

FCC TEST REPORT

(PART 24)

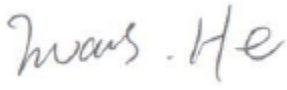
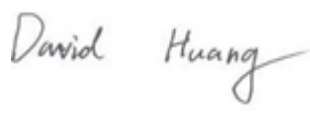
Applicant:	Jethro Trading LTD.
Address:	505 - 8840 210TH STREET, #231 Langley, Canada V1M2Y2

Manufacturer or Supplier:	Ying Tai Electronics Co., Ltd
Address:	ROOM 803,CHEVALIER HOUSE 45-51 CHATHAM ROAD SOUTH, TSIM SHA TSUI,KOWLOON,HONG KONG
Product:	Jethro 4G Simple Phone
Brand Name:	Jethro
Model Name:	SC490
FCC ID:	2AAWJSC490
Date of tests:	Jun. 04, 2020~ Aug. 05, 2020

The tests have been carried out according to the requirements of the following standard:

- ☒ **FCC PART 24, Subpart E** ☒ **ANSI C63.26-2015**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Issued by Evans He Engineer / Mobile Department	Approved by David Huang Manager / Mobile Department
	
Date: Aug. 05, 2020	Date: Aug. 05, 2020

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
1.1 MEASUREMENT UNCERTAINTY	5
1.2 TEST SITE AND INSTRUMENTS	6
2 GENERAL INFORMATION.....	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 CONFIGURATION OF SYSTEM UNDER TEST	9
2.3 DESCRIPTION OF SUPPORT UNITS.....	10
2.4 TEST ITEM AND TEST CONFIGURATION	10
2.5 EUT OPERATING CONDITIONS	13
2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS	13
3 TEST TYPES AND RESULTS.....	14
3.1 OUTPUT POWER MEASUREMENT	14
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT	14
3.1.2 TEST PROCEDURES	14
3.1.3 TEST SETUP.....	14
3.1.4 TEST RESULTS	15
3.2 FREQUENCY STABILITY MEASUREMENT	23
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	23
3.2.2 TEST PROCEDURE.....	23
3.2.3 TEST SETUP.....	23
3.2.4 TEST RESULTS	24
3.3 OCCUPIED BANDWIDTH MEASUREMENT	33
3.3.1 TEST PROCEDURES	33
3.3.2 TEST SETUP.....	33
3.3.3 TEST RESULTS	34
3.4 BAND EDGE MEASUREMENT	41
3.4.1 LIMITS OF BAND EDGE MEASUREMENT	41
3.4.2 TEST SETUP.....	41
3.4.3 TEST PROCEDURES	41
3.4.4. TEST RESULTS	43
3.5 CONDUCTED SPURIOUS EMISSIONS	50
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	50
3.5.2 TEST PROCEDURE.....	50
3.5.3 TEST SETUP.....	50
3.5.4 TEST RESULTS	51
3.6 RADIATED EMISSION MEASUREMENT	60
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT	60
3.6.2 TEST PROCEDURES	60
3.6.3 DEVIATION FROM TEST STANDARD	60
3.6.4 TEST SETUP.....	61
3.6.5 TEST RESULTS	63
3.7 PEAK TO AVERAGE RATIO	81
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT	81
3.7.2 TEST SETUP.....	81
3.7.3 TEST PROCEDURES	81
3.7.4 TEST RESULTS	82



Test Report No.: RF200512S004-5

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	94
--	----



Test Report No.: RF200512S004-5

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF200512S004-5	Original release	Aug. 05, 2020



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
2.1046 24.232	Equivalent Isotropic Radiated Power	PASS	Meet the requirement of limit.
2.1055 24.235	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit.
24.232(d)	Peak to average ratio	PASS	Meet the requirement of limit.
24.238(b)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -12.16dB at 3720MHz.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GHz	3.74dB
	1GHz ~ 18GHz	4.66dB
	18GHz ~ 40GHz	4.67dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESL6	1300.5001K06-10 0262-eQ	Mar. 24,20	Mar. 24,21
Bilog Antenna	Sunol Sciences	JB6	A110712	Apr. 08, 20	Apr. 07, 21
Active Antenna	CMO-POWER	AL-130	121031	Mar. 27, 20	Mar. 26, 21
Signal Amplifier	HP	8447E	443008	Mar. 24, 20	Mar. 24, 21
Spectrum	Agilent	E4446A	MY46180622	Mar. 24, 20	Mar. 24, 21
MXA signal analyzer	Agilent	N9020A	MY49100060	Mar. 22, 20	Mar. 21, 21
Horn Antenna	COM-POWER	HAH-118	71259	Mar. 20, 20	Mar. 19, 21
Horn Antenna	COM-POWER	HAH-118	71283	Jun. 30, 20	Jun. 29, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170147	Jun. 30, 20	Jun. 29, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170242	Mar. 24, 20	Mar. 24, 21
AMPLIFIER	EM Electornic Corporation	EM01G26G	60613	Jan. 04, 20	Jan. 03,21
AMPLIFIER	Emc Instruments Corporation	Emc012645	980077	Oct. 18,18	Oct. 17,21
3m Semi-anechoic Chamber	SAEMC	9m*6m*6m	N/A	Mar. 24, 20	Mar. 24, 21
Test Software	EZ-EMC	ICP-03A1	N/A	N/A	N/A
Wireless Connectivity Tester	R&S	CMW270	1201.0002K75	Dec. 18, 19	Dec. 17, 20
MXA VEXTOR SIGNAL	Agilent	n5182a	MY50140530	Mar. 24,20	Mar. 24,21
MXA signal analyzer	Agilent	n9020a	MY49100060	Mar. 24,20	Mar. 24,21
RF Control Unit	Tonscend	JS0806-2	188060112	Mar. 24,20	Mar. 24,21
Signal Generation	Agilent	E4421B	US40051152	Dec. 18, 19	Dec. 17, 20
DC Power Supply	Agilent	E3640A	MY40004013	Mar. 28,20	Mar. 27,21
Programmable Temperature & Humidity Chamber	Hongjin	HYC-TH-225D H	DG-180746	Mar. 24,20	Mar. 24,21
Test System	Tonscend	JS 1120-3	N/A	N/A	N/A
Power Splitter	Weinschel	1580-1	TL177	Mar. 20,20	Mar. 19,21
Universal Radio Communication	ROHDE&SCHW ARZ	CMU200	112012	Mar. 24,20	Mar. 24,21
Universal Radio Communication	ROHDE&SCHW ARZ	CMU200	121393	Mar. 28,20	Mar. 27,21
Wireless Communication Test Set	ROHDE&SCHW ARZ	CMW500	1201.0002K500-1 55842-Gd	Nov. 1, 19	Oct. 31, 20

NOTE: 1. The calibration interval of the above test instruments is 12 months (except 3m Semi-anechoic Chamber). And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 535293.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Jethro 4G Simple Phone	
BRAND NAME	Jethro	
MODEL NAME	SC490	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.7Vdc (Li-ion, ion battery)	
MODULATION TYPE	GSM, GPRS: GMSK WCDMA : BPSK, QPSK LTE Band 2 : QPSK, 16QAM	
FREQUENCY RANGE	GSM, GPRS	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
MAX. EIRP POWER	GSM	1124.6mW
	GPRS	88.31mW
	WCDMA	41.02mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	230.67mW
	LTE Band 2 Channel Bandwidth: 3MHz	228.03mW
	LTE Band 2 Channel Bandwidth: 5MHz	235.50mW
	LTE Band 2 Channel Bandwidth: 10MHz	228.03mW
	LTE Band 2 Channel Bandwidth: 15MHz	225.94mW
	LTE Band 2 Channel Bandwidth: 20MHz	236.59mW
EMISSION DESIGNATOR	GSM	247KGXW



	GPRS	247KG7W
	WCDMA	4M18F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M10W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M68G7D
		16QAM: 2M68W7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M48G7D
		16QAM: 4M48W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 8M95G7D
		16QAM: 8M94W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M43G7D
		16QAM: 13M43W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 17M88G7D
		16QAM: 17M88W7D
ANTENNA TYPE	PIFA Antenna with 0.5dBi gain	
HW VERSION	L831-MB-V2.2	
SW VERSION	4.4.95 Sat Jul 18 19:54:38 CST 2020	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: Unshielded, detachable, 1.0m	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT was powered by the following adapter:

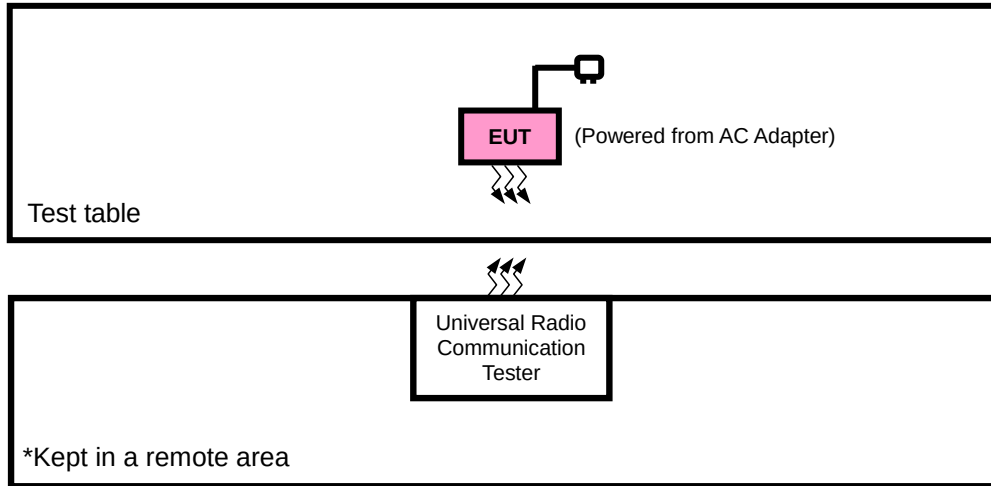
ADAPTER	
BRAND:	N/A
MODEL:	HJ-0500600E1-US
INPUT:	100-240V~50/60Hz 0.2A
OUTPUT:	5.0V --- 600mA

