

# FCC Test Report

## (Part 27: LTE Band 4)

**Report No.:** RF200513C20-1

**FCC ID:** H8NSFE3056

**Test Model:** SS2FII Femtocell Multi-band SOHO

**Received Date:** May 13, 2020

**Test Date:** Jun. 02 ~ Jun. 05, 2020 (LTE Band 4 mode)  
Jul. 10 ~ Jul. 15, 2020 (LTE Band 4 NB-IoT Guard band mode)

**Issued Date:** Jul. 16, 2020

**Applicant:** ASKEY COMPUTER CORP.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**



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### Release Control Record

Issue No.	Description	Date Issued
RF200513C20-1	Original release	Jul. 16, 2020

## 1 Certificate of Conformity

**Product:** Femtocell

**Brand:** Nokia

**Test Model:** SS2FII Femtocell Multi-band SOHO

**Sample Status:** Engineering sample

**Applicant:** ASKEY COMPUTER CORP.

**Test Date:** Jun. 02 ~ Jun. 05, 2020 (LTE Band 4 mode)  
Jul. 10 ~ Jul. 15, 2020 (LTE Band 4 NB-IoT Guard band mode)

**Standards:** FCC Part 27, Subpart C  
FCC Part 2

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Pettie Chen , **Date:** Jul. 16, 2020  
Pettie Chen / Senior Specialist

**Approved by :** Bruce Chen , **Date:** Jul. 16, 2020  
Bruce Chen / Senior Project Engineer

## 2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
LTE Band 4			
2.1046 27.50(d)(2)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	Pass	Meet the requirement
2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	Pass	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -24.0dB at 4300.00MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 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	Expanded Uncertainty (k=2) ( $\pm$ )
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

## 2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 23, 2019	Sep. 22, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019 Jul. 06, 2020	Jun. 30, 2020 Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jul. 11, 2019 Jun. 08, 2020	Jul. 10, 2020 Jun. 07, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 18, 2020	Feb. 17, 2021
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 18, 2020	Jan. 17, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jul. 11, 2019 Jan. 18, 2020	Jul. 10, 2020 Jan. 17, 2021
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 30, 2019	Jul. 29, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 01, 2020	May 31, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
Digital Multimeter Fluke	87-III	70360755	Jul. 12, 2019 Jul. 10, 2020	Jul. 11, 2020 Jul. 09, 2021
Radio Communication Analyzer	MT8821C	6261786083	Jan. 18, 2020	Jan. 17, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 9.

### 3 General Information

#### 3.1 General Description of EUT

Product	Femtocell				
Brand	Nokia				
Test Model	SS2FII Femtocell Multi-band SOHO				
Status of EUT	Engineering sample				
Power Supply Rating	12Vdc (Adapter)				
Modulation Type	QPSK, 16QAM, 64QAM				
Operating Frequency	LTE Band 4	Channel Bandwidth 5MHz	2112.5MHz ~ 2152.5MHz		
		Channel Bandwidth 10MHz	2115.0MHz ~ 2150.0MHz		
		Channel Bandwidth 15MHz	2117.5MHz ~ 2147.5MHz		
		Channel Bandwidth 20MHz	2120.0MHz ~ 2145.0MHz		
	LTE Band 4 NB-IoT Guard band	Channel Bandwidth 10MHz	2115.0MHz ~ 2150.0MHz		
		Channel Bandwidth 15MHz	2117.5MHz ~ 2147.5MHz		
		Channel Bandwidth 20MHz	2120.0MHz ~ 2145.0MHz		
Max. EIRP Power	LTE Band 4		QPSK	16QAM	64QAM
		Channel Bandwidth 5MHz	562.341mW (27.5dBm)	467.735mW (26.7dBm)	416.869mW (26.2dBm)
		Channel Bandwidth 10MHz	537.032mW (27.3dBm)	436.516mW (26.4dBm)	398.107mW (26.0dBm)
		Channel Bandwidth 15MHz	575.440mW (27.6dBm)	446.684mW (26.5dBm)	398.107mW (26.0dBm)
		Channel Bandwidth 20MHz	588.844mW (27.7dBm)	478.630mW (26.8dBm)	416.869mW (26.2dBm)
	LTE Band 4 NB-IoT Guard band		QPSK	16QAM	64QAM
		Channel Bandwidth 10MHz	562.341mW (27.5dBm)	467.735mW (26.7dBm)	416.869mW (26.2dBm)
		Channel Bandwidth 15MHz	602.560mW (27.8dBm)	467.735mW (26.7dBm)	426.580mW (26.3dBm)
		Channel Bandwidth 20MHz	630.957mW (28.0dBm)	489.779mW (26.9dBm)	436.516mW (26.4dBm)
			QPSK	16QAM	64QAM
Emission Designator	LTE Band 4		QPSK	16QAM	64QAM
		Channel Bandwidth 5MHz	4M43G7D	4M43W7D	4M43W7D
		Channel Bandwidth 10MHz	8M91G7D	8M91W7D	8M91W7D
		Channel Bandwidth 15MHz	13M3G7D	13M3W7D	13M3W7D
	LTE Band 4 NB-IoT Guard band	Channel Bandwidth 20MHz	17M9G7D	17M9W7D	17M9W7D
			QPSK	16QAM	64QAM
		Channel Bandwidth 10MHz	9M35G7D	9M34W7D	9M36W7D
		Channel Bandwidth 15MHz	13M8G7D	13M8W7D	13M8W7D
		Channel Bandwidth 20MHz	18M4G7D	18M4W7D	18M4W7D
Antenna Type	LTE Band 4: Antenna 1: PIFA antenna with 3.1dBi gain Antenna 3: PIFA antenna with 2.6dBi gain				
Antenna Connector	NA				
Accessory Device	Adapter, GPS antenna (Brand: INPAQ, model: GPSGLONASS15D-S6-0341-A, cable: 4.55m non-shielded cable w/o core)				
Data Cable Supplied	2.95m non-shielded RJ45 cable w/o core				



