	0	21.72	21.62	21.64	
		12	6	21.58	21.74	21.53	
		12	13	21.54	21.62	21.56	
		25	0	21.61	21.56	21.52	
	64QAM	1	0	21.47	21.47	21.36	
		1	13	21.42	21.39	21.38	
		1	24	21.41	21.59	21.35	
		12	0	19.79	19.81	19.85	
		12	6	19.87	19.80	19.75	
		12	13	19.77	19.85	19.85	
		25	0	19.74	19.84	19.75	
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)			
				26840/829	26915/836.5	26990/844	



10MHz	QPSK	1	0	23.58	23.44	23.51
		1	25	23.70	23.55	23.57
		1	49	23.46	23.32	23.35
		25	0	22.57	22.67	22.58
		25	13	22.55	22.70	22.46
		25	25	22.51	22.62	22.59
		50	0	22.62	22.61	22.52
	16QAM	1	0	22.47	22.74	22.82
		1	25	22.69	22.69	22.90
		1	49	22.40	22.56	22.59
		25	0	21.69	21.60	21.61
		25	13	21.55	21.69	21.49
		25	25	21.52	21.58	21.53
		50	0	21.58	21.51	21.48
	64QAM	1	0	21.42	21.45	21.34
		1	25	21.40	21.36	21.36
		1	49	21.38	21.55	21.32
		25	0	19.76	19.79	19.82
		25	13	19.84	19.75	19.71
		25	25	19.75	19.81	19.82
		50	0	19.71	19.79	19.71
BW	Modulation	RB size	RB offset	Channel/Frequency(MHz)		
				26865/831.5	26915/836.5	26965/841.5
15MHz	QPSK	1	0	23.55	23.40	23.48
		1	38	23.69	23.51	23.55
		1	74	23.44	23.31	23.32
		36	0	22.64	22.72	22.64
		36	18	22.63	22.76	22.53
		36	39	22.58	22.67	22.65
		75	0	22.69	22.66	22.58
	16QAM	1	0	22.45	22.70	22.77
		1	38	22.65	22.67	22.86
		1	74	22.38	22.53	22.57
		36	0	21.76	21.66	21.68
		36	18	21.62	21.77	21.56
		36	39	21.59	21.63	21.59
		75	0	21.66	21.57	21.55



64QAM	1	0	21.40	21.41	21.29
	1	38	21.36	21.34	21.32
	1	74	21.36	21.52	21.30
	36	0	19.73	19.75	19.79
	36	18	19.81	19.73	19.68
	36	39	19.72	19.76	19.78
	75	0	19.69	19.75	19.68

5.2. Effective Radiated Power

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

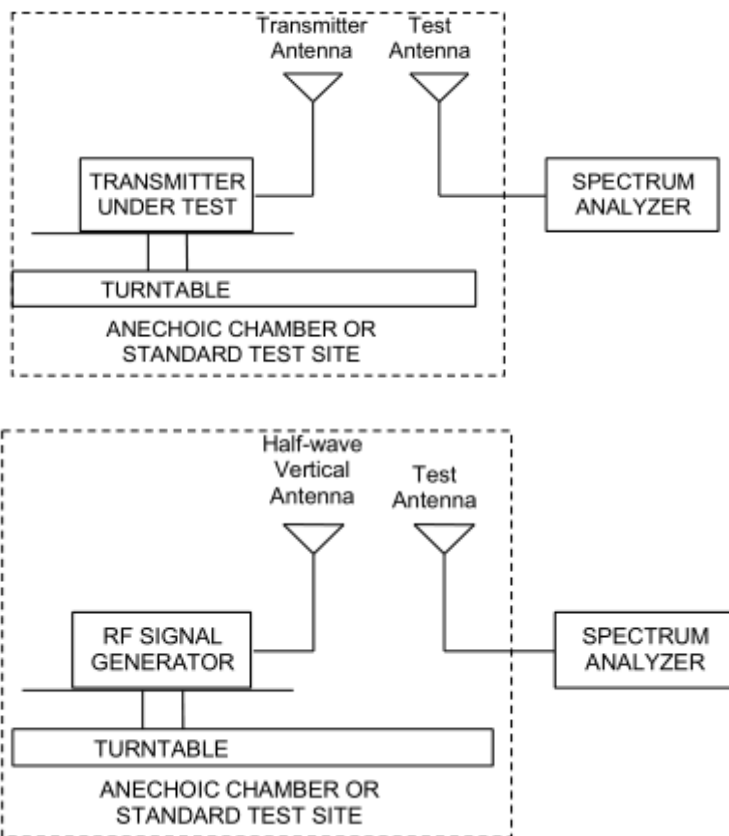
Methods of Measurement

The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI/TIA-603-E (2016).