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

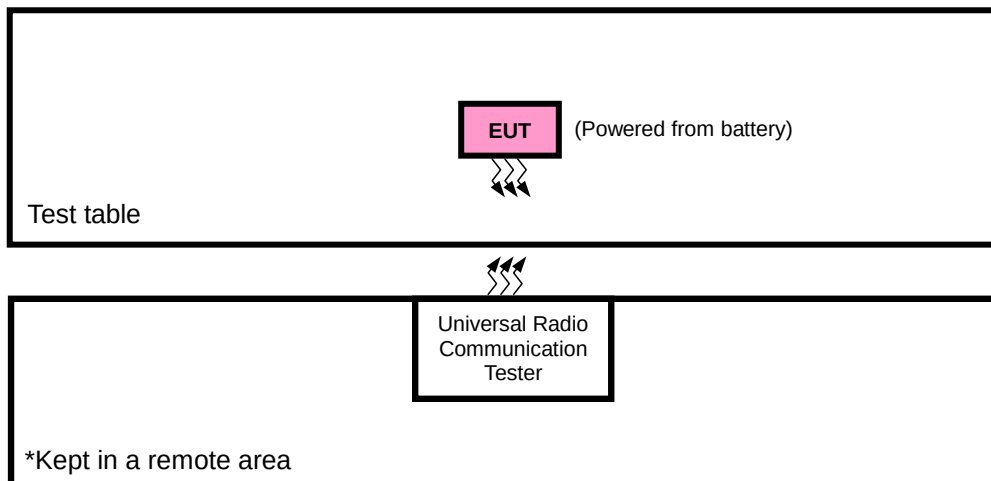


2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



FOR CONDUCTED & E.I.R.P. TEST





2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case in EIRP and radiated emission was found when positioned on X-plane for GSM/EDGE/WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with LTE link
B	EUT + Battery with LTE link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	EIRP	512 to 810	512, 661, 810	GSM
B	FREQUENCY STABILITY	512 to 810	512, 810	GSM
B	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GSM
B	PEAK TO AVERAGE RATIO	512 to 810	512, 661, 810	GSM
B	BAND EDGE	512 to 810	512, 810	GSM
B	CONDUCTED EMISSION	512 to 810	512, 661, 810	GSM
A	RADIATED EMISSION	512 to 810	512, 661, 810	GSM



WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
B	FREQUENCY STABILITY	9262 to 9538	9262, 9538	WCDMA
B	OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
B	PEAK TO AVERAGE RATIO	9262 to 9538	9262, 9400, 9538	WCDMA
B	BAND EDGE	9262 to 9538	9262, 9538	WCDMA
B	CONDCUDED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA
A	RADIATED EMISSION	9262 to 9538	9262, 9400, 9538	WCDMA

LTE BAND 2

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	18607 to 19193	18607, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 19100	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM	1 RB / 0 RB Offset



B	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK	1 RB / 0 RB Offset
			19193	1.4MHz	QPSK	6 RB / 0 RB Offset
		18615 to 19185	18615	3MHz	QPSK	1 RB / 5 RB Offset
			19185	3MHz	QPSK	6 RB / 0 RB Offset
		18625 to 19175	18625	5MHz	QPSK	1 RB / 0 RB Offset
			19175	5MHz	QPSK	15 RB / 0 RB Offset
		18650 to 19150	18650	10MHz	QPSK	1 RB / 14 RB Offset
			19150	10MHz	QPSK	15 RB / 0 RB Offset
		18675 to 19125	18675	15MHz	QPSK	1 RB / 0 RB Offset
			19125	15MHz	QPSK	25 RB / 0 RB Offset
		18700 to 19100	18700	20MHz	QPSK	1 RB / 24 RB Offset
			19100	20MHz	QPSK	25 RB / 0 RB Offset
B	CONDCUDED EMISSION	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	18607 to 19193	18900	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18900	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18900	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18900	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18900	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
FREQUENCY STABILITY	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
OCCUPIED BANDWIDTH	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
PEAK TO AVERAGE RATIO	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
BAND EDGE	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
CONDCUDED EMISSION	24deg. C, 60%RH	3.7Vdc from Battery	Aaron Liang
RADIATED EMISSION	25deg. C, 59%RH	5Vdc from adapter	Aaron Liang



2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.



3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

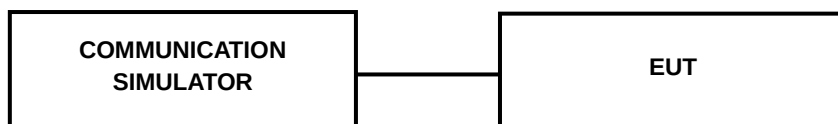
L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

- The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900			
Channel	512	661	810	Max. Tune-up Power
Frequency	1850.2	1880	1909.8	
GSM (GMSK, 1Tx-slot)	30.01	29.98	29.47	30.50
GPRS (GMSK, 1Tx-slot)	30.08	29.88	29.54	30.50
GPRS (GMSK, 2Tx-slot)	27.48	26.84	26.57	27.5
GPRS (GMSK, 3Tx-slot)	26.24	25.64	25.33	26.5
GPRS (GMSK, 4Tx-slot)	24.20	23.57	23.76	24.5

Band	WCDMA II			WCDMA II
TX Channel	9262	9400	9538	Max. Tune-up Power
Rx Channel	9662	9800	9938	
Frequency	1852.4	1880	1907.6	
RMC 12.2K	22.61	22.74	22.65	23
HSDPA Subtest-1	21.56	21.77	21.64	22
HSDPA Subtest-2	21.64	21.93	21.82	22
HSDPA Subtest-3	21.79	21.70	21.60	22
HSDPA Subtest-4	21.52	21.92	21.64	22
HSUPA Subtest-1	21.64	21.78	21.84	22
HSUPA Subtest-2	21.58	21.88	21.61	22
HSUPA Subtest-3	21.51	21.64	21.74	22
HSUPA Subtest-4	21.78	21.72	21.67	22
HSUPA Subtest-5	21.68	21.80	21.55	22



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193	3GPP MPR (dB)
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz	
1.4MHz	QPSK	1	0	23.01	23.07	22.97	0
		1	2	22.97	23.09	22.91	0
		1	5	23.01	23.08	22.95	0
		3	0	23.07	22.99	22.99	0
		3	1	23.1	23.04	23.07	0
		3	3	23.06	22.94	23.13	0
		6	0	22.12	21.9	22.04	1
	16QAM	1	0	22.38	21.77	22.35	1
		1	2	22.37	21.73	22.32	1
		1	5	22.42	21.76	22.36	1
		3	0	21.94	22.31	21.94	1
		3	1	21.92	22.3	21.96	1
		3	3	21.93	22.29	21.92	1
		6	0	21.31	21.41	21.26	2
BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185	3GPP MPR (dB)
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz	
3 MHz	QPSK	1	0	22.95	22.95	23.08	0
		1	7	22.95	23.01	23.01	0
		1	14	22.94	22.97	22.99	0
		8	0	22.09	21.99	22.08	1
		8	3	21.97	21.98	22.03	1
		8	7	21.94	22.06	21.95	1
		15	0	22.09	22.09	22.08	1
	16QAM	1	0	22.37	21.65	22.55	1
		1	7	22.39	21.64	22.59	1
		1	14	22.37	21.75	22.54	1
		8	0	21.26	21.31	21.38	2
		8	3	21.1	20.96	21	2
		8	7	21.08	21.05	21.01	2
		15	0	21.05	21.07	21.05	2



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175	3GPP MPR (dB)
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz	
5 MHz	QPSK	1	0	22.96	23.22	23.06	0
		1	12	22.96	23.15	23.07	0
		1	24	22.9	23.19	23.07	0
		12	0	22.1	22.15	22.06	1
		12	6	22.12	22.04	22.03	1
		12	13	22.06	21.95	21.98	1
		25	0	22.03	22	22.07	1
	16QAM	1	0	21.79	21.79	22.03	1
		1	12	21.78	21.81	22.03	1
		1	24	21.82	21.83	22.01	1
		12	0	21.16	21.1	21.11	2
		12	6	21.15	21.11	21.01	2
		12	13	21.15	21.12	21.05	2
		25	0	21.13	21.08	21.04	2
BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150	3GPP MPR (dB)
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz	
10 MHz	QPSK	1	0	22.93	22.97	23.08	0
		1	24	22.93	22.99	23.07	0
		1	49	22.97	22.96	23.05	0
		25	0	21.93	21.96	22.05	1
		25	12	21.92	22.01	22.08	1
		25	25	21.89	22.05	22.06	1
		50	0	22.06	21.99	21.97	1
	16QAM	1	0	22.35	22.28	22.51	1
		1	24	22.37	22.33	22.45	1
		1	49	22.33	22.37	22.53	1
		25	0	21.2	21.21	21.37	2
		25	12	21.2	21.22	21.36	2
		25	25	21.23	21.14	21.33	2
		50	0	21.04	21.13	21.2	2



LTE Band 2							
BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125	3GPP MPR (dB)
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz	
15 MHz	QPSK	1	0	23	22.94	22.99	0
		1	37	22.96	22.98	23.02	0
		1	74	22.94	22.96	22.98	0
		36	0	22.1	21.96	21.97	1
		36	19	22.03	22.06	22.06	1
		36	39	22.01	21.95	22.09	1
		75	0	22.08	22.03	21.96	1
	16QAM	1	0	22.36	22.78	23.04	1
		1	37	22.32	22.73	22.95	1
		1	74	22.38	22.71	23.04	1
		36	0	21.16	21.17	21.15	2
		36	19	21.17	21.09	21.17	2
		36	39	21.12	21.2	21.21	2
		75	0	21.12	21.09	21.12	2
BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100	3GPP MPR (dB)
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz	
20MHz	QPSK	1	0	23.06	23.2	23.06	0
		1	50	23.09	23.19	22.97	0
		1	99	23.08	23.24	23.03	0
		50	0	22	21.95	22.11	1
		50	25	21.96	22.02	22.12	1
		50	50	22.06	21.94	22.04	1
		100	0	22.07	21.93	21.96	1
	16QAM	1	0	22.03	22.17	22.07	1
		1	50	21.98	22.19	22.12	1
		1	99	22.01	22.2	22.09	1
		50	0	21.17	21.15	21.1	2
		50	25	21.17	21.11	21.13	2
		50	50	21.19	21.1	21.18	2
		100	0	22.07	21.93	22.08	2



Test Report No.: RF200512S004-5

EIRP POWER (dBm)

GSM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
512	1850.2	30.01	0.5	30.51	1124.6	2
661	1880	29.98	0.5	30.48	1116.86	2
810	1909.8	29.47	0.5	29.97	993.12	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

GPRS

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
512	1850.2	30.08	0.5	30.58	1142.88	2
661	1880	29.88	0.5	30.38	1091.44	2
810	1909.8	29.54	0.5	30.04	1009.25	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
9262	1852.4	22.61	0.5	23.11	204.64	2
9400	1880	22.74	0.5	23.24	210.86	2
9538	1907.6	22.65	0.5	23.15	206.54	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss



LTE BAND 2

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18607	1850.7	23.1	0.5	23.6	229.09	2
18900	1880	23.09	0.5	23.59	228.56	2
19193	1909.3	23.13	0.5	23.63	230.67	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18607	1850.7	22.42	0.5	22.92	195.88	2
18900	1880	22.31	0.5	22.81	190.99	2
19193	1909.3	22.36	0.5	22.86	193.20	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18615	1851.5	22.95	0.5	23.45	221.31	2
18900	1880	23.01	0.5	23.51	224.39	2
19185	1908.5	23.08	0.5	23.58	228.03	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18615	1851.5	22.39	0.5	22.89	194.54	2
18900	1880	21.75	0.5	22.25	167.88	2
19185	1908.5	22.59	0.5	23.09	203.70	2

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18625	1852.5	22.96	0.5	23.46	221.82	2
18900	1880	23.22	0.5	23.72	235.50	2
19175	1907.5	23.07	0.5	23.57	227.51	2



CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18625	1852.5	21.82	0.5	22.32	170.61	2
18900	1880	21.83	0.5	22.33	171.00	2
19175	1907.5	22.03	0.5	22.53	179.06	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18650	1855	22.97	0.5	23.47	222.33	2
18900	1880	22.99	0.5	23.49	223.36	2
19150	1905	23.08	0.5	23.58	228.03	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18650	1855	22.37	0.5	22.87	193.64	2
18900	1880	22.37	0.5	22.87	193.64	2
19150	1905	22.53	0.5	23.03	200.91	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18675	1857.5	23	0.5	23.5	223.87	2
18900	1880	22.98	0.5	23.48	222.84	2
19125	1902.5	23.02	0.5	23.52	224.91	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18675	1857.5	22.38	0.5	22.88	194.09	2
18900	1880	22.78	0.5	23.28	212.81	2
19125	1902.5	23.04	0.5	23.54	225.94	2



Test Report No.: RF200512S004-5

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18700	1860	23.09	0.5	23.59	228.56	2
18900	1880	23.24	0.5	23.74	236.59	2
19100	1900	23.06	0.5	23.56	226.99	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
18700	1860	22.07	0.5	22.57	180.72	2
18900	1880	22.2	0.5	22.7	186.21	2
19100	1900	22.12	0.5	22.62	182.81	2

REMARKS: 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).

