

VARIANT FCC TEST REPORT

(PART 24)

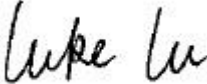
Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

Manufacturer or Supplier:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45-L1N-G
FCC ID:	HD5-CT45L1NG
Date of tests:	May. 08, 2021 ~ Sep. 08, 2021

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

☒ **FCC PART 24, Subpart E** ☒ **FCC PART 2**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
	
Date: Sep. 09, 2021	Date: Sep. 09, 2021

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF16	Original release	Sep. 01, 2021
W7L-P21040030RF16	Based on the original report W7L-P21080006RF16 Changed LCM to screen HD(1280*720), removing a 2nd BLE and Supercap, Increase the RTC battery, Detail refer to Product Equality Declaration	Sep. 09, 2021

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	1.1.1.1.1 TEST TYPE	RESULT
2.1046 24.232	Equivalent Isotropic Radiated Power	Compliance
2.1055 24.235	Frequency Stability	Compliance
2.1049 24.238(b)	Occupied Bandwidth	Compliance
24.232(d)	Peak to average ratio	Compliance
24.238(b)	Band Edge Measurements	Compliance
2.1051 24.238	Conducted Spurious Emissions	Compliance
2.1053 24.238	Radiated Spurious Emissions	Compliance

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	UNCERTAINTY
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions & Radiated Power (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GMHz ~6GMHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GMHz ~18GMHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GMHz ~40GMHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

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.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 04,20	Jun. 03,21
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 26, 20	Aug. 25, 21
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 03,20	Jun. 02,21
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 04,20	Jun. 03,21
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 04,20	Jun. 03,21
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 03,20	Jun. 02,21
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months 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 525120; The Designation No. is CN1171.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer	
BRAND NAME	Honeywell	
MODEL NAME	CT45-L1N-G	
NOMINAL VOLTAGE	3.85Vdc (Lithium-ion cell, battery)	
MODULATION TYPE	GPRS: GMSK EDGE: 8PSK WCDMA: BPSK,QPSK LTE Band 2: QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	GSM, GPRS, EDGE	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
	LTE Band 25 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1914.3MHz
	LTE Band 25 Channel Bandwidth: 3MHz	1851.5MHz ~ 1913.5MHz
	LTE Band 25 Channel Bandwidth: 5MHz	1852.5MHz ~ 1912.5MHz
	LTE Band 25 Channel Bandwidth: 10MHz	1855.0MHz ~ 1910.0MHz
	LTE Band 25 Channel Bandwidth: 15MHz	1857.5MHz ~ 1907.5MHz
	LTE Band 25 Channel Bandwidth: 20MHz	1860.0MHz ~ 1905.0MHz



MAX. EIRP POWER	GSM	1610.65mW
	EDGE	714.5mW
	WCDMA	275.42mW
	LTE Band 2 Channel Bandwidth: 1.4MHz	200.91mW
	LTE Band 2 Channel Bandwidth: 3MHz	239.33mW
	LTE Band 2 Channel Bandwidth: 5MHz	239.88mW
	LTE Band 2 Channel Bandwidth: 10MHz	239.88mW
	LTE Band 2 Channel Bandwidth: 15MHz	239.88mW
	LTE Band 2 Channel Bandwidth: 20MHz	242.66mW
MAX. EIRP POWER	LTE Band 25 Channel Bandwidth: 1.4MHz	240.44mW
	LTE Band 25 Channel Bandwidth: 3MHz	241.55mW
	LTE Band 25 Channel Bandwidth: 5MHz	238.78mW
	LTE Band 25 Channel Bandwidth: 10MHz	240.44mW
	LTE Band 25 Channel Bandwidth: 15MHz	240.44mW
	LTE Band 25 Channel Bandwidth: 20MHz	242.66mW



EMISSION DESIGNATOR	GSM	240KGXW
	EDGE	240KG7W
	WCDMA	4M16F9W
	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M10W7D
		64QAM: 1M10W7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M69W7D
		64QAM: 2M69W7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 4M49G7D
		16QAM: 4M48W7D
		64QAM: 4M48W7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 8M97G7D
		16QAM: 8M97W7D
		64QAM: 8M98W7D
	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
	LTE Band 25 Channel Bandwidth: 1.4MHz	QPSK: 1M09G7D
		16QAM: 1M09W7D
		64QAM: 1M09W7D
	LTE Band 25 Channel Bandwidth: 3MHz	QPSK: 2M70G7D
		16QAM: 2M69W7D
		64QAM: 2M69W7D
	LTE Band 25 Channel Bandwidth: 5MHz	QPSK: 4M46G7D
		16QAM: 4M46W7D
		64QAM: 4M49W7D
	LTE Band 25 Channel Bandwidth: 10MHz	QPSK: 8M92G7D
		16QAM: 8M92W7D
		64QAM: 8M92W7D
	LTE Band 25 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M4W7D
		64QAM: 13M5W7D
	LTE Band 25 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 18M0W7D
		64QAM: 18M0W7D
ANTENNA TYPE	PIFA Antenna with 2.67dBi gain	
HW VERSION	V1.0	



SW VERSION	OS.11.002-HON.11.002
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: unshielded without ferrite, 1.25 meter Earphone cable: unshielded without ferrite, 1.27 meter
EXTREME TEMPERATURE	-10-55 °C
EXTREME VOLTAGE	3.4V- 4.4V

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- This product includes the following six SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-27D120G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-28D120G ,Assembled Scanner Imager: 8 - N6803/S0803
3	SKU ID: CT45-L1N-28D120T, Assembled with Scanner: 8 - N6803/S0803 for Turkey Only
4	SKU ID: CT45-L1N-27D120T, Assembled with Scanner: 7-S0703 for Turkey Only
5	SKU ID:CT45-L1N-28D220C, Assembled with Scanner: 8 - N6803/S0803 for China Only with Android non-GMS
6	SKU ID:CT45-L1N-27D220C, Assembled with Scanner: 7-S0703 for China Only with Android non-GMS

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

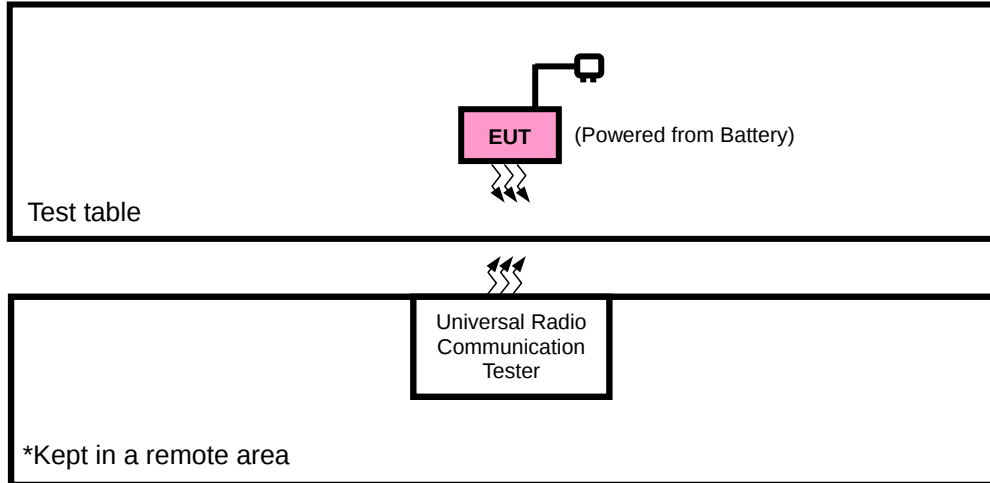
List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A
USB Cable	Honeywell	CT40-SN	Shielded, 1.25meter
Earphone	VIVO	N/A	Shielded, 1.27meter
LCD Panel	TZD	TS5099	5.0" HD(1280*720)