- a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
- b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
- c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
- d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$
- e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation: $ERP \text{ (dBm)} = \text{LVL (dBm)} + \text{LOSS (dB)}$
- f) The maximum ERP is the maximum value determined in the preceding step.
- g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g. transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:
 $ERP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBd)}$
where: dBd refers to gain relative to an ideal dipole.
 $EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$

The RB allocation refers to section 5.1, using the maximum output power configuration.

Test setup



Limits

Rule Part 22.913(a)(5) specifies that "Mobile/portable stations are limited to 7 watts ERP".

Limit	$\leq 7 \text{ W}$ (38.45 dBm)
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 1.19 \text{ dB}$

Test Results:

The measurement is performed for both of horizontal and vertical antenna Polarization, and only the data of worst mode is recorded in this report.

LTE Band 26						
bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	824.7	Horizontal	16.26	38.45	Pass
	Mid	836.5	Horizontal	17.06	38.45	Pass
	High	848.3	Horizontal	16.89	38.45	Pass
3 MHz (QPSK)	Low	825.5	Horizontal	16.19	38.45	Pass
	Mid	836.5	Horizontal	16.71	38.45	Pass
	High	847.5	Horizontal	16.81	38.45	Pass
5 MHz (QPSK)	Low	826.5	Horizontal	16.15	38.45	Pass
	Mid	836.5	Horizontal	16.77	38.45	Pass
	High	846.5	Horizontal	16.87	38.45	Pass
10 MHz (QPSK)	Low	829	Horizontal	16.16	38.45	Pass
	Mid	836.5	Horizontal	16.72	38.45	Pass
	High	844	Horizontal	16.78	38.45	Pass
15 MHz (QPSK)	Low	831.5	Horizontal	16.21	38.45	Pass
	Mid	836.5	Horizontal	16.77	38.45	Pass
	High	841.5	Horizontal	16.98	38.45	Pass
1.4 MHz (16QAM)	Low	824.7	Horizontal	15.69	38.45	Pass
	Mid	836.5	Horizontal	16.60	38.45	Pass
	High	848.3	Horizontal	16.51	38.45	Pass
3 MHz (16QAM)	Low	825.5	Horizontal	15.66	38.45	Pass
	Mid	836.5	Horizontal	16.24	38.45	Pass
	High	847.5	Horizontal	16.31	38.45	Pass
5 MHz (16QAM)	Low	826.5	Horizontal	15.77	38.45	Pass
	Mid	836.5	Horizontal	16.38	38.45	Pass
	High	846.5	Horizontal	16.62	38.45	Pass
10 MHz (16QAM)	Low	829	Horizontal	15.76	38.45	Pass
	Mid	836.5	Horizontal	16.37	38.45	Pass
	High	844	Horizontal	16.46	38.45	Pass
15 MHz (16QAM)	Low	831.5	Horizontal	15.70	38.45	Pass
	Mid	836.5	Horizontal	16.48	38.45	Pass
	High	841.5	Horizontal	16.59	38.45	Pass
1.4 MHz (64QAM)	Low	824.7	Horizontal	14.17	38.45	Pass
	Mid	836.5	Horizontal	15.08	38.45	Pass
	High	848.3	Horizontal	15.07	38.45	Pass
3 MHz (64QAM)	Low	825.5	Horizontal	14.06	38.45	Pass
	Mid	836.5	Horizontal	14.72	38.45	Pass
	High	847.5	Horizontal	14.87	38.45	Pass