2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss



3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

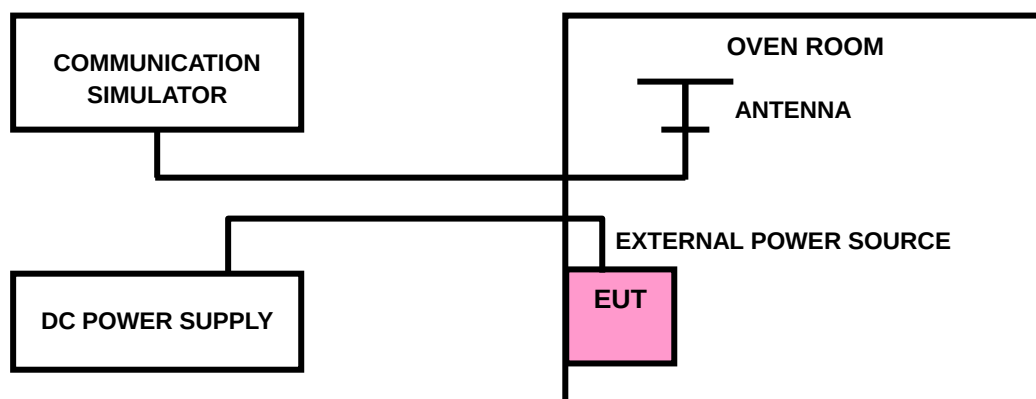
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.2.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP





3.2.4 TEST RESULTS

GSM1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0252	0.0266	2.5
V_{min}	0.0271	0.0219	2.5
V_{max}	0.0167	0.0229	2.5

NOTE: The applicant defined the normal working voltage of the battery is from V_{min} to V_{max} .

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	0.0383	0.0121	2.5
-20	0.0259	0.0077	2.5
-10	0.0291	0.0159	2.5
0	0.0331	0.0178	2.5
10	0.0436	0.0328	2.5
20	0.0467	0.0227	2.5
30	0.0444	0.0319	2.5
40	0.0398	0.0441	2.5
50	0.0371	0.0348	2.5



GPRS 1900

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0255	0.0202	2.5
V_{min}	0.0343	0.0289	2.5
V_{max}	0.0446	0.0366	2.5

NOTE: The applicant defined the normal working voltage of the battery is from V_{min} to V_{max} .

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	0.0207	0.0276	2.5
-20	0.0178	0.0175	2.5
-10	0.0326	0.005	2.5
0	0.0464	0.0059	2.5
10	0.0322	0.0209	2.5
20	0.0403	0.0344	2.5
30	0.0279	0.044	2.5
40	0.0419	0.0579	2.5
50	0.0398	0.0721	2.5



WCDMA BAND II

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0235	0.0245	2.5
V_{min}	0.0292	0.0378	2.5
V_{max}	0.0296	0.0492	2.5

NOTE: The applicant defined the normal working voltage of the battery is from V_{min} to V_{max} .

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
-30	0.0351	0.0427	2.5
-20	0.0394	0.0538	2.5
-10	0.0345	0.0583	2.5
0	0.0225	0.0707	2.5
10	0.0313	0.0796	2.5
20	0.0213	0.0746	2.5
30	0.0089	0.0832	2.5
40	0.0225	0.0906	2.5
50	0.0317	0.0927	2.5



LTE BAND 2

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.1003	0.1012	2.5
3.55(BEP)	0.1000	0.1072	2.5
4.35	0.1109	0.0984	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.0918	0.1052	2.5
-20	0.0868	0.0983	2.5
-10	0.0834	0.0875	2.5
0	0.0793	0.0972	2.5
10	0.0655	0.1106	2.5
20	0.0767	0.1086	2.5
30	0.0787	0.1178	2.5
40	0.0746	0.124	2.5
50	0.0857	0.1306	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.0985	0.1115	2.5
3.55(BEP)	0.1005	0.1097	2.5
4.35	0.0906	0.1236	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.0913	0.0956	2.5
-20	0.0787	0.0869	2.5
-10	0.0772	0.0942	2.5
0	0.0666	0.1083	2.5
10	0.0707	0.1082	2.5
20	0.0625	0.113	2.5
30	0.0562	0.1067	2.5
40	0.046	0.1085	2.5
50	0.0447	0.1153	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.1048	0.096	2.5
3.55(BEP)	0.111	0.0811	2.5
4.35	0.1229	0.0805	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.1179	0.0876	2.5
-20	0.1252	0.0943	2.5
-10	0.1143	0.1006	2.5
0	0.1251	0.0972	2.5
10	0.1365	0.083	2.5
20	0.1233	0.0757	2.5
30	0.1154	0.0805	2.5
40	0.1253	0.0715	2.5
50	0.137	0.0828	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.0975	0.1048	2.5
3.55(BEP)	0.0887	0.0939	2.5
4.35	0.0798	0.0792	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.0781	0.1028	2.5
-20	0.0689	0.1116	2.5
-10	0.0739	0.1191	2.5
0	0.0628	0.1046	2.5
10	0.0655	0.1161	2.5
20	0.0649	0.1061	2.5
30	0.0508	0.1099	2.5
40	0.0617	0.1237	2.5
50	0.0756	0.125	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.1067	0.1057	2.5
3.55(BEP)	0.1016	0.1197	2.5
4.35	0.1153	0.1102	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.0962	0.1178	2.5
-20	0.1057	0.1255	2.5
-10	0.1115	0.1265	2.5
0	0.1139	0.1143	2.5
10	0.1166	0.1104	2.5
20	0.1118	0.1121	2.5
30	0.1076	0.0999	2.5
40	0.1192	0.0938	2.5
50	0.1191	0.1045	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
3.7	0.1098	0.0987	2.5
3.55(BEP)	0.0967	0.0919	2.5
4.35	0.0939	0.0942	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.55Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (°C)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	0.0954	0.0931	2.5
-20	0.0865	0.0913	2.5
-10	0.0888	0.1029	2.5
0	0.0978	0.1044	2.5
10	0.1016	0.1008	2.5
20	0.0909	0.093	2.5
30	0.087	0.0853	2.5
40	0.0978	0.0724	2.5
50	0.0838	0.0854	2.5