Note:

1. The EUT uses following adapters.

Adapter 1	
Brand	Asian Power Devices Inc.
Model	WB-24J12FU
Input Power	100-240Vac~50-60Hz 0.7A Max.
Output Power	12Vdc / 2A
Power Line	1.5m DC cable without core attached on adapter

Adapter 2	
Brand	AOEM
Model	ADS0248T-W120200(H)
Input Power	100-240Vac~50-60Hz 0.6A
Output Power	12Vdc / 2.0A
Power Line	1.5m DC cable without core attached on adapter

Adapter 3	
Brand	ChenZhou Frecom electronics Co., Ltd.
Model	F24L9-120200SPAU
Input Power	100-240Vac~50/60Hz 0.6A
Output Power	12Vdc / 2A
Power Line	1.5m DC cable without core attached on adapter

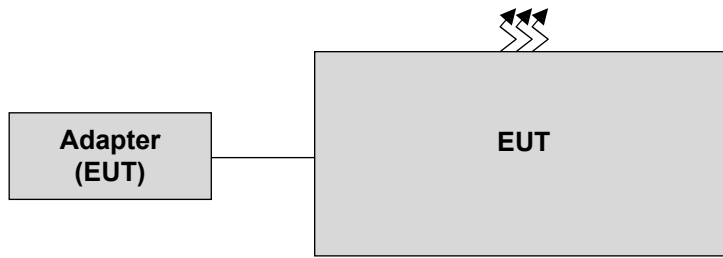
\*After pre-testing, adapter 1 was the worst case for the final tests.

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
3. The EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX FUNCTION	RX FUNCTION
LTE Band 4	2TX	2RX
LTE Band 4 NB-IoT Guard band	1TX (Fixed on chain 0)	1RX

4. Carrier Aggregation technology supported for this device, the operation behavior is LTE Band 2 + LTE Band 4, for more details information please refer to "CA Mode" of test report.

### 3.2 Configuration of System under Test



Remote site



#### 3.2.1 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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Radio Communication Analyzer	Anritsu	MT8821C	6261786083	NA	-

Note: All power cords of the above support units are non-shielded (1.8m).

### 3.3 Test Mode Applicability and Tested Channel Detail

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 was found when positioned on X-plane. Following channel(s) was (were) selected for the final test as listed below:

#### LTE Band 4

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Output Power	1975 to 2375	1975(2112.5MHz), 2175(2132.5MHz), 2375(2152.5MHz)	5MHz	QPSK / 16QAM / 64QAM
	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM
Modulation characteristics	2000 to 2350	2000(2115.0MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
Frequency Stability	1975 to 2375	1975(2112.5MHz), 2375(2152.5MHz)	5MHz	QPSK
	2000 to 2350	2000(2115.0MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2300(2145.0MHz)	20MHz	QPSK
Emission Bandwidth	1975 to 2375	1975(2112.5MHz), 2175(2132.5MHz), 2375(2152.5MHz)	5MHz	QPSK / 16QAM / 64QAM
	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM
Channel Edge	1975 to 2375	1975(2112.5MHz), 2375(2152.5MHz)	5MHz	QPSK
	2000 to 2350	2000(2115.0MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2300(2145.0MHz)	20MHz	QPSK
Peak To Average Ratio	1975 to 2375	1975(2112.5MHz), 2175(2132.5MHz), 2375(2152.5MHz)	5MHz	QPSK / 16QAM / 64QAM
	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Conducted Emission	1975 to 2375	1975(2112.5MHz), 2175(2132.5MHz), 2375(2152.5MHz)	5MHz	QPSK
	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK
Radiated Emission Below 1GHz	1975 to 2375	2375(2152.5MHz)	5MHz	QPSK
	2050 to 2300	2050(2120.0MHz)	20MHz	QPSK
Radiated Emission Above 1GHz	1975 to 2375	1975(2112.5MHz), 2175(2132.5MHz), 2375(2152.5MHz)	5MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK

**Note:**

1. The conducted output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM and 64QAM mode. Therefore, Frequency Stability, Channel edge, Conducted Emission, Radiated Emission were presented under QPSK mode only.

**LTE Band 4 NB-IoT Guard band**

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Output Power	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM
Frequency Stability	2000 to 2350	2000(2115.0MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2300(2145.0MHz)	20MHz	QPSK
Emission Bandwidth	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM
Channel Edge	2000 to 2350	2000(2115.0MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2300(2145.0MHz)	20MHz	QPSK
Peak To Average Ratio	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK / 16QAM / 64QAM
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK / 16QAM / 64QAM
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK / 16QAM / 64QAM
Conducted Emission	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK
Radiated Emission Below 1GHz	2000 to 2350	2000(2115.0MHz)	10MHz	QPSK
Radiated Emission Above 1GHz	2000 to 2350	2000(2115.0MHz), 2175(2132.5MHz), 2350(2150.0MHz)	10MHz	QPSK
	2025 to 2325	2025(2117.5MHz), 2175(2132.5MHz), 2325(2147.5MHz)	15MHz	QPSK
	2050 to 2300	2050(2120.0MHz), 2175(2132.5MHz), 2300(2145.0MHz)	20MHz	QPSK

**Note:**

1. The conducted output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM and 64QAM mode. Therefore, Frequency Stability, Channel edge, Conducted Emission, Radiated Emission were presented under QPSK mode only.

**Test Condition:**

Test Item	Environmental Conditions	Input Power	Tested By
Output Power	22deg. C, 66%RH	120Vac, 60Hz	Han Wu Greg Lin
Modulation characteristics	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Frequency Stability	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Emission Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Channel Edge	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Radiated Emission	22deg. C, 66%RH	120Vac, 60Hz	Han Wu Greg Lin

**3.4 EUT Operating Conditions**

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

**3.5 General Description of Applied Standards and References**

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

**Test Standard:**

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

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

**References Test Guidance:**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**KDB 412172 D01 Determining ERP and EIRP v01r01**

**KDB 662911 D01 multiple transmitter output v02r01**

**ANSI/TIA/EIA-603-E 2016**

All test items have been performed as a reference to the above KDB test guidance.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

The radiated peak output power shall be according to the specific rule Part 27.50(d)(2) that are limited to EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

#### 4.1.2 Test Procedures

##### **EIRP / ERP Measurement:**

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz and 3MHz for WCDMA, 3MHz and 10MHz for LTE.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dBi}$ .