2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION 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	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

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/ LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	1.1.1.1.1.2DESCRIPTION
A	EUT + DC Source with GSM or WCDMA or LTE link

GSM MODE

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

WCDMA

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, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	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, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset

B	BAND EDGE	18607 to 19193	18607	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			19193	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615	3MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset
			19185	3MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		18625 to 19175	18625	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			19175	5MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18650 to 19150	18650	10MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset
			19150	10MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		18675 to 19125	18675	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			19125	15MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		18700 to 19100	18700	20MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
			19100	20MHz	QPSK,16QAM, 64QAM	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	18607, 18900, 19193	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



LTE BAND 25

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
B	EIRP	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	26047 to 26683	26047, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055, 26675	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090, 26640	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26115, 26615	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140, 26590	20MHz	QPSK	1 RB / 0 RB Offset
B	OCCUPIED BANDWIDTH	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	50 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	75 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	100 RB / 0 RB Offset
B	PEAK TO AVERAGE RATIO	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset

B	BAND EDGE	26047 to 26683	26047	1.4MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			26683	1.4MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		26055 to 26675	26055	3MHz	QPSK,16QAM, 64QAM	1 RB / 5 RB Offset
			26675	3MHz	QPSK,16QAM, 64QAM	6 RB / 0 RB Offset
		26065 to 26665	26065	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			26665	5MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		26090 to 26640	26090	10MHz	QPSK,16QAM, 64QAM	1 RB / 14 RB Offset
			26640	10MHz	QPSK,16QAM, 64QAM	15 RB / 0 RB Offset
		26115 to 26615	26115	15MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset
			26615	15MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
		26140 to 26590	26140	20MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset
			26590	20MHz	QPSK,16QAM, 64QAM	25 RB / 0 RB Offset
B	CONDCUDED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365, 26640	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	26047 to 26683	26365	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26365	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26365	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26365	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26365	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 3.85V By Battery	Jace Hu
FREQUENCY STABILITY	23deg. C, 61%RH	DC 3.85V By Battery	James Fu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC 3.85V By Battery	James Fu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 3.85V By Battery	James Fu
BAND EDGE	23deg. C, 61%RH	DC 3.85V By Battery	James Fu
CONDCUDED EMISSION	23deg. C, 61%RH	DC 3.85V By Battery	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 3.85V By Battery	Jace Hu

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 v03r01

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:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

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.

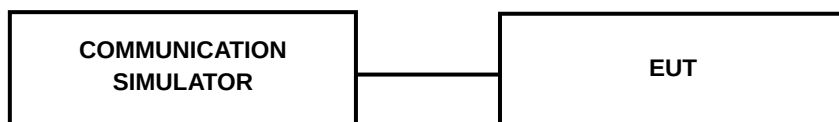
CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA 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

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM1900			Max. Tune-up Power
Channel	512	661	810	
Frequency	1850.2	1880	1909.8	
GSM (GMSK, 1Tx-slot)	29.27	29.37	29.40	29.5
GPRS (GMSK, 1Tx-slot)	29.25	29.35	29.38	29.5
GPRS (GMSK, 2Tx-slot)	27.76	27.88	27.91	28.0
GPRS (GMSK, 3Tx-slot)	26.12	26.32	26.38	26.5
GPRS (GMSK, 4Tx-slot)	24.03	24.14	24.15	24.5
EDGE (8PSK, 1Tx-slot)	25.77	25.77	25.87	26.0
EDGE (8PSK, 2Tx-slot)	23.88	23.67	23.94	24.0
EDGE (8PSK, 3Tx-slot)	21.67	21.80	21.96	22.0
EDGE (8PSK, 4Tx-slot)	20.56	20.75	20.72	21.0

Band	WCDMA II			Max. Tune-up Power
Channel	9262	9400	9538	
Frequency	1852.4	1880	1907.6	
RMC 12.2K	21.71	21.50	21.73	22.0
HSDPA Subtest-1	20.73	20.53	20.73	21.0
HSDPA Subtest-2	20.67	20.47	20.74	21.0
HSDPA Subtest-3	20.22	20.00	20.20	20.5
HSDPA Subtest-4	20.12	19.92	20.20	20.5
DC-HSDPA Subtest-1	20.73	20.49	20.73	21.0
DC-HSDPA Subtest-2	20.70	20.51	20.69	21.0
DC-HSDPA Subtest-3	20.18	19.96	20.22	20.5
DC-HSDPA Subtest-4	20.12	19.95	20.17	20.5
HSUPA Subtest-1	20.79	20.52	20.82	21.0
HSUPA Subtest-2	18.77	18.60	18.82	19.0
HSUPA Subtest-3	19.89	19.65	19.92	20.0
HSUPA Subtest-4	18.87	18.62	18.82	19.0
HSUPA Subtest-5	20.74	20.56	20.78	21.0



**BUREAU
VERITAS**

Test Report No.: W7L-P21040030RF16

LTE BAND 2

Band/BW	Modulation	RB Size	RB Offset	Low CH 18607	Mid CH 18900	High CH 19193	MPR
				Frequency 1850.7 MHz	Frequency 1880 MHz	Frequency 1909.3 MHz	
2/ 1.4	QPSK	1	0	21.06	21.06	21.13	0
		1	2	21.09	20.98	21.09	0
		1	5	21.01	20.92	21.02	0
		3	0	21.10	21.04	21.25	0
		3	1	21.13	21.06	21.08	0
		3	3	21.01	20.94	21.12	0
		6	0	20.22	20.09	20.25	1
	16QAM	1	0	20.32	20.27	20.35	1
		1	2	20.24	20.12	20.32	1
		1	5	20.23	20.19	20.36	1
		3	0	20.11	19.99	20.17	1
		3	1	20.09	20.15	20.21	1
		3	3	20.06	19.97	20.16	1
		6	0	19.12	19.07	19.12	2
	64QAM	1	0	19.17	19.17	19.30	2
		1	2	19.14	19.10	19.20	2
		1	5	19.26	19.13	19.36	2
		3	0	19.05	19.01	19.04	2
		3	1	19.09	19.07	19.16	2
		3	3	19.04	18.97	19.12	2
		6	0	18.11	17.99	18.17	3



**BUREAU
VERITAS**

Test Report No.: W7L-P21040030RF16

Band/BW	Modulation	RB Size	RB Offset	Low CH 18615	Mid CH 18900	High CH 19185	MPR
				Frequency 1851.5 MHz	Frequency 1880 MHz	Frequency 1908.5 MHz	
2 / 3	QPSK	1	0	21.08	21.08	21.12	0
		1	7	21.05	20.99	21.09	0
		1	14	20.97	20.92	21.02	0
		8	0	20.09	20.07	20.25	1
		8	3	20.06	20.06	20.10	1
		8	7	19.98	20.01	20.16	1
		15	0	20.19	20.10	20.19	1
	16QAM	1	0	20.29	20.33	20.38	1
		1	7	20.21	20.15	20.30	1
		1	14	20.26	20.19	20.36	1
		8	0	19.07	19.00	19.17	2
		8	3	19.14	19.10	19.24	2
		8	7	19.08	18.95	19.12	2
		15	0	19.12	19.01	19.15	2
	64QAM	1	0	19.23	19.20	19.24	2
		1	7	19.17	19.04	19.19	2
		1	14	19.27	19.15	19.36	2
		8	0	18.08	18.05	18.05	3
		8	3	18.13	18.01	18.21	3
		8	7	18.01	18.01	18.08	3
		15	0	18.13	17.96	18.21	3