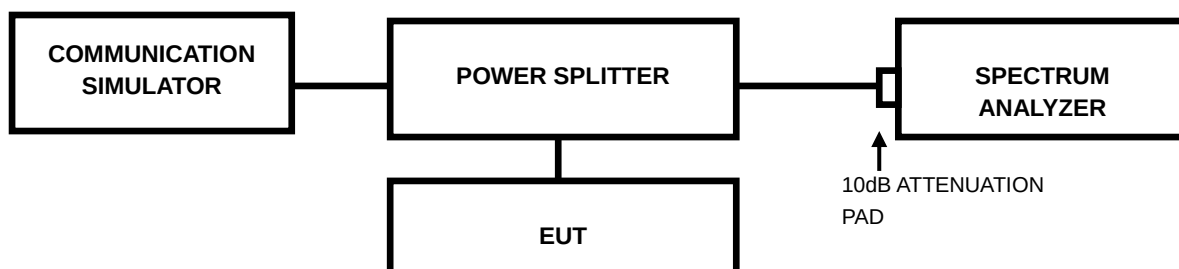


3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

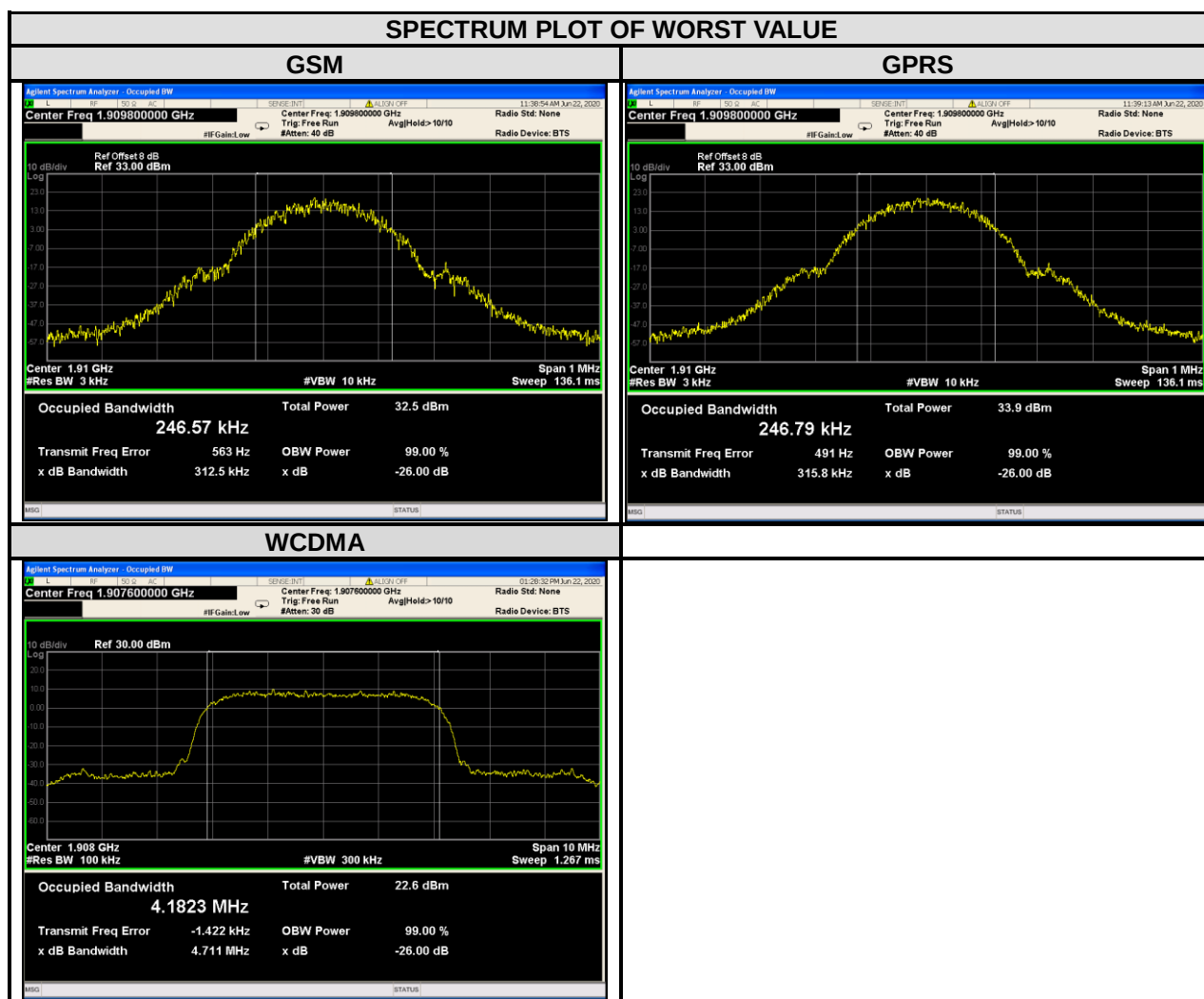
3.3.2 TEST SETUP





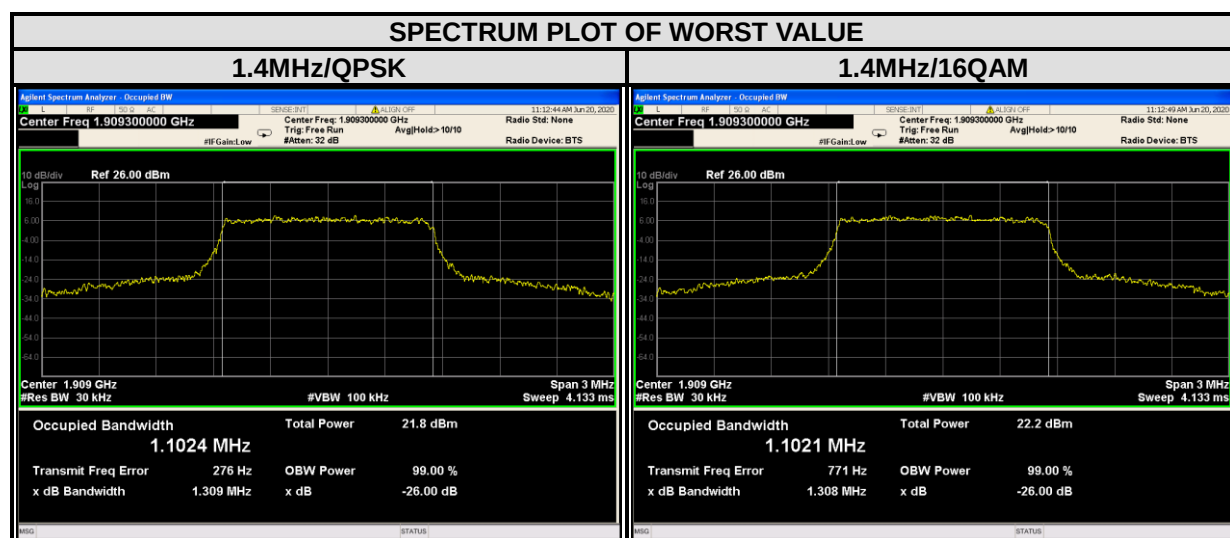
3.3.3 TEST RESULTS

Channel	Frequency (MHz)	99% Occupied bandwidth (kHz)		Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)
		GSM	GPRS			WCDMA
512	1850.2	245.44	243.95	9262	1852.4	4.1559
661	1880	246.39	243.91	9400	1880	4.1757
810	1909.8	246.57	246.79	9538	1907.6	4.1823
Channel	Frequency (MHz)	26dB bandwidth (kHz)		CHANNEL	FREQUENCY (MHz)	26dB bandwidth (MHz)
		GSM	GPRS			WCDMA
512	1850.2	302.4	302.4	9262	1852.4	4.700
661	1880	292.9	313.8	9400	1880	4.713
810	1909.8	312.5	315.8	9538	1907.6	4.711



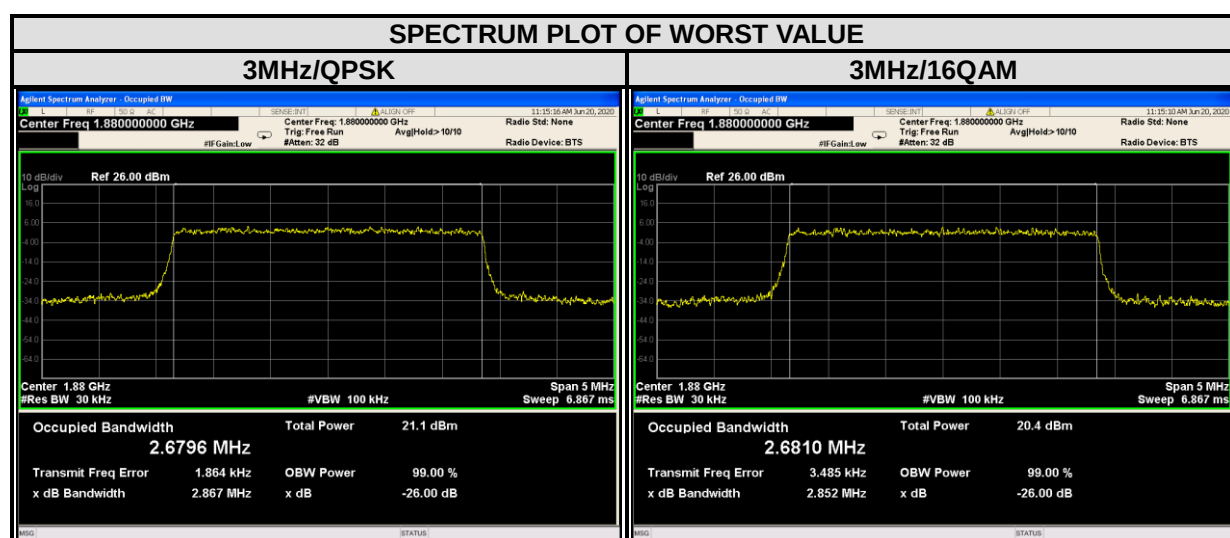


LTE band 2							
Channel Bandwidth : 1.4MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18607	1850.7	1.0817	1.0285	18607	1850.7	1.255	1.285
18900	1880	1.0886	1.0917	18900	1880	1.297	1.297
19193	1909.3	1.1024	1.1021	19193	1909.3	1.309	1.308



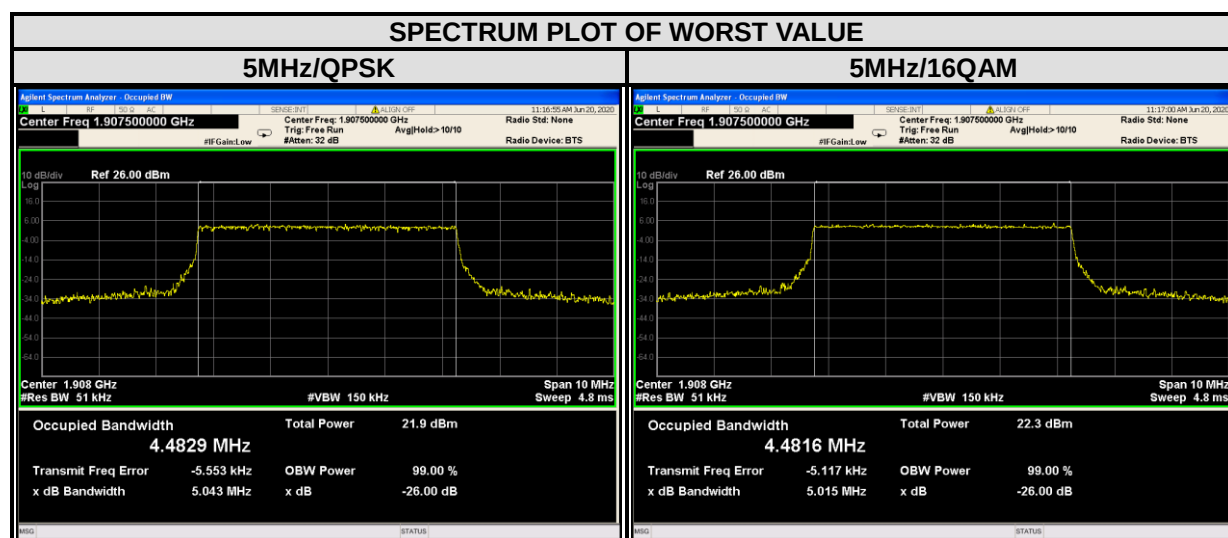


LTE band 2							
Channel Bandwidth : 3MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18615	1851.5	2.6750	2.6725	18615	1851.5	2.858	2.858
18900	1880	2.6796	2.6810	18900	1880	2.867	2.852
19185	1908.5	2.6782	2.6790	19185	1908.5	2.868	2.871



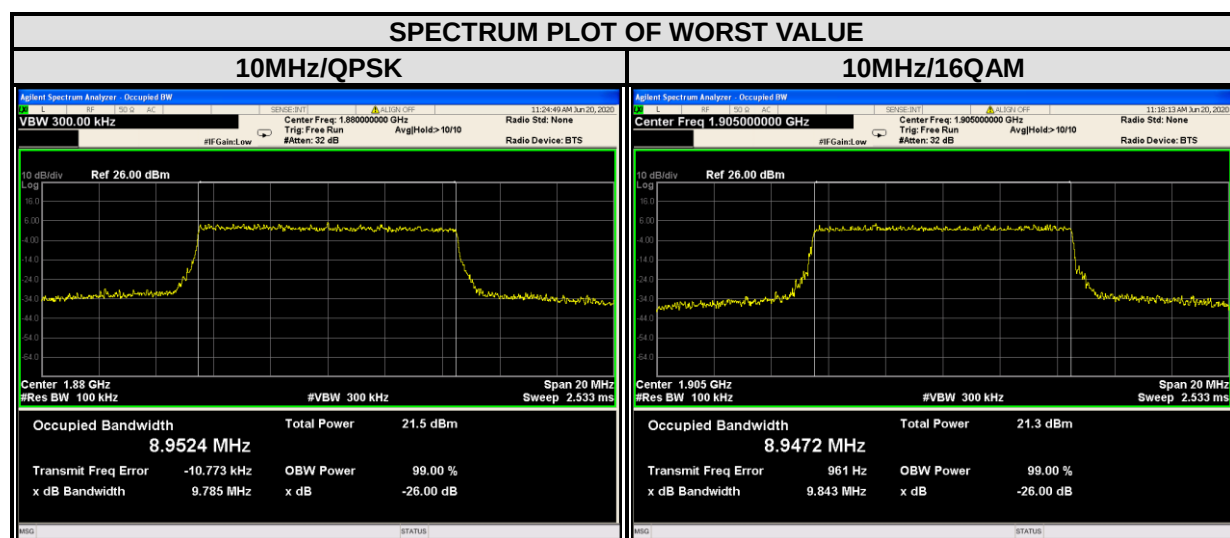


LTE band 2							
Channel Bandwidth : 5 MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18625	1852.5	4.4694	4.4683	18625	1852.5	5.003	5.004
18900	1880	4.4610	4.4781	18900	1880	5.006	5.01
19175	1907.5	4.4829	4.4816	19175	1907.5	5.043	5.015