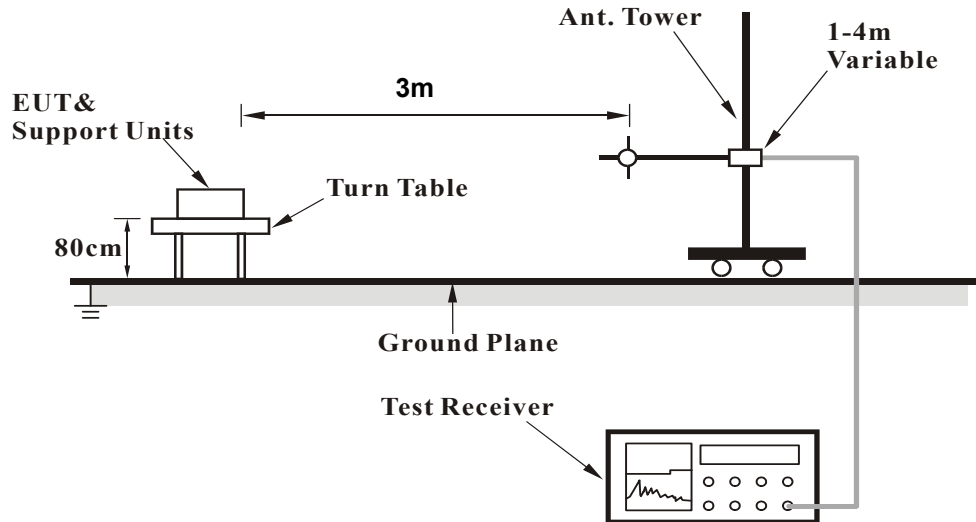
##### **Conducted Power Measurement:**

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

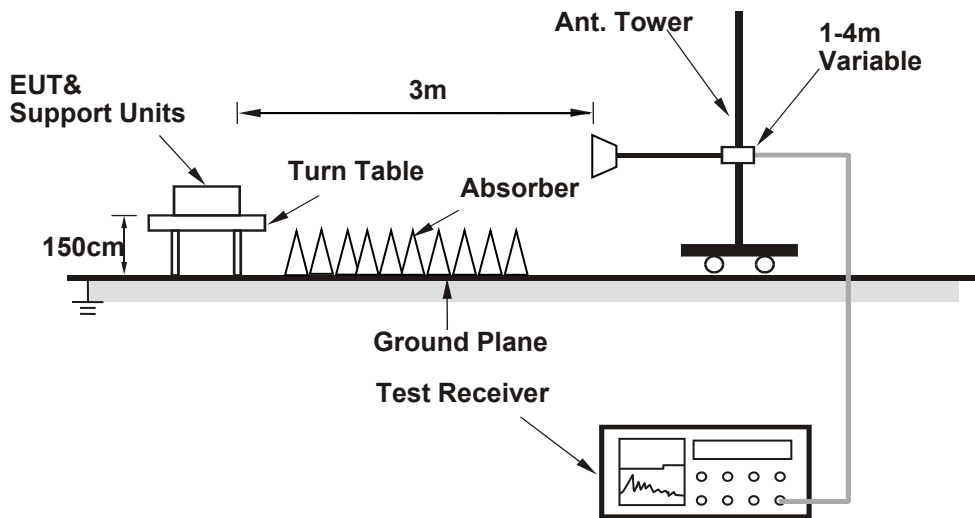
### 4.1.3 Test Setup

EIRP / ERP MEASUREMENT:

**For Radiated Emission below or equal 1GHz**

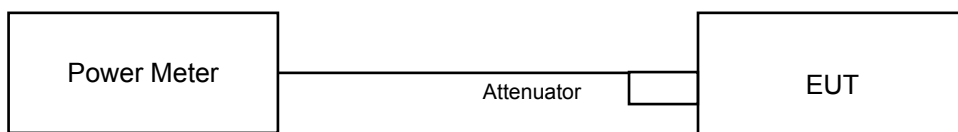


**For Radiated Emission above 1GHz**



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

CONDUCTED POWER MEASUREMENT:



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



#### 4.1.4 Test Results

##### CONDUCTED OUTPUT POWER (dBm)

##### LTE Band 4

Band	BW	Chain	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			1975	2175	2375	1975	2175	2375	1975	2175	2375
			2112.5 MHz	2132.5 MHz	2152.5 MHz	2112.5 MHz	2132.5 MHz	2152.5 MHz	2112.5 MHz	2132.5 MHz	2152.5 MHz
LTE Band 4	5M	0	19.88	20.47	20.53	19.54	20.17	19.82	19.45	19.60	19.31
		1	20.25	20.76	20.29	19.85	19.95	19.88	19.57	19.25	19.45
		Total	23.08	23.63	23.42	22.71	23.07	22.86	22.52	22.44	22.39

Band	BW	Chain	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			2000	2175	2350	2000	2175	2350	2000	2175	2350
			2115 MHz	2132.5 MHz	2150 MHz	2115 MHz	2132.5 MHz	2150 MHz	2115 MHz	2132.5 MHz	2150 MHz
LTE Band 4	10M	0	20.48	20.79	20.33	20.24	20.11	19.65	19.61	19.85	19.48
		1	20.61	20.63	20.49	19.97	20.26	19.88	19.49	19.77	19.57
		Total	23.56	23.72	23.42	23.12	23.20	22.78	22.56	22.82	22.54