Band/BW	Modulation	RB Size	RB Offset	Low CH 18625	Mid CH 18900	High CH 19175	MPR
				Frequency 1852.5 MHz	Frequency 1880 MHz	Frequency 1907.5 MHz	
2 / 5	QPSK	1	0	21.09	21.03	21.13	0
		1	12	21.10	20.96	21.09	0
		1	24	20.98	20.91	21.06	0
		12	0	20.12	20.07	20.22	1
		12	6	20.06	20.07	20.11	1
		12	13	20.02	19.97	20.17	1
		25	0	20.17	20.13	20.22	1
	16QAM	1	0	20.30	20.29	20.38	1
		1	12	20.18	20.18	20.29	1
		1	24	20.26	20.19	20.35	1
		12	0	19.07	18.98	19.14	2
		12	6	19.11	19.14	19.20	2
		12	13	19.03	18.97	19.15	2
		25	0	19.12	19.02	19.12	2
	64QAM	1	0	19.17	19.17	19.30	2
		1	12	19.14	19.10	19.19	2
		1	24	19.20	19.20	19.36	2
		12	0	18.09	18.02	18.04	3
		12	6	18.07	18.08	18.20	3
		12	13	18.05	18.00	18.05	3
		25	0	18.09	18.02	18.19	3



Band/BW	Modulation	RB Size	RB Offset	Low CH 18650	Mid CH 18900	High CH 19150	MPR
				Frequency 1855 MHz	Frequency 1880 MHz	Frequency 1905 MHz	
2/ 10	QPSK	1	0	21.06	21.06	21.13	0
		1	24	21.10	20.96	21.10	0
		1	49	20.95	20.95	21.02	0
		25	0	20.13	20.06	20.25	1
		25	12	20.12	20.01	20.11	1
		25	25	20.00	19.94	20.16	1
		50	0	20.22	20.13	20.19	1
	16QAM	1	0	20.30	20.26	20.34	1
		1	24	20.23	20.14	20.32	1
		1	49	20.26	20.20	20.32	1
		25	0	19.09	18.96	19.20	2
		25	12	19.15	19.08	19.25	2
		25	25	19.02	18.98	19.12	2
		50	0	19.16	19.01	19.16	2
	64QAM	1	0	19.16	19.18	19.27	2
		1	24	19.19	19.06	19.23	2
		1	49	19.26	19.14	19.33	2
		25	0	18.07	17.99	18.10	3
		25	12	18.14	18.07	18.14	3
		25	25	18.04	17.97	18.07	3
		50	0	18.14	17.98	18.20	3



Band/BW	Modulation	RB Size	RB Offset	Low CH 18675	Mid CH 18900	High CH 19125	MPR
				Frequency 1857.5 MHz	Frequency 1880 MHz	Frequency 1902.5 MHz	
2/ 15	QPSK	1	0	21.13	21.06	21.10	0
		1	37	21.08	21.01	21.05	0
		1	74	21.01	20.98	21.03	0
		36	0	20.10	20.07	20.26	1
		36	19	20.13	20.06	20.11	1
		36	39	19.98	19.95	20.16	1
		75	0	20.22	20.11	20.24	1
	16QAM	1	0	20.34	20.33	20.34	1
		1	37	20.22	20.15	20.32	1
		1	74	20.22	20.25	20.34	1
		36	0	19.13	18.96	19.21	2
		36	19	19.09	19.12	19.21	2
		36	39	19.07	18.96	19.15	2
		75	0	19.17	19.04	19.09	2
	64QAM	1	0	19.18	19.19	19.28	2
		1	37	19.20	19.05	19.20	2
		1	74	19.22	19.13	19.36	2
		36	0	18.12	18.05	18.04	3
		36	19	18.08	18.01	18.16	3
		36	39	18.07	18.04	18.09	3
		75	0	18.13	17.96	18.21	3

Band/BW	Modulation	RB Size	RB Offset	Low CH 18700	Mid CH 18900	High CH 19100	MPR
				Frequency 1860 MHz	Frequency 1880 MHz	Frequency 1900 MHz	
2/ 20	QPSK	1	0	21.14	21.10	21.18	0
		1	50	21.12	21.04	21.11	0
		1	99	21.03	20.99	21.07	0
		50	0	20.16	20.12	20.27	1
		50	25	20.14	20.08	20.16	1
		50	50	20.06	20.02	20.18	1
		100	0	20.23	20.15	20.27	1
	16QAM	1	0	20.37	20.34	20.40	1
		1	50	20.26	20.20	20.34	1
		1	99	20.28	20.27	20.37	1
		50	0	19.15	19.04	19.22	2
		50	25	19.17	19.16	19.26	2
		50	50	19.10	19.02	19.17	2
		100	0	19.18	19.09	19.17	2
	64QAM	1	0	19.24	19.22	19.32	2
		1	50	19.22	19.12	19.25	2
		1	99	19.28	19.21	19.38	2
		50	0	18.13	18.07	18.12	3
		50	25	18.15	18.09	18.22	3
		50	50	18.09	18.05	18.13	3
		100	0	18.15	18.04	18.22	3

LTE BAND 25

Band/BW	Modulation	RB Size	RB Offset	Low CH 26047	Mid CH 26365	High CH 26683	MPR
				Frequency 1850.7 MHz	Frequency 1882.5 MHz	Frequency 1914.3 MHz	
25/ 1.4	QPSK	1	0	20.97	21.14	20.84	0
		1	2	20.87	21.01	20.77	0
		1	5	20.47	20.59	20.33	0
		3	0	20.82	20.97	20.82	0
		3	1	21.00	21.14	20.80	0
		3	3	20.84	20.98	20.80	0
		6	0	20.03	20.11	19.91	1
	16QAM	1	0	20.15	20.31	20.03	1
		1	2	20.14	20.23	20.07	1
		1	5	19.61	19.78	19.59	1
		3	0	19.85	19.94	19.76	1
		3	1	19.86	20.13	19.83	1
		3	3	19.92	20.04	19.87	1
		6	0	19.00	19.16	18.85	2
	64QAM	1	0	19.08	19.29	19.06	2
		1	2	18.95	19.12	18.86	2
		1	5	18.71	18.79	18.66	2
		3	0	18.83	19.00	18.67	2
		3	1	18.89	19.08	18.81	2
		3	3	18.89	19.03	18.82	2
		6	0	18.04	18.13	17.95	3