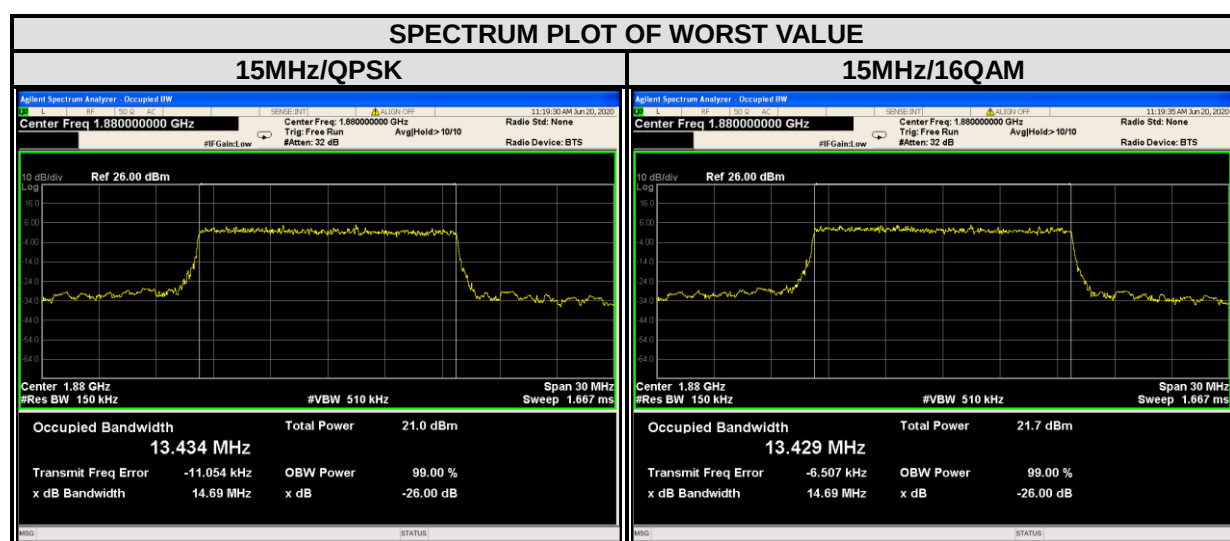


LTE band 2							
Channel Bandwidth : 10 MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18650	1855	8.9398	8.9365	18650	1855	9.732	9.595
18900	1880	8.9524	8.9419	18900	1880	9.785	9.77
19150	1905	8.9523	8.9472	19150	1905	9.864	9.843



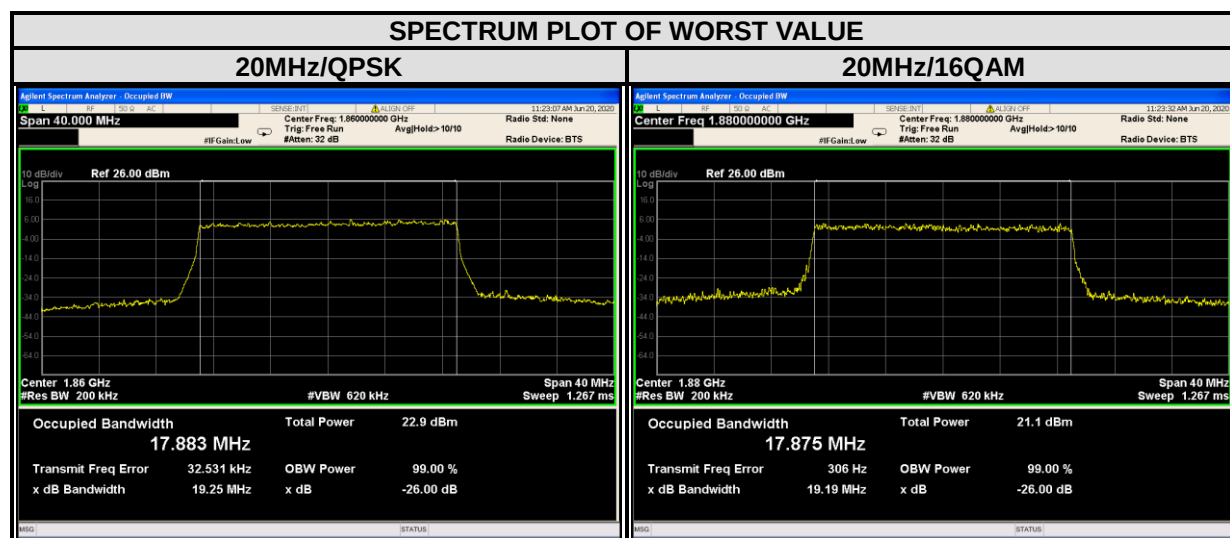


LTE band 2							
Channel Bandwidth : 15 MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18675	1857.5	13.391	13.395	18675	1857.5	14.38	14.54
18900	1880	13.434	13.429	18900	1880	14.69	14.69
19125	1902.5	13.424	13.419	19125	1902.5	14.65	14.72





LTE band 2							
Channel Bandwidth : 20 MHz							
Channel	Frequency (MHz)	99% Occupied bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)	
		QPSK	16QAM			QPSK	16QAM
18700	1860	17.882	17.857	18700	1860	19.42	19.38
18900	1880	17.883	17.841	18900	1880	19.25	19.07
19100	1900	17.871	17.875	19100	1900	19.31	19.19



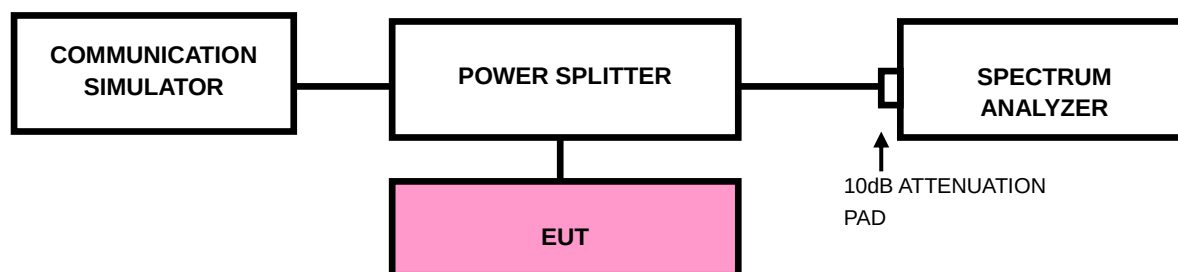


3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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 $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

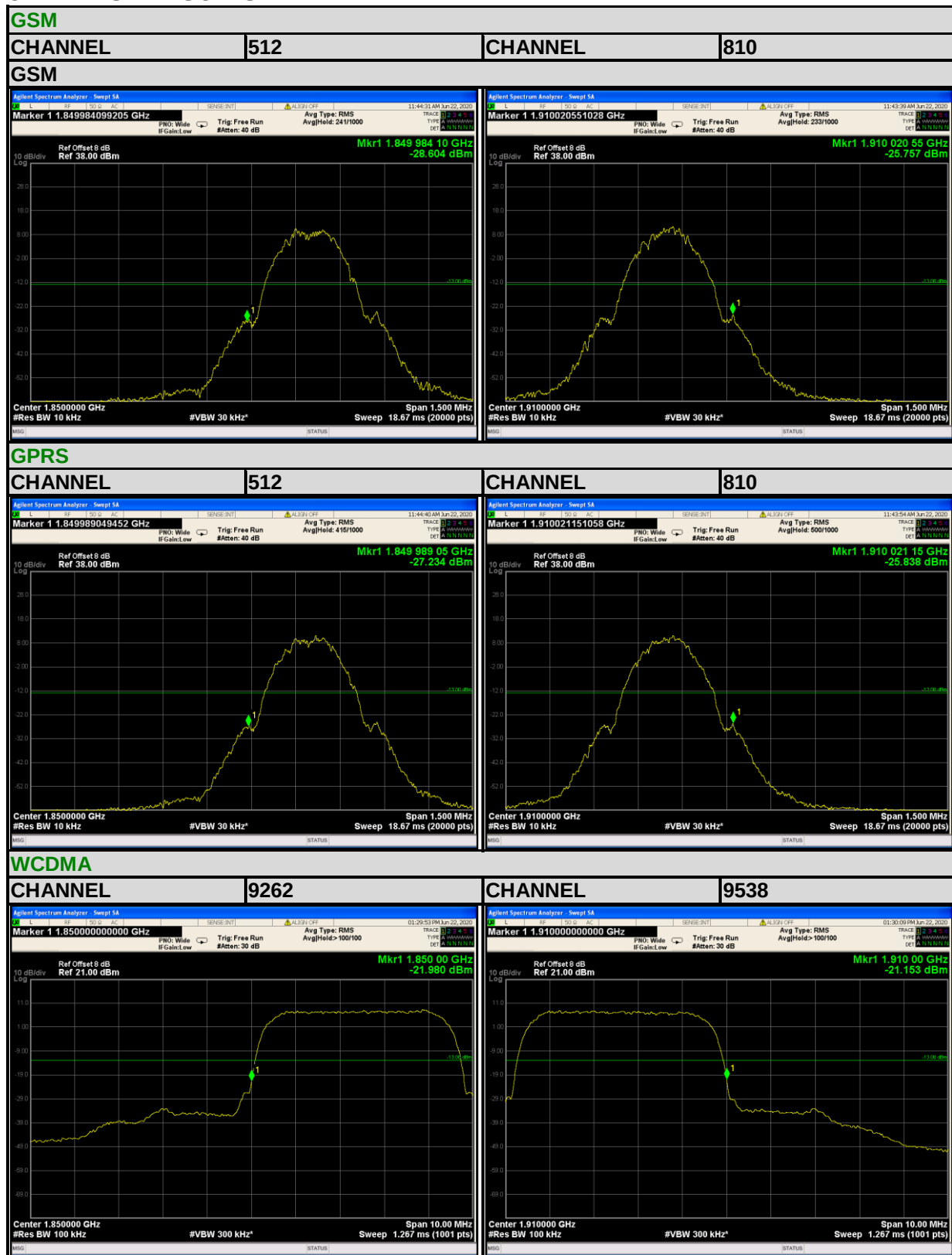
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE).
- The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)
- The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)
- The center frequency of spectrum is the band edge frequency and span is



- 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)
- g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)
- h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)
- i. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)
- j. Record the max trace plot into the test report.