Band	BW	Chain	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			2025	2175	2325	2025	2175	2325	2025	2175	2325
			2117.5 MHz	2132.5 MHz	2147.5 MHz	2117.5 MHz	2132.5 MHz	2147.5 MHz	2117.5 MHz	2132.5 MHz	2147.5 MHz
LTE Band 4	15M	0	20.44	20.37	20.55	20.13	20.02	19.89	19.71	19.47	19.44
		1	20.86	20.79	20.49	20.28	20.08	20.07	19.85	19.62	19.55
		Total	23.67	23.60	23.53	23.22	23.06	22.99	22.79	22.56	22.51

Band	BW	Chain	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			2050	2175	2300	2050	2175	2300	2050	2175	2300
			2120 MHz	2132.5 MHz	2145 MHz	2120 MHz	2132.5 MHz	2145 MHz	2120 MHz	2132.5 MHz	2145 MHz
LTE Band 4	20M	0	20.37	20.56	20.37	20.11	19.99	19.87	19.58	19.38	19.29
		1	20.49	20.49	20.24	20.20	19.95	19.63	19.49	19.61	19.37
		Total	23.44	23.54	23.32	23.17	22.98	22.76	22.55	22.51	22.34

LTE Band 4 NB-IoT Guard band  
Signal at lower

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz	2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz	2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz
LTE Band 4 NB-IoT Guard band	10M	20.57	20.52	20.44	19.95	20.16	19.85	19.55	19.69	19.50

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz	2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz	2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz
LTE Band 4 NB-IoT Guard band	15M	20.77	20.75	20.44	20.21	20.05	20.05	19.78	19.58	19.48

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz	2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz	2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz
LTE Band 4 NB-IoT Guard band	20M	20.44	20.48	20.16	20.21	19.92	19.70	19.47	19.58	19.33

Signal at upper

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz	2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz	2000 2115 MHz	2175 2132.5 MHz	2350 2150 MHz
LTE Band 4 NB-IoT Guard band	10M	20.55	20.60	20.43	20.03	20.20	19.85	19.41	19.65	19.55

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz	2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz	2025 2117.5 MHz	2175 2132.5 MHz	2325 2147.5 MHz
LTE Band 4 NB-IoT Guard band	15M	20.82	20.77	20.41	20.20	20.00	20.01	19.82	19.66	19.52

Band	BW	QPSK			16QAM			64QAM		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz	2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz	2050 2120 MHz	2175 2132.5 MHz	2300 2145 MHz
LTE Band 4 NB-IoT Guard band	20M	20.45	20.40	20.22	20.16	19.85	19.67	19.42	19.61	19.33

EIRP Power (dBm)

**LTE Band 4**

**Modulation Type: QPSK**

Channel Bandwidth: 5MHz

MODE		TX channel 1975, 2175, 2375					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-16.6	25.1	-0.3	24.8	62.1	-37.3
2	2132.50	-16.4	25.5	-0.4	25.1	62.1	-37.0
3	2152.50	-17.0	25.0	-0.3	24.7	62.1	-37.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-15.3	27.2	-0.3	26.9	62.1	-35.2
2	2132.50	-15.0	27.6	-0.4	27.2	62.1	-34.9
3	2152.50	-14.6	27.8	-0.3	27.5	62.1	-34.6

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-16.4	25.3	-0.3	25.0	62.1	-37.1
2	2132.50	-16.2	25.7	-0.4	25.3	62.1	-36.8
3	2150.00	-16.4	25.5	-0.3	25.2	62.1	-36.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-14.9	27.6	-0.3	27.3	62.1	-34.8
2	2132.50	-15.1	27.5	-0.4	27.1	62.1	-35.0
3	2150.00	-14.8	27.6	-0.3	27.3	62.1	-34.8

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-16.3	25.4	-0.3	25.1	62.1	-37.0
2	2132.50	-16.7	25.2	-0.4	24.8	62.1	-37.3
3	2147.50	-16.9	25.0	-0.3	24.7	62.1	-37.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-15.5	27.0	-0.3	26.7	62.1	-35.4
2	2132.50	-14.6	28.0	-0.4	27.6	62.1	-34.5
3	2147.50	-14.8	27.6	-0.3	27.3	62.1	-34.8

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-16.7	25.1	-0.3	24.8	62.1	-37.3
2	2132.50	-16.9	25.0	-0.4	24.6	62.1	-37.5
3	2145.00	-16.2	25.7	-0.3	25.4	62.1	-36.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-14.8	27.7	-0.3	27.4	62.1	-34.7
2	2132.50	-14.5	28.1	-0.4	27.7	62.1	-34.4
3	2145.00	-14.6	27.9	-0.3	27.6	62.1	-34.5

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

**Modulation Type: 16QAM**

Channel Bandwidth: 5MHz

MODE		TX channel 1975, 2175, 2375					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-17.7	24.0	-0.3	23.7	62.1	-38.4
2	2132.50	-17.5	24.4	-0.4	24.0	62.1	-38.1
3	2152.50	-18.1	23.9	-0.3	23.6	62.1	-38.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-16.2	26.3	-0.3	26.0	62.1	-36.1
2	2132.50	-16.0	26.6	-0.4	26.2	62.1	-35.9
3	2152.50	-15.4	27.0	-0.3	26.7	62.1	-35.4

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-17.4	24.3	-0.3	24.0	62.1	-38.1
2	2132.50	-17.1	24.8	-0.4	24.4	62.1	-37.7
3	2150.00	-17.3	24.6	-0.3	24.3	62.1	-37.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-15.8	26.7	-0.3	26.4	62.1	-35.7
2	2132.50	-16.0	26.6	-0.4	26.2	62.1	-35.9
3	2150.00	-15.9	26.5	-0.3	26.2	62.1	-35.9

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-17.3	24.4	-0.3	24.1	62.1	-38.0
2	2132.50	-17.6	24.3	-0.4	23.9	62.1	-38.2
3	2147.50	-17.7	24.2	-0.3	23.9	62.1	-38.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-16.7	25.8	-0.3	25.5	62.1	-36.6
2	2132.50	-15.8	26.8	-0.4	26.4	62.1	-35.7
3	2147.50	-15.6	26.8	-0.3	26.5	62.1	-35.6