Band/BW	Modulation	RB Size	RB Offset	Low CH 26055	Mid CH 26365	High CH 26675	MPR
				Frequency 1851.5 MHz	Frequency 1882.5 MHz	Frequency 1913.5 MHz	
25/ 3	QPSK	1	0	20.99	21.16	20.83	0
		1	7	20.83	21.02	20.77	0
		1	14	20.43	20.59	20.33	0
		8	0	19.81	20.00	19.82	1
		8	3	19.93	20.14	19.82	1
		8	7	19.81	20.05	19.84	1
		15	0	20.00	20.12	19.85	1
	16QAM	1	0	20.12	20.37	20.06	1
		1	7	20.11	20.26	20.05	1
		1	14	19.64	19.78	19.59	1
		8	0	18.81	18.95	18.76	2
		8	3	18.91	19.08	18.86	2
		8	7	18.94	19.02	18.83	2
		15	0	19.00	19.10	18.88	2
	64QAM	1	0	19.14	19.32	19.00	2
		1	7	18.98	19.06	18.85	2
		1	14	18.72	18.81	18.66	2
		8	0	17.86	18.04	17.68	3
		8	3	17.93	18.02	17.86	3
		8	7	17.86	18.07	17.78	3
		15	0	18.06	18.10	17.99	3

Band/BW	Modulation	RB Size	RB Offset	Low CH 26065	Mid CH 26365	High CH 26665	MPR
				Frequency 1852.5 MHz	Frequency 1882.5 MHz	Frequency 1912.5 MHz	
25/ 5	QPSK	1	0	21.00	21.11	20.84	0
		1	12	20.88	20.99	20.77	0
		1	24	20.44	20.58	20.37	0
		12	0	19.84	20.00	19.79	1
		12	6	19.93	20.15	19.83	1
		12	13	19.85	20.01	19.85	1
		25	0	19.98	20.15	19.88	1
	16QAM	1	0	20.13	20.33	20.06	1
		1	12	20.08	20.29	20.04	1
		1	24	19.64	19.78	19.58	1
		12	0	18.81	18.93	18.73	2
		12	6	18.88	19.12	18.82	2
		12	13	18.89	19.04	18.86	2
		25	0	19.00	19.11	18.85	2
	64QAM	1	0	19.08	19.29	19.06	2
		1	12	18.95	19.12	18.85	2
		1	24	18.65	18.86	18.66	2
		12	0	17.87	18.01	17.67	3
		12	6	17.87	18.09	17.85	3
		12	13	17.90	18.06	17.75	3
		25	0	18.02	18.16	17.97	3



Band/BW	Modulation	RB Size	RB Offset	Low CH 26090	Mid CH 26365	High CH 26640	MPR
				Frequency 1855 MHz	Frequency 1882.5 MHz	Frequency 1910 MHz	
25/ 10	QPSK	1	0	20.97	21.14	20.84	0
		1	24	20.88	20.99	20.78	0
		1	49	20.41	20.62	20.33	0
		25	0	19.85	19.99	19.82	1
		25	12	19.99	20.09	19.83	1
		25	25	19.83	19.98	19.84	1
		50	0	20.03	20.15	19.85	1
	16QAM	1	0	20.13	20.30	20.02	1
		1	24	20.13	20.25	20.07	1
		1	49	19.64	19.79	19.55	1
		25	0	18.83	18.91	18.79	2
		25	12	18.92	19.06	18.87	2
		25	25	18.88	19.05	18.83	2
		50	0	19.04	19.10	18.89	2
	64QAM	1	0	19.07	19.30	19.03	2
		1	24	19.00	19.08	18.89	2
		1	49	18.71	18.80	18.63	2
		25	0	17.85	17.98	17.73	3
		25	12	17.94	18.08	17.79	3
		25	25	17.89	18.03	17.77	3
		50	0	18.07	18.12	17.98	3



**BUREAU
VERITAS**

Test Report No.: W7L-P21040030RF16

Band/BW	Modulation	RB Size	RB Offset	Low CH 26115	Mid CH 26365	High CH 26615	MPR
				Frequency 1857.5 MHz	Frequency 1882.5 MHz	Frequency 1907.5 MHz	
25/ 15	QPSK	1	0	21.04	21.14	20.81	0
		1	37	20.86	21.04	20.73	0
		1	74	20.47	20.65	20.34	0
		36	0	19.82	20.00	19.83	1
		36	19	20.00	20.14	19.83	1
		36	39	19.81	19.99	19.84	1
		75	0	20.03	20.13	19.90	1
	16QAM	1	0	20.17	20.37	20.02	1
		1	37	20.12	20.26	20.07	1
		1	74	19.60	19.84	19.57	1
		36	0	18.87	18.91	18.80	2
		36	19	18.86	19.10	18.83	2
		36	39	18.93	19.03	18.86	2
		75	0	19.05	19.13	18.82	2
	64QAM	1	0	19.09	19.31	19.04	2
		1	37	19.01	19.07	18.86	2
		1	74	18.67	18.79	18.66	2
		36	0	17.90	18.04	17.67	3
		36	19	17.88	18.02	17.81	3
		36	39	17.92	18.10	17.79	3
		75	0	18.06	18.10	17.99	3



Band/BW	Modulation	RB Size	RB Offset	Low CH 26140	Mid CH 26365	High CH 26590	MPR
				Frequency 1860 MHz	Frequency 1882.5 MHz	Frequency 1905 MHz	
25/ 20	QPSK	1	0	21.05	21.18	20.89	0
		1	50	20.90	21.07	20.79	0
		1	99	20.49	20.66	20.38	0
		50	0	19.88	20.05	19.84	1
		50	25	20.01	20.16	19.88	1
		50	50	19.89	20.06	19.86	1
		100	0	20.04	20.17	19.93	1
	16QAM	1	0	20.20	20.38	20.08	1
		1	50	20.16	20.31	20.09	1
		1	99	19.66	19.86	19.60	1
		50	0	18.89	18.99	18.81	2
		50	25	18.94	19.14	18.88	2
		50	50	18.96	19.09	18.88	2
		100	0	19.06	19.18	18.90	2
	64QAM	1	0	19.15	19.34	19.08	2
		1	50	19.03	19.14	18.91	2
		1	99	18.73	18.87	18.68	2
		50	0	17.91	18.06	17.75	3
		50	25	17.95	18.10	17.87	3
		50	50	17.94	18.11	17.83	3
		100	0	18.08	18.18	18.00	3



BUREAU
VERITAS

Test Report No.: W7L-P21040030RF16

EIRP POWER (dBm)

GSM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	29.27	2.67	31.94	1563.15	2
661	1880.0	29.37	2.67	32.04	1599.56	2
810	1909.8	29.4	2.67	32.07	1610.65	2

EDGE

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
512	1850.2	25.77	2.67	28.44	698.23	2
661	1880.0	25.77	2.67	28.44	698.23	2
810	1909.8	25.87	2.67	28.54	714.5	2

WCDMA

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
9662	1852.4	21.71	2.67	24.38	274.16	2
9800	1880	21.5	2.67	24.17	261.22	2
9938	1907.6	21.73	2.67	24.4	275.42	2



LTE BAND 2

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	20.32	2.67	22.99	199.07	2
18900	1880.0	20.27	2.67	22.94	196.79	2
19193	1908.3	20.36	2.67	23.03	200.91	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	20.32	2.67	22.99	199.07	2
18900	1880.0	20.27	2.67	22.94	196.79	2
19193	1908.3	20.36	2.67	23.03	200.91	2

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	19.26	2.67	21.93	155.96	2
18900	1880.0	19.17	2.67	21.84	152.76	2
19193	1908.3	19.36	2.67	22.03	159.59	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.08	2.67	23.75	237.14	2
18900	1880.0	21.08	2.67	23.75	237.14	2
19185	1908.5	21.12	2.67	23.79	239.33	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	20.29	2.67	22.96	197.7	2
18900	1880.0	20.33	2.67	23	199.53	2
19185	1908.5	20.38	2.67	23.05	201.84	2