3.4.4. TEST RESULTS



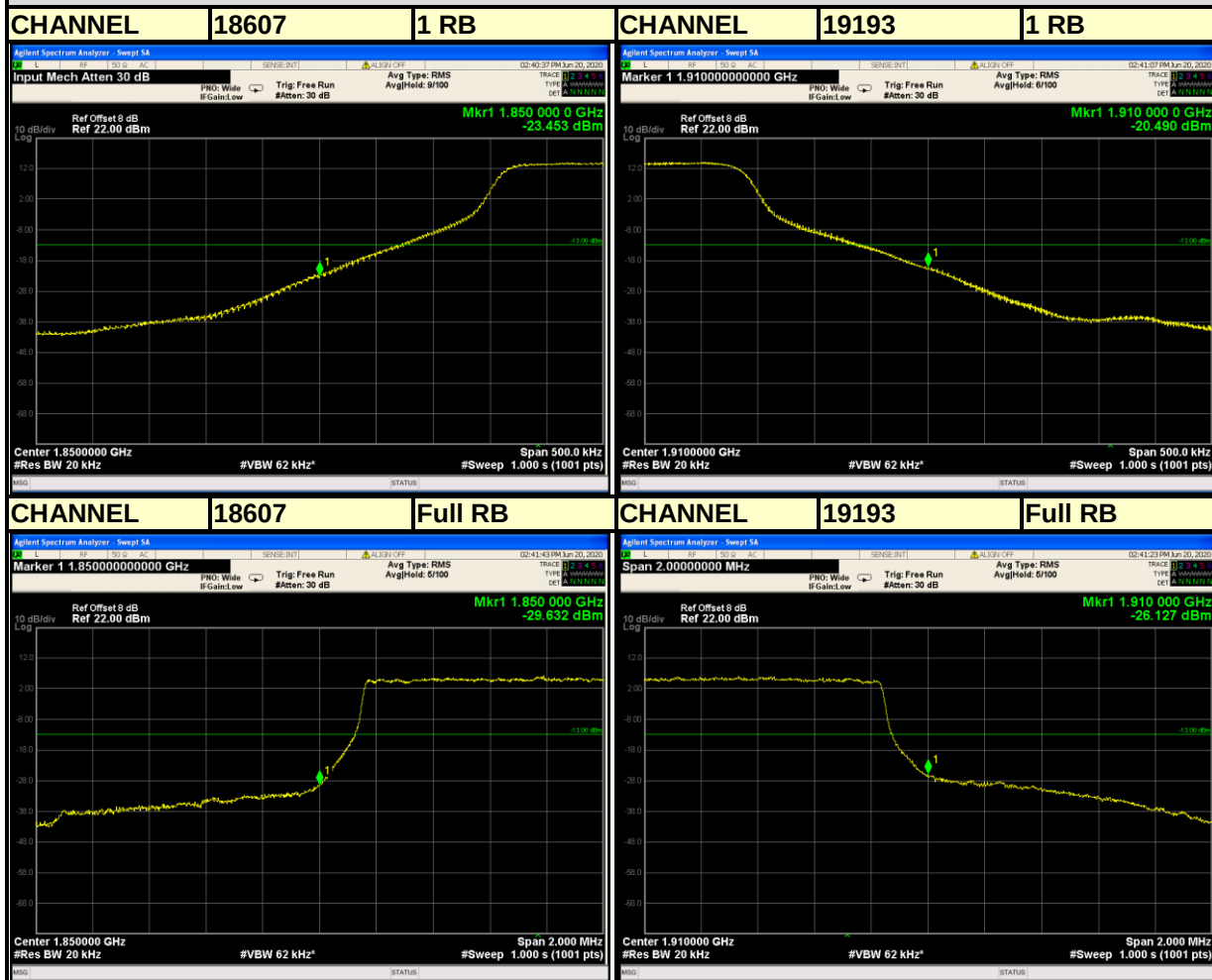


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 1.4MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com

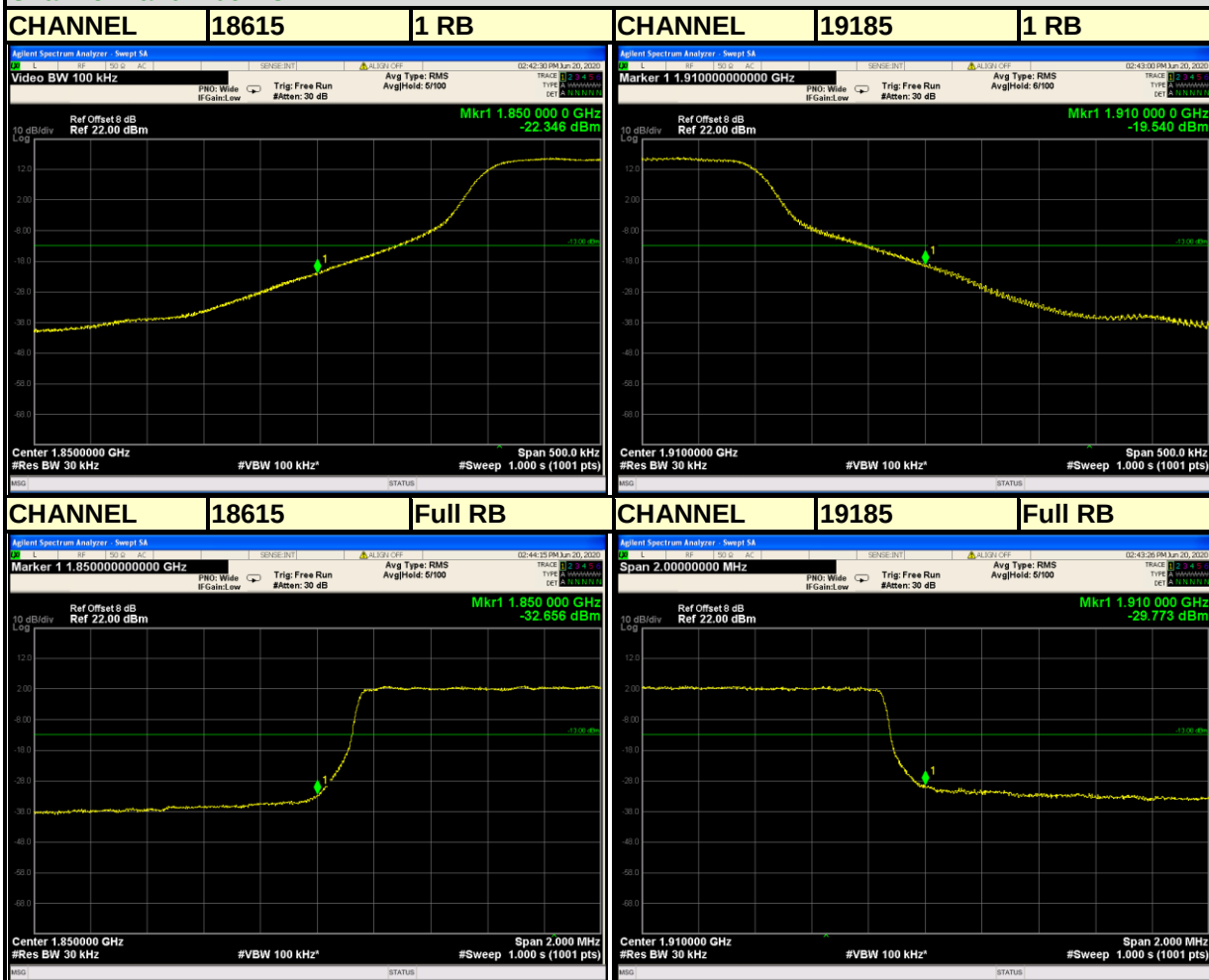


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 3MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com

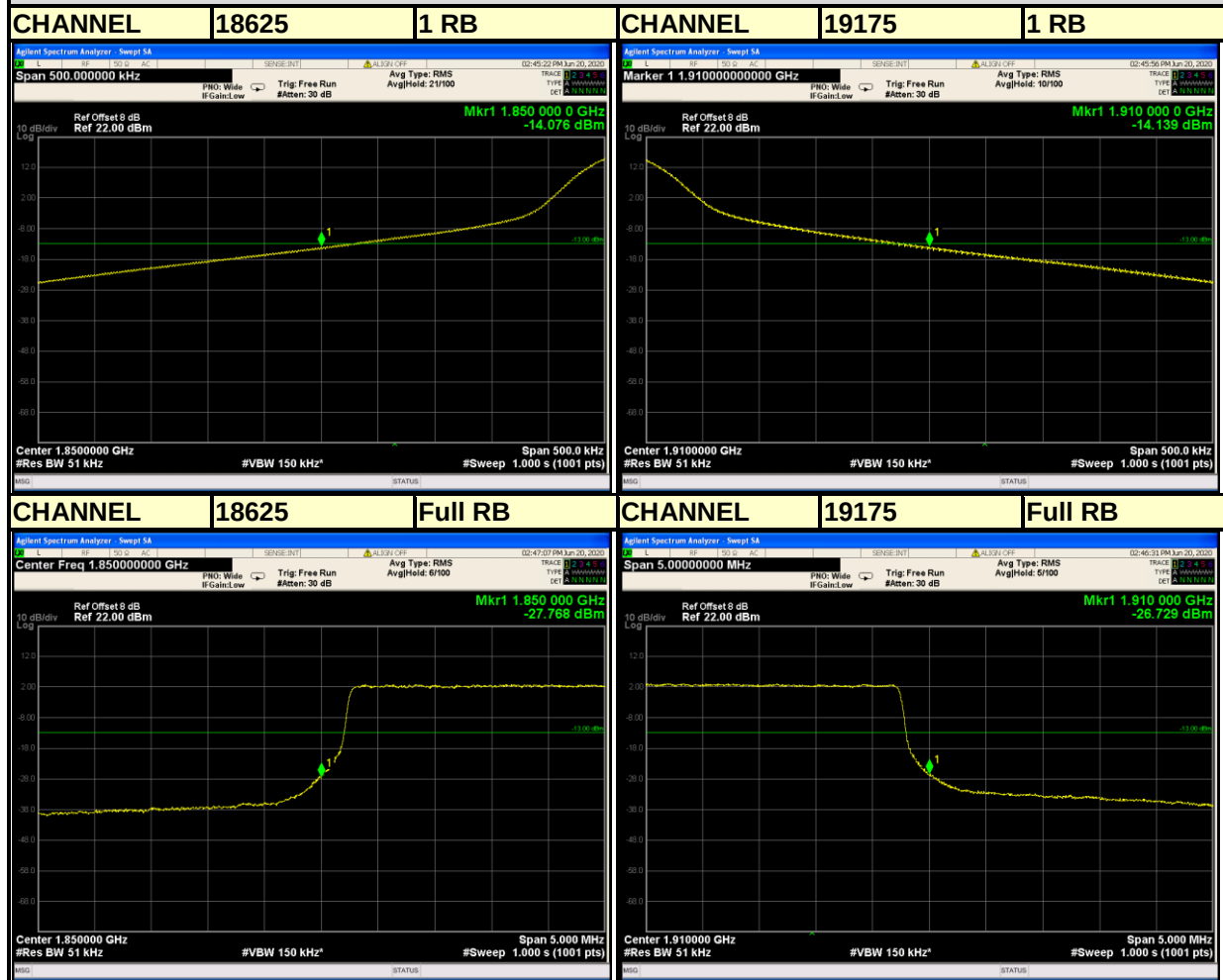


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 5MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com