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-17.5	24.3	-0.3	24.0	62.1	-38.1
2	2132.50	-18.0	23.9	-0.4	23.5	62.1	-38.6
3	2145.00	-17.0	24.9	-0.3	24.6	62.1	-37.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-15.8	26.7	-0.3	26.4	62.1	-35.7
2	2132.50	-15.4	27.2	-0.4	26.8	62.1	-35.3
3	2145.00	-15.5	27.0	-0.3	26.7	62.1	-35.4

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

**Modulation Type: 64QAM**

Channel Bandwidth: 5MHz

MODE		TX channel 1975, 2175, 2375					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-18.1	23.6	-0.3	23.3	62.1	-38.8
2	2132.50	-18.1	23.8	-0.4	23.4	62.1	-38.7
3	2152.50	-18.7	23.3	-0.3	23.0	62.1	-39.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-16.7	25.8	-0.3	25.5	62.1	-36.6
2	2132.50	-16.5	26.1	-0.4	25.7	62.1	-36.4
3	2152.50	-15.9	26.5	-0.3	26.2	62.1	-35.9

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-18.0	23.7	-0.3	23.4	62.1	-38.7
2	2132.50	-17.5	24.4	-0.4	24.0	62.1	-38.1
3	2150.00	-17.8	24.1	-0.3	23.8	62.1	-38.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-16.2	26.3	-0.3	26.0	62.1	-36.1
2	2132.50	-16.5	26.1	-0.4	25.7	62.1	-36.4
3	2150.00	-16.5	25.9	-0.3	25.6	62.1	-36.5

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-17.7	24.0	-0.3	23.7	62.1	-38.4
2	2132.50	-18.0	23.9	-0.4	23.5	62.1	-38.6
3	2147.50	-18.3	23.6	-0.3	23.3	62.1	-38.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-17.1	25.4	-0.3	25.1	62.1	-37.0
2	2132.50	-16.4	26.2	-0.4	25.8	62.1	-36.3
3	2147.50	-16.1	26.3	-0.3	26.0	62.1	-36.1

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-18.1	23.7	-0.3	23.4	62.1	-38.7
2	2132.50	-18.5	23.4	-0.4	23.0	62.1	-39.1
3	2145.00	-17.6	24.3	-0.3	24.0	62.1	-38.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-16.3	26.2	-0.3	25.9	62.1	-36.2
2	2132.50	-16.0	26.6	-0.4	26.2	62.1	-35.9
3	2145.00	-16.1	26.4	-0.3	26.1	62.1	-36.0

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).



### LTE Band 4 NB-IoT Guard band

**Modulation Type: QPSK**

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-16.2	25.5	-0.3	25.2	62.1	-36.9
2	2132.50	-16.1	25.8	-0.4	25.4	62.1	-36.7
3	2150.00	-16.3	25.6	-0.3	25.3	62.1	-36.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-14.7	27.8	-0.3	27.5	62.1	-34.6
2	2132.50	-14.8	27.8	-0.4	27.4	62.1	-34.7
3	2150.00	-14.6	27.8	-0.3	27.5	62.1	-34.6

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-16.1	25.6	-0.3	25.3	62.1	-36.8
2	2132.50	-16.6	25.3	-0.4	24.9	62.1	-37.2
3	2147.50	-16.7	25.2	-0.3	24.9	62.1	-37.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-15.3	27.2	-0.3	26.9	62.1	-35.2
2	2132.50	-14.4	28.2	-0.4	27.8	62.1	-34.3
3	2147.50	-14.7	27.7	-0.3	27.4	62.1	-34.7

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-16.5	25.3	-0.3	25.0	62.1	-37.1
2	2132.50	-16.7	25.2	-0.4	24.8	62.1	-37.3
3	2145.00	-16.1	25.8	-0.3	25.5	62.1	-36.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-14.6	27.9	-0.3	27.6	62.1	-34.5
2	2132.50	-14.2	28.4	-0.4	28.0	62.1	-34.1
3	2145.00	-14.4	28.1	-0.3	27.8	62.1	-34.3

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

**Modulation Type: 16QAM**

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-16.8	24.9	-0.3	24.6	62.1	-37.5
2	2132.50	-16.9	25.0	-0.4	24.6	62.1	-37.5
3	2150.00	-17.2	24.7	-0.3	24.4	62.1	-37.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-15.5	27.0	-0.3	26.7	62.1	-35.4
2	2132.50	-15.8	26.8	-0.4	26.4	62.1	-35.7
3	2150.00	-15.6	26.8	-0.3	26.5	62.1	-35.6

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-17.2	24.5	-0.3	24.2	62.1	-37.9
2	2132.50	-17.4	24.5	-0.4	24.1	62.1	-38.0
3	2147.50	-17.6	24.3	-0.3	24.0	62.1	-38.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-16.6	25.9	-0.3	25.6	62.1	-36.5
2	2132.50	-15.7	26.9	-0.4	26.5	62.1	-35.6
3	2147.50	-15.4	27.0	-0.3	26.7	62.1	-35.4

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-17.4	24.4	-0.3	24.1	62.1	-38.0
2	2132.50	-17.7	24.2	-0.4	23.8	62.1	-38.3
3	2145.00	-16.8	25.1	-0.3	24.8	62.1	-37.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-15.6	26.9	-0.3	26.6	62.1	-35.5
2	2132.50	-15.3	27.3	-0.4	26.9	62.1	-35.2
3	2145.00	-15.3	27.2	-0.3	26.9	62.1	-35.2

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

**Modulation Type: 64QAM**

Channel Bandwidth: 10MHz

MODE		TX channel 2000, 2175, 2350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-17.9	23.8	-0.3	23.5	62.1	-38.6
2	2132.50	-17.3	24.6	-0.4	24.2	62.1	-37.9
3	2150.00	-17.7	24.2	-0.3	23.9	62.1	-38.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.00	-16.0	26.5	-0.3	26.2	62.1	-35.9
2	2132.50	-16.1	26.5	-0.4	26.1	62.1	-36.0
3	2150.00	-16.1	26.3	-0.3	26.0	62.1	-36.1