LTE Band 26						
bandwidth	Channel	Frequency (MHz)	Polarization	ERP (dBm)	Limit (dBm)	Conclusion
5 MHz (64QAM)	Low	826.5	Horizontal	14.28	38.45	Pass
	Mid	836.5	Horizontal	15.08	38.45	Pass
	High	846.5	Horizontal	15.10	38.45	Pass
10 MHz (64QAM)	Low	829	Horizontal	14.32	38.45	Pass
	Mid	836.5	Horizontal	15.17	38.45	Pass
	High	844	Horizontal	15.26	38.45	Pass
15 MHz (64QAM)	Low	831.5	Horizontal	14.12	38.45	Pass
	Mid	836.5	Horizontal	15.02	38.45	Pass
	High	841.5	Horizontal	14.73	38.45	Pass

5.3. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

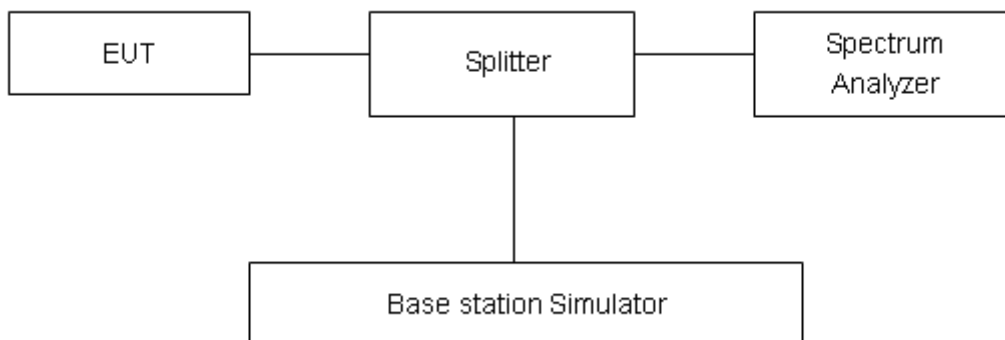
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 26 (1.4MHz),

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 26 (3MHz/5MHz),

RBW is set to 300 kHz, VBW is set to 1 MHz for LTE Band 26 (10MHz/15MHz).

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 624\text{Hz}$.



Test Result

LTE Band 26						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	26797	824.7	1.1241	1.289
			26915	836.5	1.1253	1.289
			27033	848.3	1.1287	1.293
		3	26805	825.5	2.7431	3.063
			26915	836.5	2.7380	3.036
			27025	847.5	2.7455	3.059
		5	26815	826.5	4.5197	4.994
			26915	836.5	4.5155	4.980
			27015	846.5	4.5405	4.975
		10	26840	829	9.0966	10.09
			26915	836.5	9.0930	10.07
			26990	844	9.0687	10.02
		15	26865	831.5	13.5560	14.99
			26915	836.5	13.4970	15.00
			26965	841.5	13.5170	15.030
	16QAM	1.4	26797	824.7	1.1320	1.285
			26915	836.5	1.1277	1.289
			27033	848.3	1.1271	1.290
		3	26805	825.5	2.7389	3.049
			26915	836.5	2.7603	3.061
			27025	847.5	2.7539	3.054
		5	26815	826.5	4.5355	5.000
			26915	836.5	4.5313	5.007
			27015	846.5	4.5216	4.966
		10	26840	829	9.1122	10.060
			26915	836.5	9.0576	10.090
			26990	844	9.0562	10.010
		15	26865	831.5	13.5620	14.950
			26915	836.5	13.5300	15.08
			26965	841.5	13.5140	14.96



64QAM	1.4	26797	824.7	1.1272	1.290
		26915	836.5	1.1217	1.288
		27033	848.3	1.1240	1.290
	3	26805	825.5	2.7484	3.058
		26915	836.5	2.7471	3.037
		27025	847.5	2.7536	3.053
	5	26815	826.5	4.5358	5.012
		26915	836.5	4.5347	4.973
		27015	846.5	4.5293	4.996
	10	26840	829	9.1013	10.100
		26915	836.5	9.0546	10.040
		26990	844	9.0770	10.020
	15	26865	831.5	13.5150	15.010
		26915	836.5	13.5090	14.970
		26965	841.5	13.5090	14.970