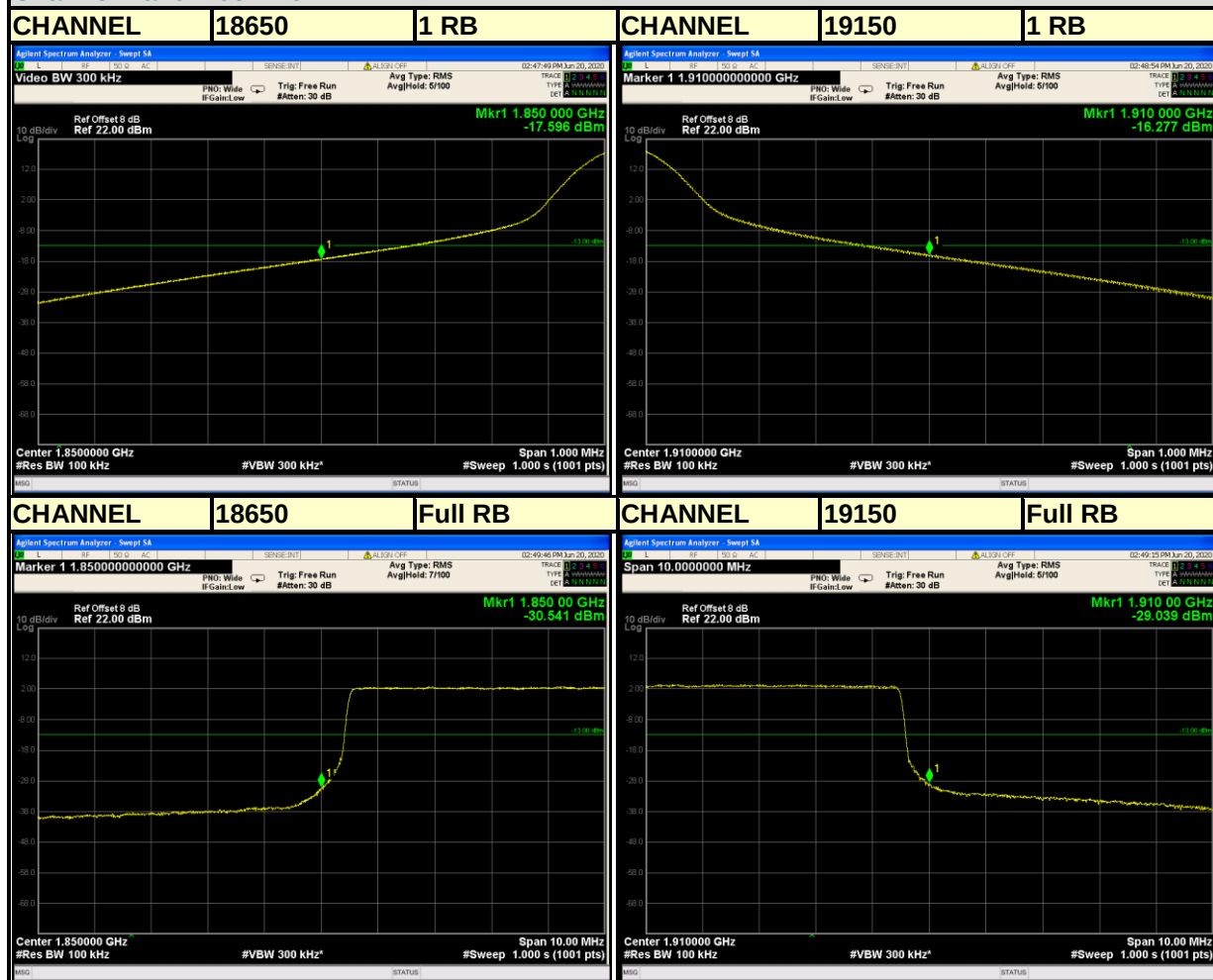


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 10MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com

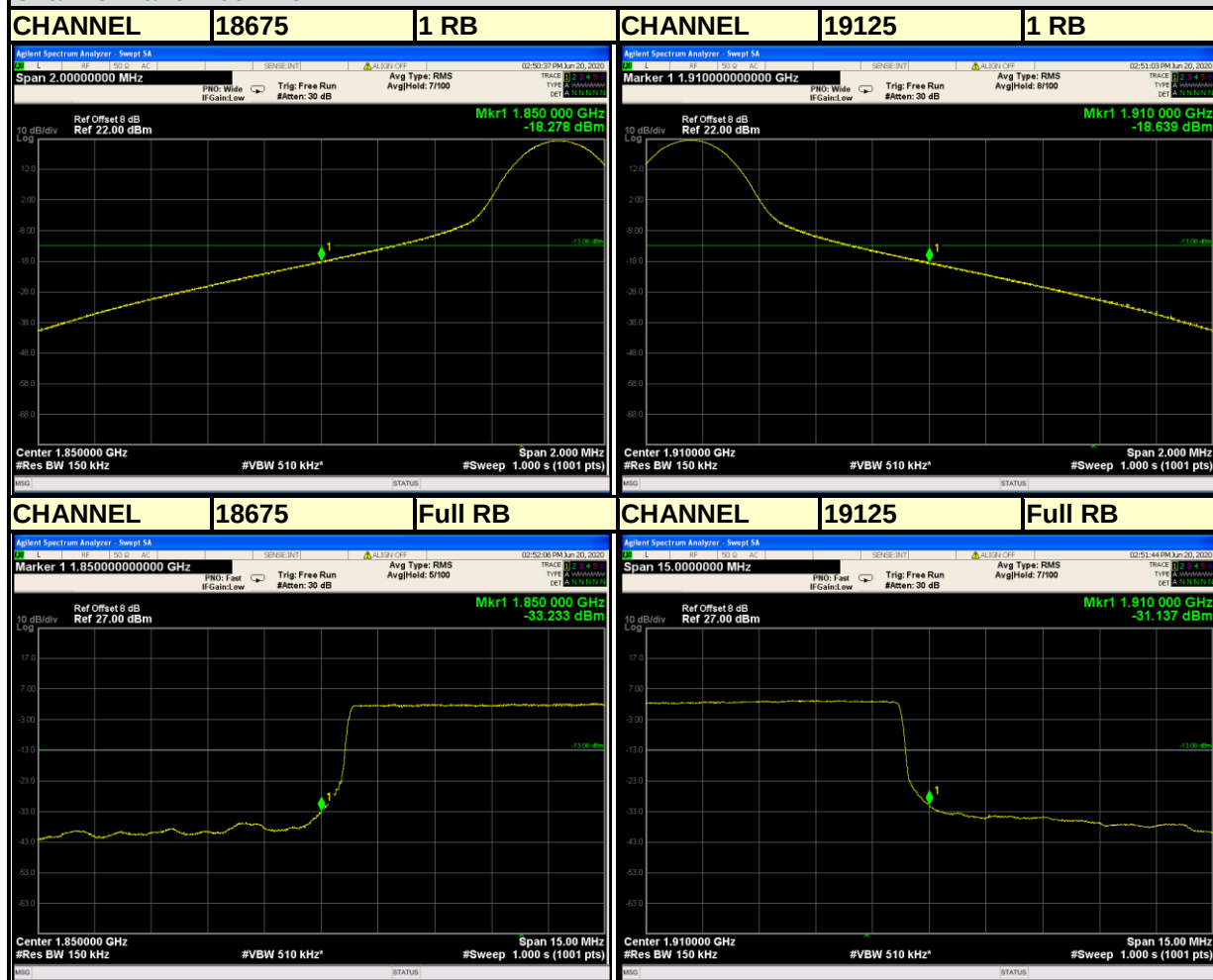


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 15MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com