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	19.27	2.67	21.94	156.31	2
18900	1880.0	19.2	2.67	21.87	153.82	2
19185	1908.5	19.36	2.67	22.03	159.59	2



BUREAU
VERITAS

Test Report No.: W7L-P21040030RF16

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.1	2.67	23.77	238.23	2
18900	1880.0	21.03	2.67	23.7	234.42	2
19175	1907.5	21.13	2.67	23.8	239.88	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	20.3	2.67	22.97	198.15	2
18900	1880.0	20.29	2.67	22.96	197.7	2
19175	1907.5	20.38	2.67	23.05	201.84	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	19.2	2.67	21.87	153.82	2
18900	1880.0	19.2	2.67	21.87	153.82	2
19175	1907.5	19.36	2.67	22.03	159.59	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	21.1	2.67	23.77	238.23	2
18900	1880.0	21.06	2.67	23.73	236.05	2
19150	1905.0	21.13	2.67	23.8	239.88	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	20.3	2.67	22.97	198.15	2
18900	1880.0	20.26	2.67	22.93	196.34	2
19150	1905.0	20.34	2.67	23.01	199.99	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855.0	19.26	2.67	21.93	155.96	2
18900	1880.0	19.18	2.67	21.85	153.11	2
19150	1905.0	19.33	2.67	22	158.49	2



CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.13	2.67	23.8	239.88	2
18900	1880.0	21.06	2.67	23.73	236.05	2
19125	1902.5	21.1	2.67	23.77	238.23	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	20.34	2.67	23.01	199.99	2
18900	1880.0	20.33	2.67	23	199.53	2
19125	1902.5	20.34	2.67	23.01	199.99	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	19.22	2.67	21.89	154.53	2
18900	1880.0	19.19	2.67	21.86	153.46	2
19125	1902.5	19.36	2.67	22.03	159.59	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.14	2.67	23.81	240.44	2
18900	1880	21.1	2.67	23.77	238.23	2
19100	1900	21.18	2.67	23.85	242.66	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	20.37	2.67	23.04	201.37	2
18900	1880	20.34	2.67	23.01	199.99	2
19100	1900	20.4	2.67	23.07	202.77	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	19.28	2.67	21.95	156.68	2
18900	1880	19.22	2.67	21.89	154.53	2
19100	1900	19.38	2.67	22.05	160.32	2

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 25

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	21	2.67	23.67	232.81	2
26365	1882.5	21.14	2.67	23.81	240.44	2
26683	1914.3	20.84	2.67	23.51	224.39	2

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	20.15	2.67	22.82	191.43	2
26365	1882.5	20.31	2.67	22.98	198.61	2
26683	1914.3	20.07	2.67	22.74	187.93	2

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	19.08	2.67	21.75	149.62	2
26365	1882.5	19.29	2.67	21.96	157.04	2
26683	1914.3	19.06	2.67	21.73	148.94	2

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	20.99	2.67	23.66	232.27	2
26365	1882.5	21.16	2.67	23.83	241.55	2
26675	1913.5	20.83	2.67	23.5	223.87	2

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	20.12	2.67	22.79	190.11	2
26365	1882.5	20.37	2.67	23.04	201.37	2
26675	1913.5	20.06	2.67	22.73	187.5	2

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1851.5	19.14	2.67	21.81	151.71	2
26365	1882.5	19.32	2.67	21.99	158.12	2
26683	1913.5	19.00	2.67	21.67	146.89	2



BUREAU
VERITAS

Test Report No.: W7L-P21040030RF16

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	21	2.67	23.67	232.81	2
26365	1882.5	21.11	2.67	23.78	238.78	2
26665	1912.5	20.84	2.67	23.51	224.39	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	20.13	2.67	22.8	190.55	2
26365	1882.5	20.33	2.67	23.00	199.53	2
26665	1912.5	20.06	2.67	22.73	187.5	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	19.08	2.67	21.75	149.62	2
26365	1882.5	19.29	2.67	21.96	157.04	2
26665	1912.5	19.06	2.67	21.73	148.94	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	20.97	2.67	23.64	231.21	2
26365	1882.5	21.14	2.67	23.81	240.44	2
26640	1910	20.84	2.67	23.51	224.39	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	20.13	2.67	22.8	190.55	2
26365	1882.5	20.3	2.67	22.97	198.15	2
26640	1910	20.07	2.67	22.74	187.93	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	19.07	2.67	21.74	149.28	2
26365	1882.5	19.3	2.67	21.97	157.4	2
26640	1910	19.03	2.67	21.7	147.91	2



CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	21.04	2.67	23.71	234.96	2
26365	1882.5	21.14	2.67	23.81	240.44	2
26615	1907.5	20.81	2.67	23.48	222.84	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	20.17	2.67	22.84	192.31	2
26365	1882.5	20.37	2.67	23.04	201.37	2
26615	1907.5	20.07	2.67	22.74	187.93	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-Lc} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	19.09	2.67	21.76	149.97	2
26365	1882.5	19.31	2.67	21.98	157.76	2
26615	1907.5	19.04	2.67	21.71	148.25	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-LC} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	21.05	2.67	23.72	235.5	2
26365	1882.5	21.18	2.67	23.85	242.66	2
26590	1905	20.89	2.67	23.56	226.99	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-LC} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	20.2	2.67	22.87	193.64	2
26365	1882.5	20.38	2.67	23.05	201.84	2
26590	1905	20.09	2.67	22.76	188.8	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _{T-LC} (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	19.15	2.67	21.82	152.05	2
26365	1882.5	19.34	2.67	22.01	158.85	2
26590	1905	19.08	2.67	21.75	149.62	2



3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

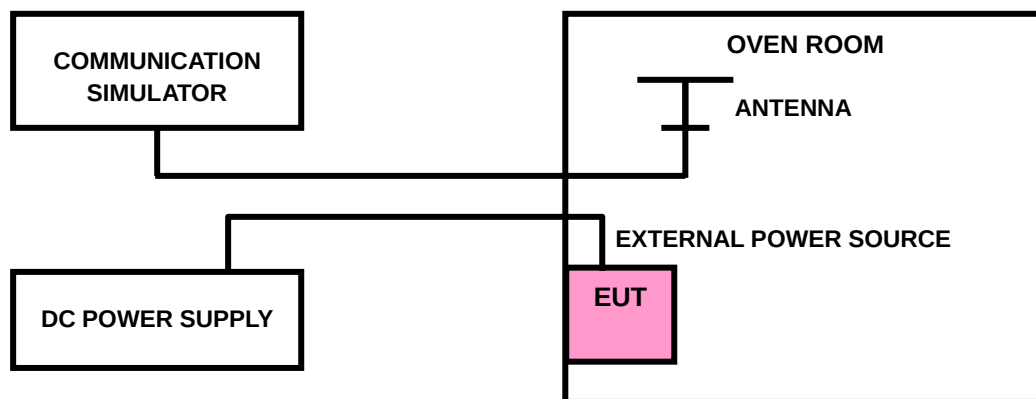
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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}	0.0002	0.0013	2.5
V_{min}	-0.0015	-0.0016	2.5
V_{max}	0.0010	0.0007	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	-0.0034	-0.0037	2.5
-20	-0.0031	-0.0035	2.5
-10	-0.0034	-0.0032	2.5
0	-0.0012	-0.0039	2.5
10	-0.0021	-0.0026	2.5
20	-0.0015	-0.0024	2.5
30	-0.0019	-0.0016	2.5
40	-0.0014	-0.0010	2.5
50	-0.0023	-0.0003	2.5