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 15MHz

MODE		TX channel 2025, 2175, 2325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-17.5	24.2	-0.3	23.9	62.1	-38.2
2	2132.50	-17.7	24.2	-0.4	23.8	62.1	-38.3
3	2147.50	-18.2	23.7	-0.3	23.4	62.1	-38.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.50	-16.9	25.6	-0.3	25.3	62.1	-36.8
2	2132.50	-16.3	26.3	-0.4	25.9	62.1	-36.2
3	2147.50	-15.8	26.6	-0.3	26.3	62.1	-35.8

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Channel Bandwidth: 20MHz

MODE		TX channel 2050, 2175, 2300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-18.0	23.8	-0.3	23.5	62.1	-38.6
2	2132.50	-18.2	23.7	-0.4	23.3	62.1	-38.8
3	2145.00	-17.5	24.4	-0.3	24.1	62.1	-38.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.00	-16.0	26.5	-0.3	26.2	62.1	-35.9
2	2132.50	-15.8	26.8	-0.4	26.4	62.1	-35.7
3	2145.00	-16.0	26.5	-0.3	26.2	62.1	-35.9

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 4.2 Modulation characteristics Measurement

### 4.2.1 Limits of Modulation characteristics

N/A

### 4.2.2 Test Procedure

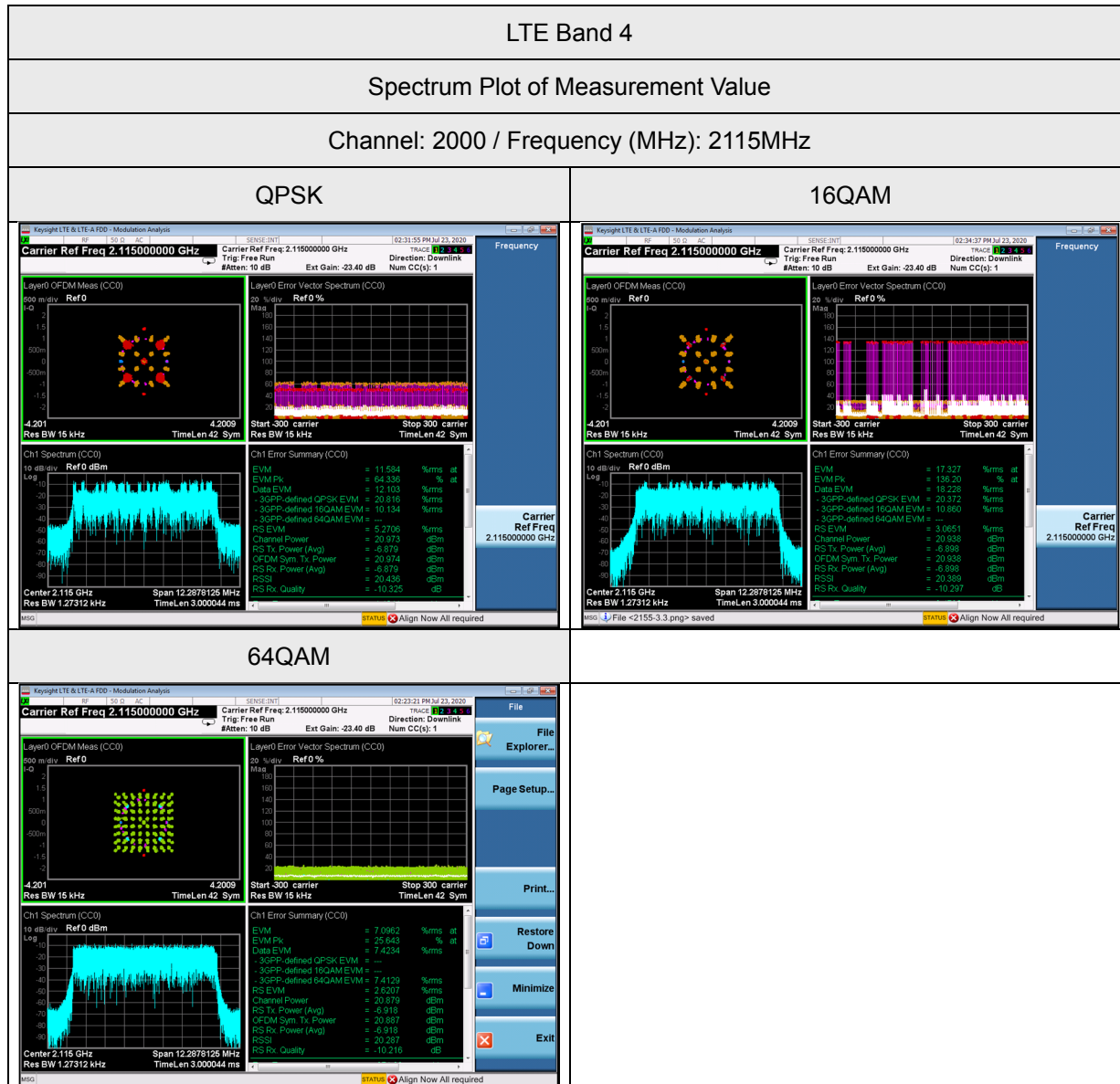
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