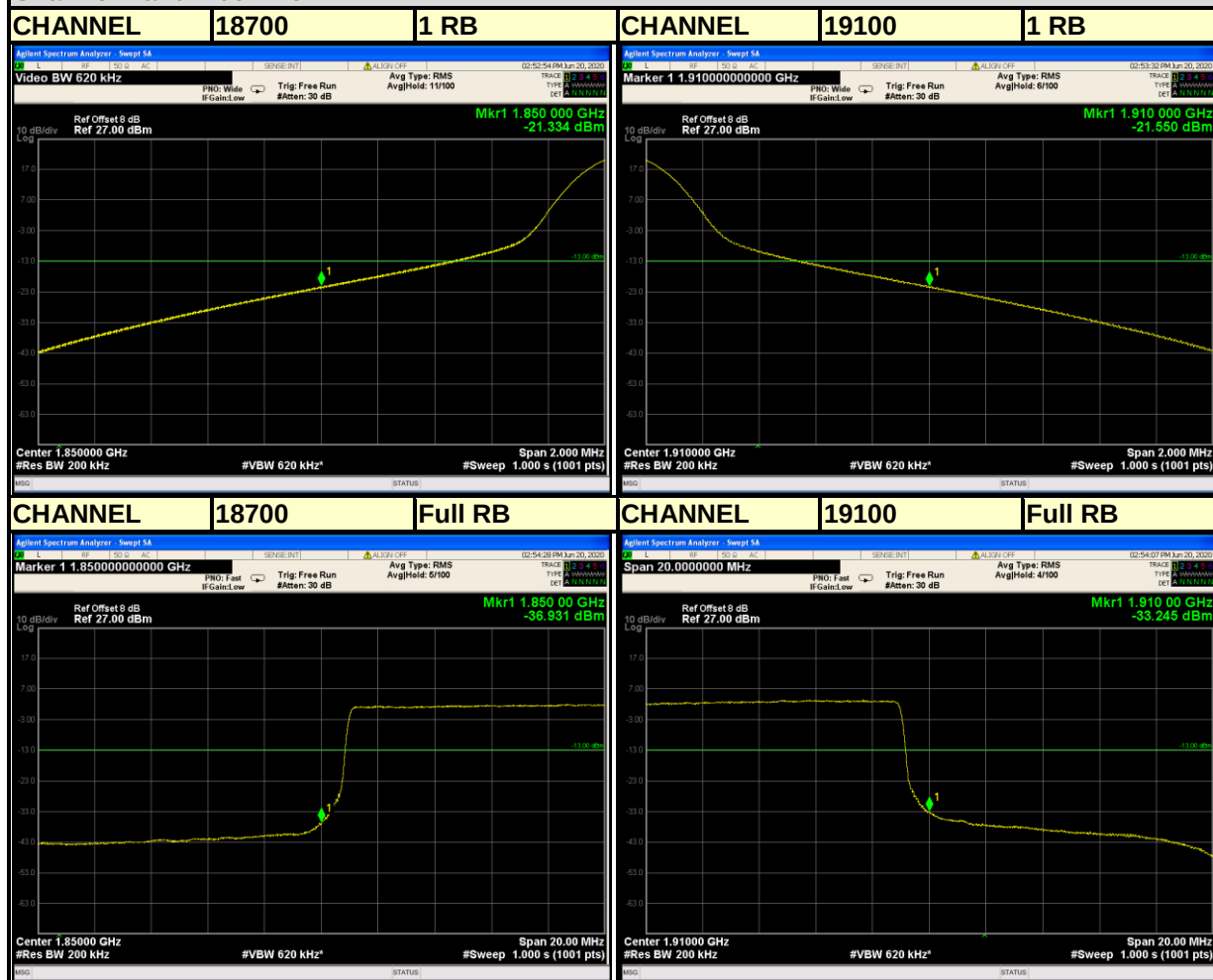


BUREAU
VERITAS

Test Report No.: RF200512S004-5

LTE BAND 2

Channel Bandwidth: 20MHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com



3.5 CONDUCTED SPURIOUS EMISSIONS

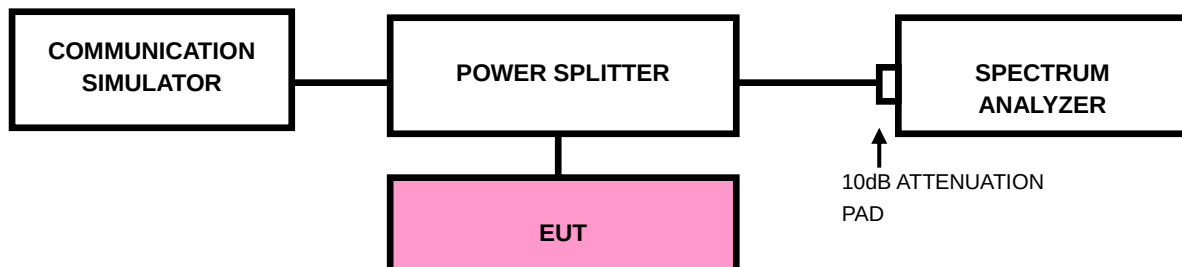
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

3.5.2 TEST PROCEDURE

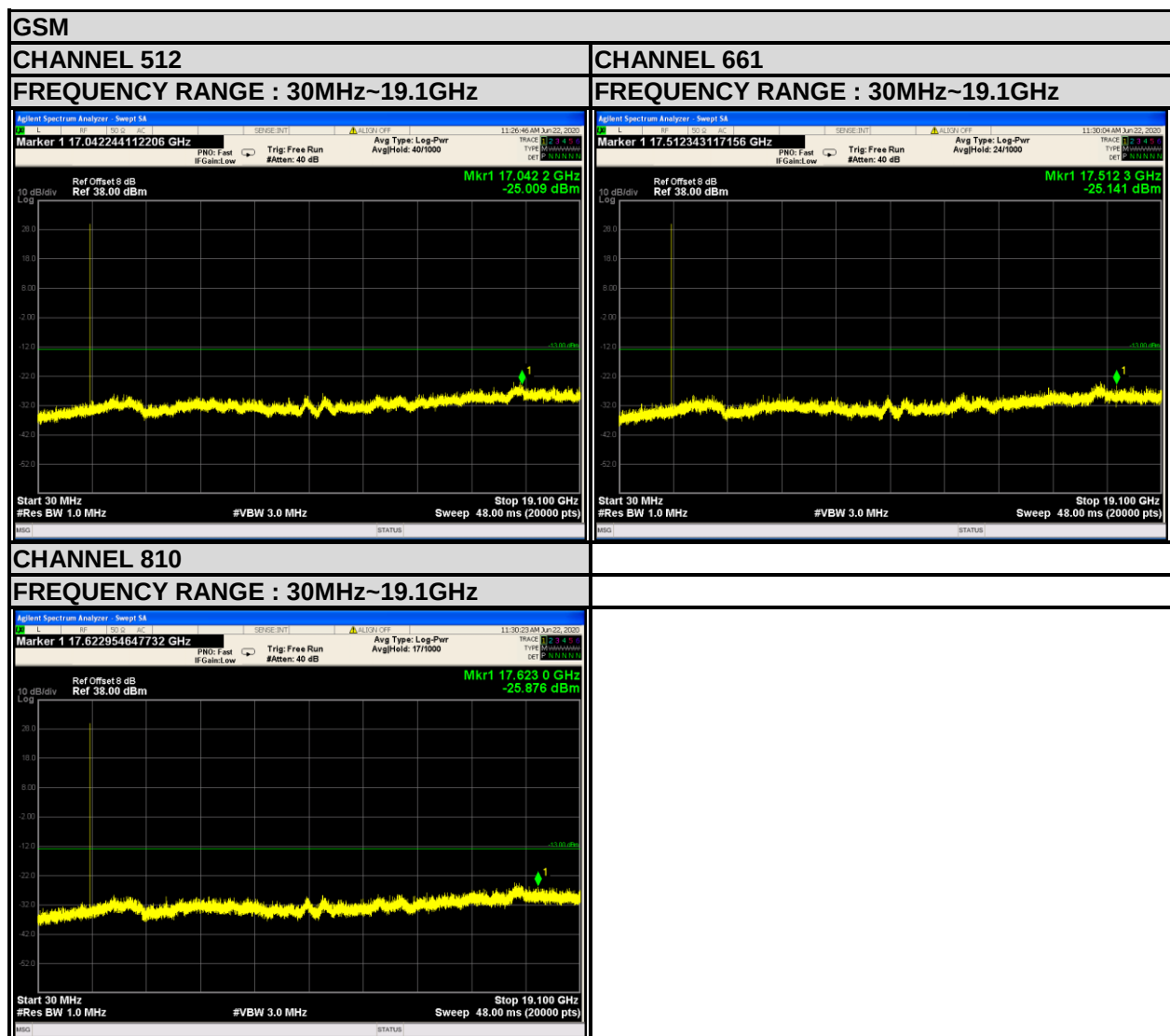
- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9 kHz to 19.1GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP





3.5.4 TEST RESULTS





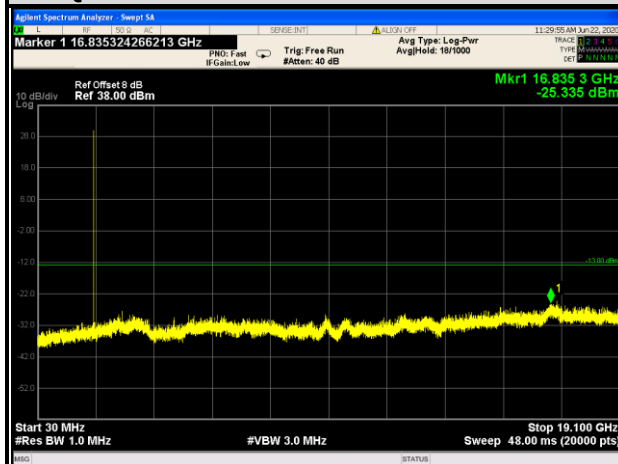
BUREAU
VERITAS

Test Report No.: RF200512S004-5

GPRS

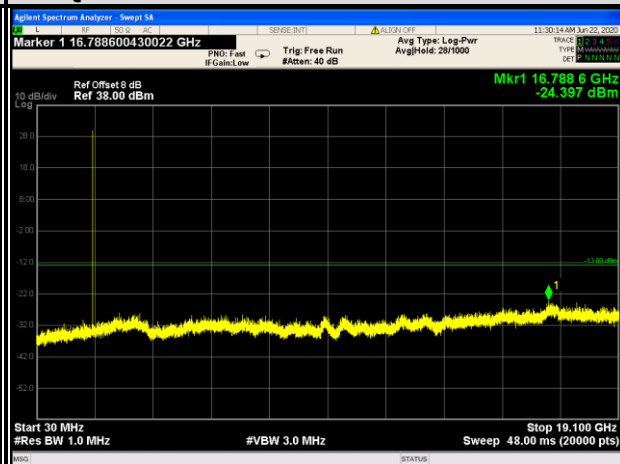
CHANNEL 512

FREQUENCY RANGE : 30MHz~19.1GHz



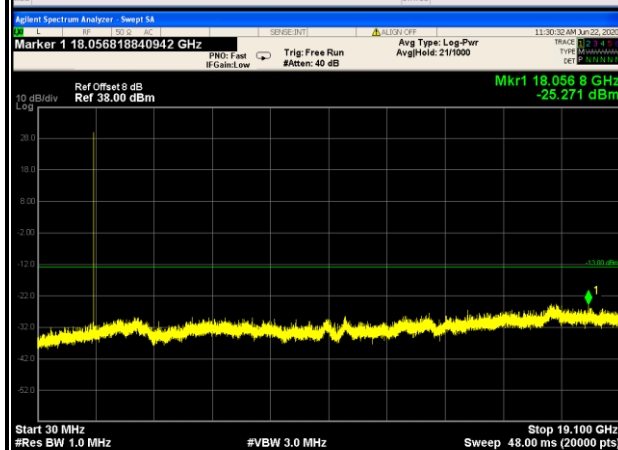
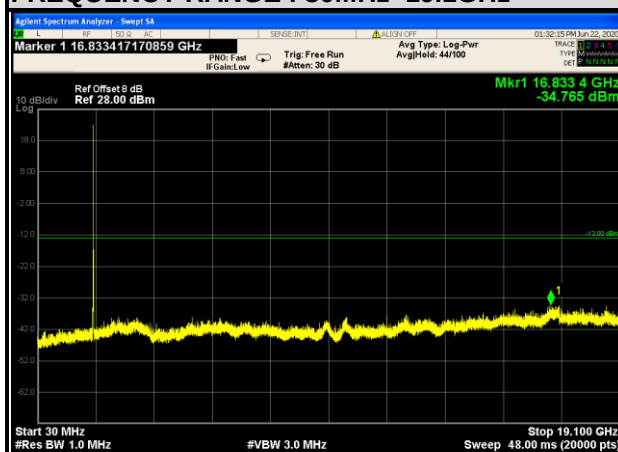
CHANNEL 661

FREQUENCY RANGE : 30MHz~19.1GHz



CHANNEL 810

FREQUENCY RANGE : 30MHz~19.1GHz



Bureau Veritas (Shenzhen)
Consumer Products Services Co., Ltd.

Zone A, Floor 1, Building 2, Wan Ye Long Technology
Park, South Side of Zhoushi Road, Bao'an District,
Shenzhen Guangdong, 518108, China.

Tel: +86-755-26014629 Ext.800
Email: customerservice.sz@bureauveritas.com