**EDGE 1900****FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0008	0.0011	2.5
V_{min}	-0.0014	-0.0013	2.5
V_{max}	0.0009	0.0009	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	-0.0038	-0.0035	2.5
-20	-0.0037	-0.0034	2.5
-10	-0.0031	-0.0030	2.5
0	-0.0035	-0.0032	2.5
10	-0.0021	-0.0019	2.5
20	-0.0018	-0.0017	2.5
30	-0.0013	-0.0012	2.5
40	-0.0009	-0.0009	2.5
50	-0.0001	-0.0001	2.5

**WCDMA BAND II****FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	Low Channel	High Channel	
V_{nor}	0.0014	0.0011	2.5
V_{min}	0.0007	0.0009	2.5
V_{max}	0.0028	0.0015	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	-0.0035	-0.0032	2.5
-20	-0.0037	-0.0034	2.5
-10	-0.0029	-0.0036	2.5
0	-0.0016	-0.0019	2.5
10	0.0004	0.0005	2.5
20	0.0012	0.0013	2.5
30	0.0027	0.0026	2.5
40	0.0018	0.0042	2.5
50	0.0022	0.0026	2.5

**LTE BAND 2****FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.002	0.0024	2.5
V _{min}	-0.0031	-0.003	2.5
V _{max}	0.0022	0.0021	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)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0084	-0.0081	2.5
-20	-0.0081	-0.0075	2.5
-10	-0.0074	-0.0078	2.5
0	-0.0074	-0.0076	2.5
10	-0.0046	-0.0053	2.5
20	-0.004	-0.0039	2.5
30	-0.0032	-0.0032	2.5
40	-0.0016	-0.0019	2.5
50	-0.0002	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0022	0.0021	2.5
V _{min}	-0.0021	-0.0025	2.5
V _{max}	0.0018	0.0018	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)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0082	-0.0084	2.5
-20	-0.0074	-0.0068	2.5
-10	-0.0070	-0.0083	2.5
0	-0.0078	-0.0073	2.5
10	-0.0054	-0.0045	2.5
20	-0.0044	-0.0043	2.5
30	-0.0033	-0.0041	2.5
40	-0.0022	-0.0018	2.5
50	-0.0002	-0.0005	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0022	0.0026	2.5
V _{min}	-0.0024	-0.003	2.5
V _{max}	0.0021	0.0021	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)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0085	-0.0081	2.5
-20	-0.0074	-0.0081	2.5
-10	-0.0082	-0.0082	2.5
0	-0.0075	-0.0076	2.5
10	-0.0045	-0.0051	2.5
20	-0.0044	-0.0038	2.5
30	-0.004	-0.0038	2.5
40	-0.0018	-0.0015	2.5
50	-0.0004	-0.0005	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0024	0.0025	2.5
V _{min}	-0.0031	-0.003	2.5
V _{max}	0.0025	0.0025	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)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0085	-0.0082	2.5
-20	-0.0080	-0.0073	2.5
-10	-0.0081	-0.0072	2.5
0	-0.0074	-0.0074	2.5
10	-0.0045	-0.0047	2.5
20	-0.0044	-0.0037	2.5
30	-0.0026	-0.0037	2.5
40	-0.0019	-0.0014	2.5
50	-0.0002	-0.0005	2.5



FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0025	2.5
V _{min}	-0.0031	-0.003	2.5
V _{max}	0.0026	0.0025	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)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0084	-0.008	2.5
-20	-0.0069	-0.007	2.5
-10	-0.0083	-0.008	2.5
0	-0.0074	-0.0073	2.5
10	-0.0049	-0.0045	2.5
20	-0.0043	-0.0043	2.5
30	-0.0029	-0.0032	2.5
40	-0.0018	-0.0019	2.5
50	-0.0005	-0.0005	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0026	0.0026	2.5
V _{min}	-0.0031	-0.003	2.5
V _{max}	0.0024	0.0026	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)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0085	-0.0083	2.5
-20	-0.0071	-0.0080	2.5
-10	-0.0084	-0.0081	2.5
0	-0.0074	-0.0075	2.5
10	-0.0051	-0.0055	2.5
20	-0.0039	-0.004	2.5
30	-0.0031	-0.0032	2.5
40	-0.0018	-0.0022	2.5
50	-0.0003	-0.0005	2.5



LTE BAND 25

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0009	0.0011	2.5
V _{min}	-0.0014	-0.0013	2.5
V _{max}	0.001	0.0009	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)	1.4MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0037	2.5
-20	-0.0033	-0.0031	2.5
-10	-0.0037	-0.0035	2.5
0	-0.0035	-0.0034	2.5
10	-0.0021	-0.0022	2.5
20	-0.0018	-0.0019	2.5
30	-0.0014	-0.0019	2.5
40	-0.0007	-0.0009	2.5
50	-0.0001	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.001	0.0009	2.5
V _{min}	-0.0009	-0.0011	2.5
V _{max}	0.0008	0.0008	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)	3MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0037	-0.0036	2.5
-20	-0.0035	-0.0037	2.5
-10	-0.0034	-0.0030	2.5
0	-0.0035	-0.0033	2.5
10	-0.0021	-0.0023	2.5
20	-0.0019	-0.0019	2.5
30	-0.0015	-0.0011	2.5
40	-0.0008	-0.001	2.5
50	-0.0002	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.001	0.0011	2.5
V _{min}	-0.001	-0.0013	2.5
V _{max}	0.0009	0.0009	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)	5MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0035	2.5
-20	-0.0029	-0.0036	2.5
-10	-0.0035	-0.0031	2.5
0	-0.0033	-0.0032	2.5
10	-0.0024	-0.0024	2.5
20	-0.002	-0.0017	2.5
30	-0.0017	-0.0012	2.5
40	-0.001	-0.001	2.5
50	-0.0002	-0.0002	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0011	0.001	2.5
V _{min}	-0.0014	-0.0013	2.5
V _{max}	0.0011	0.001	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)	10MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0036	2.5
-20	-0.0039	-0.0035	2.5
-10	-0.0037	-0.0033	2.5
0	-0.0034	-0.0033	2.5
10	-0.0025	-0.0024	2.5
20	-0.0018	-0.0018	2.5
30	-0.0017	-0.0015	2.5
40	-0.0008	-0.0009	2.5
50	-0.0001	-0.0002	2.5

**FREQUENCY ERROR VS. VOLTAGE**

VOLTAGE (Volts)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0011	0.0011	2.5
V _{min}	-0.0014	-0.0013	2.5
V _{max}	0.0012	0.001	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)	15MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0037	2.5
-20	-0.0035	-0.0033	2.5
-10	-0.0039	-0.0034	2.5
0	-0.0034	-0.0033	2.5
10	-0.0024	-0.002	2.5
20	-0.0018	-0.0017	2.5
30	-0.0012	-0.0017	2.5
40	-0.0009	-0.0007	2.5
50	-0.0001	-0.0001	2.5

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
V _{nor}	0.0011	0.0011	2.5
V _{min}	-0.0014	-0.0013	2.5
V _{max}	0.0012	0.0011	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)	20MHz		LIMIT (ppm)
	FREQUENCY ERROR (ppm)		
	Low Channel	High Channel	
-30	-0.0038	-0.0036	2.5
-20	-0.0036	-0.0034	2.5
-10	-0.0032	-0.0037	2.5
0	-0.0034	-0.0032	2.5
10	-0.0022	-0.0024	2.5
20	-0.0017	-0.0017	2.5
30	-0.0016	-0.0013	2.5
40	-0.001	-0.001	2.5
50	-0.0001	-0.0001	2.5