## 4.2.4 Test Results

### LTE Band 4

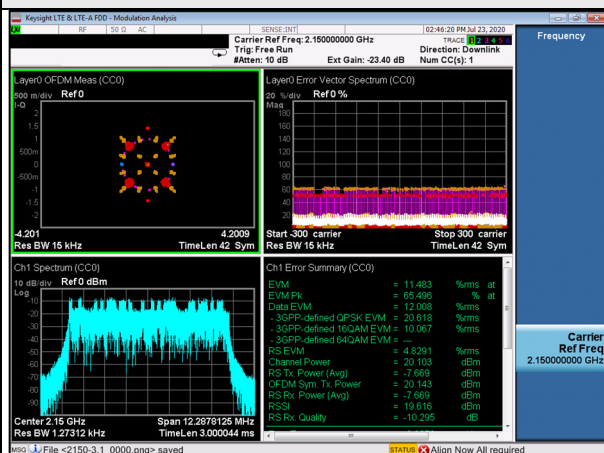


## LTE Band 4

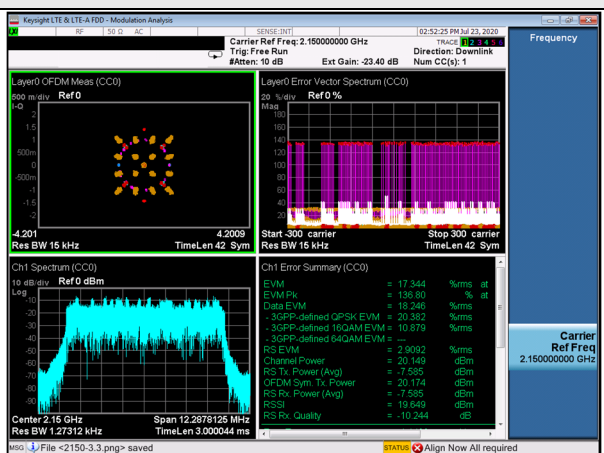
### Spectrum Plot of Measurement Value

Channel: 2350 / Frequency (MHz): 2150MHz

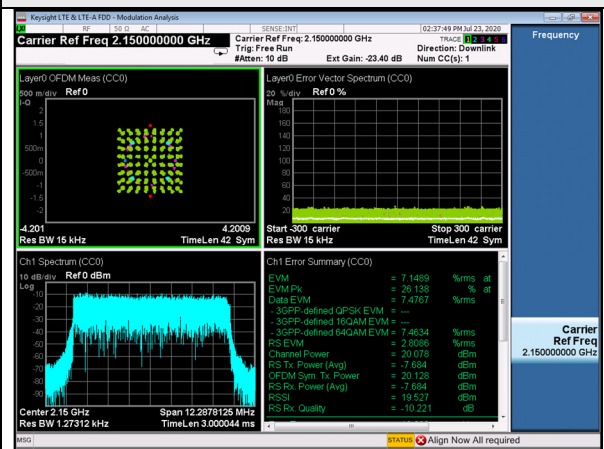
#### QPSK



#### 16QAM



#### 64QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

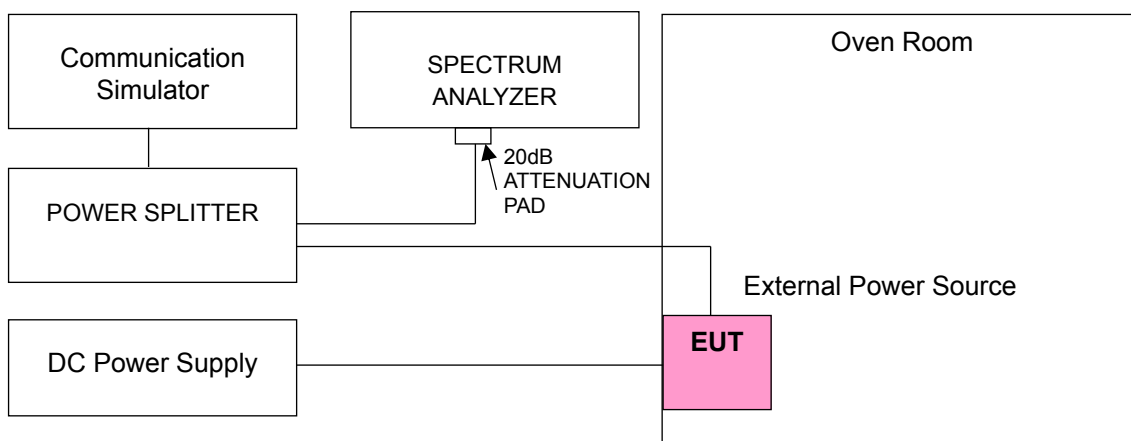
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

#### 4.3.2 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 AC 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.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### LTE Band 4

##### Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2112.500002	0.001	2152.500002	0.001
102	2112.500002	0.001	2152.500002	0.001
138	2112.500004	0.002	2152.500003	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

##### Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2112.500002	0.001	2152.500001	0.001
-20	2112.500004	0.002	2152.500004	0.002
-10	2112.500002	0.001	2152.500004	0.002
0	2112.500001	0.001	2152.500004	0.002
10	2112.500002	0.001	2152.500002	0.001
20	2112.499999	0.000	2152.499998	-0.001
30	2112.499996	-0.002	2152.499997	-0.001
40	2112.499997	-0.001	2152.499996	-0.002
50	2112.499998	-0.001	2152.499997	-0.002



### Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2115.000002	0.001	2150.000003	0.001
102	2115.000002	0.001	2150.000002	0.001
138	2115.000002	0.001	2150.000001	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

### Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2115.000002	0.001	2150.000002	0.001
-20	2115.000002	0.001	2150.000004	0.002
-10	2115.000004	0.002	2150.000002	0.001
0	2115.000003	0.002	2150.000004	0.002
10	2115.000002	0.001	2150.000003	0.001
20	2114.999997	-0.001	2149.999998	-0.001
30	2114.999996	-0.002	2149.999997	-0.001
40	2114.999997	-0.001	2149.999997	-0.001
50	2114.999997	-0.001	2149.999999	-0.001

**Frequency Error vs. Voltage**

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2117.500003	0.001	2147.500002	0.001
102	2117.500002	0.001	2147.500003	0.001
138	2117.500002	0.001	2147.500002	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