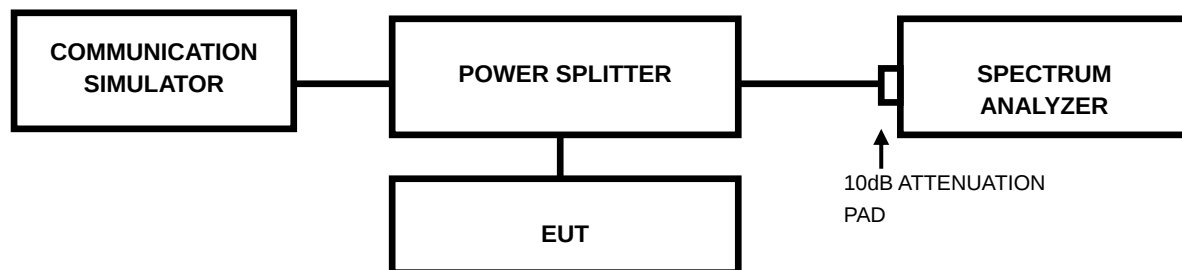


3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 TEST PROCEDURES

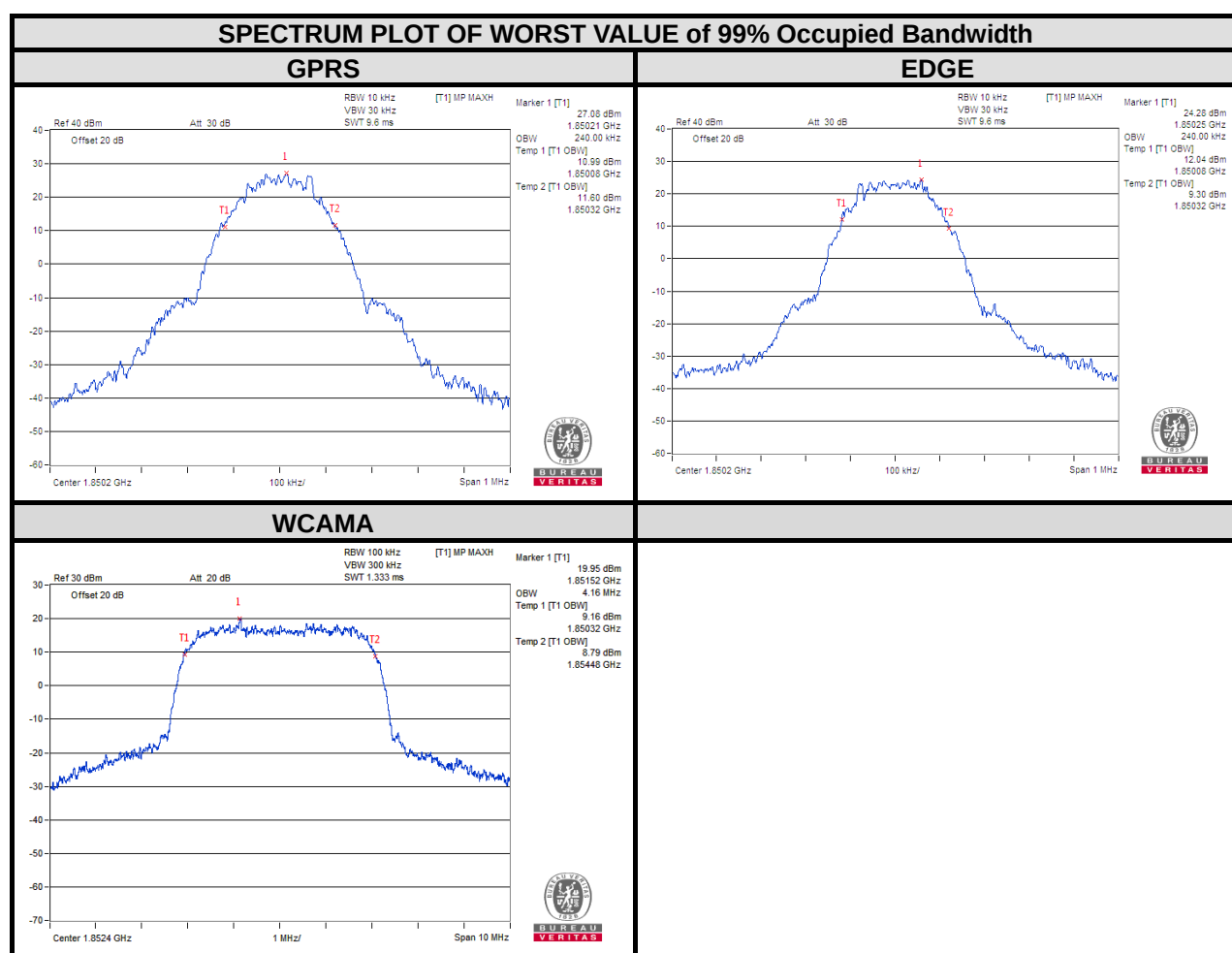
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function 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 (kHz)
		GPRS	EDGE			WCAMA
512	1850.2	240.000	240.000	9262	1852.4	4.160
661	1880.0	240.000	240.000	9400	1880.0	4.160
810	1909.8	240.000	240.000	9538	1907.6	4.160

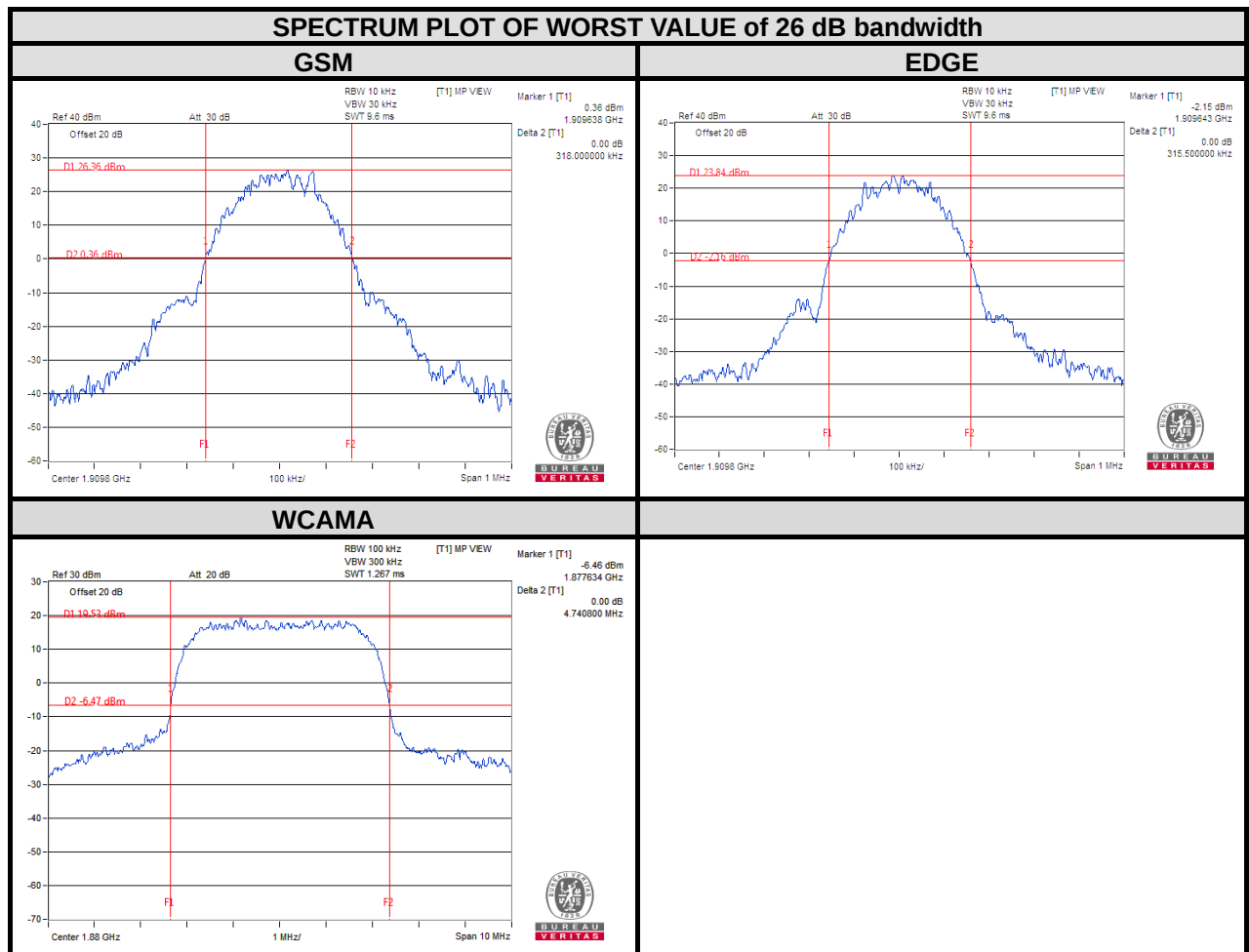




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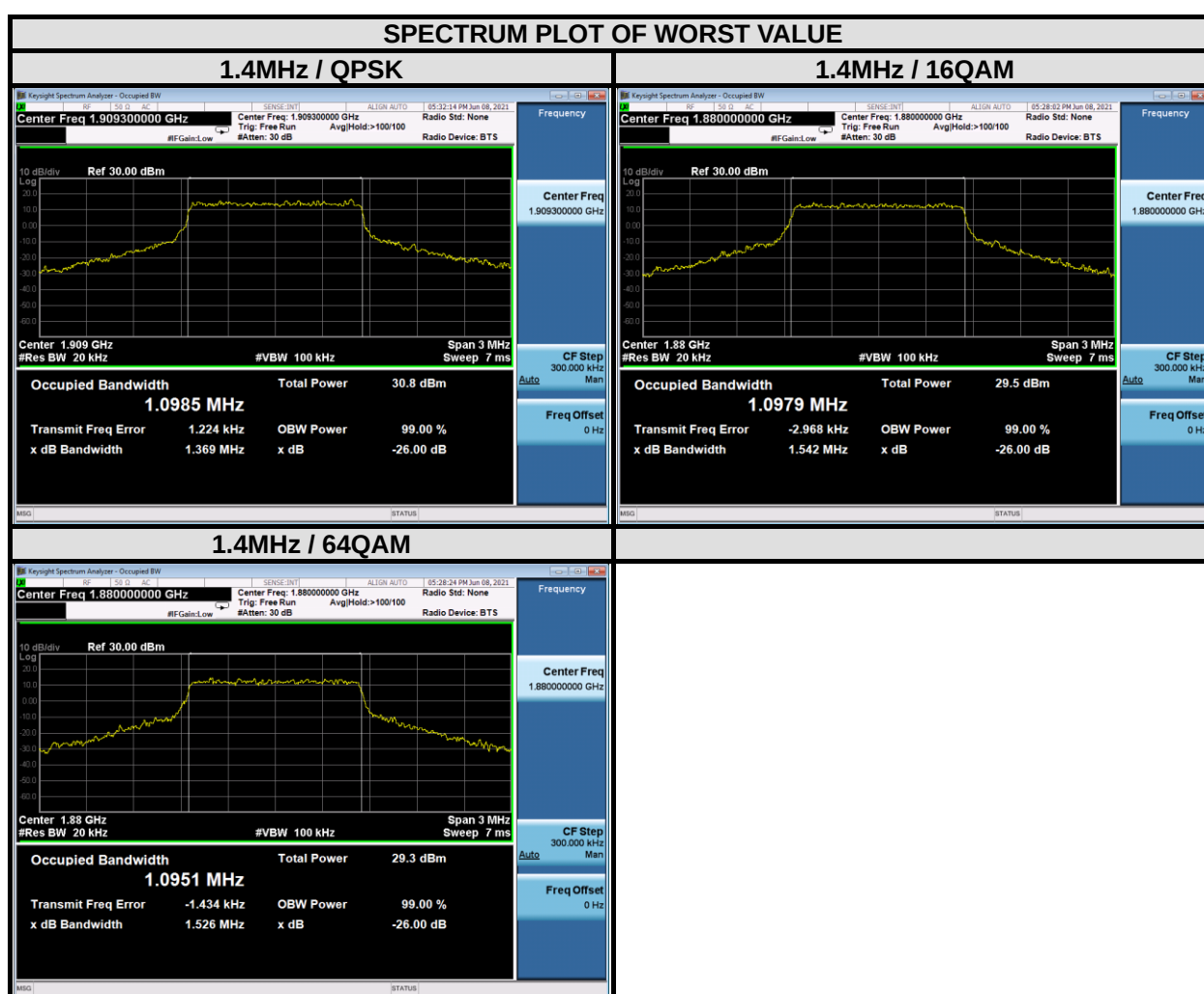
Test Report No.: W7L-P21040030RF16

Channel	Frequency (MHz)	26dB bandwidth (MHz)		Channel	Frequency (MHz)	26dB bandwidth (MHz)
		GPRS	EDGE			WCAMA
512	1850.2	320.600	317.700	9262	1852.4	4.755
661	1880.0	326.000	316.300	9400	1880.0	4.741
810	1909.8	318.000	315.500	9538	1907.6	4.743



LTE BAND 2

LTE band 2							
CHANNEL BANDWIDTH: 1.4MHz							
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)			26dB BANDWIDTH (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
18607	1850.7	1.10	1.09	1.09	1.45	1.42	1.36
18900	1880	1.09	1.10	1.10	1.47	1.54	1.53
19193	1909.3	1.10	1.09	1.09	1.37	1.43	1.38





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Test Report No.: W7L-P21040030RF16

CHANNEL BANDWIDTH: 3MHz							
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)			26 dB bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
18615	1851.5	2.69	2.69	2.69	2.93	2.96	2.98
18900	1880	2.69	2.69	2.69	2.97	2.96	2.96
19185	1908.5	2.69	2.69	2.68	2.98	2.95	2.94





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VERITAS

Test Report No.: W7L-P21040030RF16

CHANNEL BANDWIDTH: 5MHz							
CHANNEL	Frequency (MHz)	99% OCCUPIED Bandwidth (MHz)			26 dB bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
18625	1852.5	4.48	4.47	4.47	4.94	4.85	4.89
18900	1880	4.47	4.48	4.48	4.91	4.97	4.94
19175	1907.5	4.49	4.48	4.47	4.91	4.98	4.96