**Frequency Error vs. Temperature**

Temp. (°C)	LTE Band 4			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2117.500004	0.002	2147.500004	0.002
-20	2117.500002	0.001	2147.500003	0.001
-10	2117.500003	0.002	2147.500003	0.001
0	2117.500001	0.001	2147.500003	0.001
10	2117.500002	0.001	2147.500004	0.002
20	2117.499997	-0.001	2147.499997	-0.001
30	2117.499999	-0.001	2147.499998	-0.001
40	2117.499997	-0.001	2147.499997	-0.001
50	2117.499996	-0.002	2147.499996	-0.002

### Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2120.000001	0.001	2145.000003	0.001
102	2120.000002	0.001	2145.000002	0.001
138	2120.000001	0.001	2145.000002	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

### Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2120.000002	0.001	2145.000003	0.001
-20	2120.000003	0.001	2145.000003	0.001
-10	2120.000003	0.002	2145.000003	0.001
0	2120.000002	0.001	2145.000004	0.002
10	2120.000004	0.002	2145.000002	0.001
20	2119.999998	-0.001	2144.999998	-0.001
30	2119.999998	-0.001	2144.999996	-0.002
40	2119.999997	-0.001	2144.999998	-0.001
50	2119.999999	-0.001	2144.999997	-0.001

### LTE Band 4 NB-IoT Guard band

Signal at lower

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2115.000002	0.001	2150.000003	0.001
102	2115.000001	0.000	2150.000004	0.002
138	2115.000004	0.002	2150.000001	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2115.000003	0.001	2150.000003	0.002
-20	2115.000002	0.001	2150.000002	0.001
-10	2115.000002	0.001	2150.000004	0.002
0	2115.000003	0.002	2150.000004	0.002
10	2115.000003	0.001	2150.000002	0.001
20	2114.999997	-0.001	2149.999997	-0.001
30	2114.999997	-0.001	2149.999997	-0.002
40	2114.999998	-0.001	2149.999997	-0.001
50	2114.999999	-0.001	2149.999997	-0.001

**Frequency Error vs. Voltage**

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2117.500002	0.001	2147.500002	0.001
102	2117.500002	0.001	2147.500003	0.001
138	2117.500002	0.001	2147.500001	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

**Frequency Error vs. Temperature**

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2117.500004	0.002	2147.500002	0.001
-20	2117.500004	0.002	2147.500002	0.001
-10	2117.500002	0.001	2147.500003	0.001
0	2117.500002	0.001	2147.500004	0.002
10	2117.500003	0.001	2147.500002	0.001
20	2117.499998	-0.001	2147.499998	-0.001
30	2117.499998	-0.001	2147.499997	-0.001
40	2117.499999	-0.001	2147.499997	-0.001
50	2117.499998	-0.001	2147.499996	-0.002

**Frequency Error vs. Voltage**

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2120.000001	0.000	2145.000003	0.002
102	2120.000004	0.002	2145.000003	0.001
138	2120.000001	0.001	2145.000003	0.002

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

**Frequency Error vs. Temperature**

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2120.000001	0.001	2145.000002	0.001
-20	2120.000002	0.001	2145.000001	0.001
-10	2120.000004	0.002	2145.000002	0.001
0	2120.000002	0.001	2145.000002	0.001
10	2120.000002	0.001	2145.000004	0.002
20	2119.999997	-0.001	2144.999998	-0.001
30	2119.999998	-0.001	2144.999997	-0.001
40	2119.999997	-0.002	2144.999997	-0.001
50	2119.999997	-0.001	2144.999998	-0.001

Signal at upper  
 Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2115.000004	0.002	2150.000004	0.002
102	2115.000003	0.001	2150.000003	0.001
138	2115.000002	0.001	2150.000003	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2115.000003	0.001	2150.000001	0.000
-20	2115.000001	0.001	2150.000002	0.001
-10	2115.000004	0.002	2150.000004	0.002
0	2115.000002	0.001	2150.000004	0.002
10	2115.000002	0.001	2150.000002	0.001
20	2114.999997	-0.001	2149.999996	-0.002
30	2114.999999	-0.001	2149.999998	-0.001
40	2114.999997	-0.001	2149.999998	-0.001
50	2114.999996	-0.002	2149.999996	-0.002

**Frequency Error vs. Voltage**

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2117.500001	0.001	2147.500004	0.002
102	2117.500002	0.001	2147.500004	0.002
138	2117.500003	0.002	2147.500003	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

**Frequency Error vs. Temperature**

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2117.500002	0.001	2147.500003	0.001
-20	2117.500003	0.001	2147.500003	0.001
-10	2117.500003	0.001	2147.500002	0.001
0	2117.500003	0.001	2147.500002	0.001
10	2117.500004	0.002	2147.500001	0.001
20	2117.499997	-0.001	2147.499996	-0.002
30	2117.499997	-0.001	2147.499996	-0.002
40	2117.499996	-0.002	2147.499998	-0.001
50	2117.499998	-0.001	2147.499997	-0.002



**Frequency Error vs. Voltage**

Voltage (Volts)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	2120.000002	0.001	2145.000002	0.001
102	2120.000004	0.002	2145.000003	0.001
138	2120.000001	0.001	2145.000002	0.001

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

**Frequency Error vs. Temperature**

Temp. (°C)	LTE Band 4 NB-IoT Guard band			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	2120.000004	0.002	2145.000003	0.001
-20	2120.000003	0.002	2145.000002	0.001
-10	2120.000001	0.001	2145.000002	0.001
0	2120.000002	0.001	2145.000001	0.001
10	2120.000003	0.002	2145.000003	0.001
20	2119.999999	-0.001	2144.999999	-0.001
30	2119.999998	-0.001	2144.999998	-0.001
40	2119.999997	-0.001	2144.999996	-0.002
50	2119.999997	-0.001	2144.999998	-0.001

## 4.4 Emission Bandwidth Measurement

### 4.4.1 Limits of Emission Bandwidth Measurement

#### -26dBc Bandwidth

According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

#### Occupied Bandwidth

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.

### 4.4.2 Test Procedure

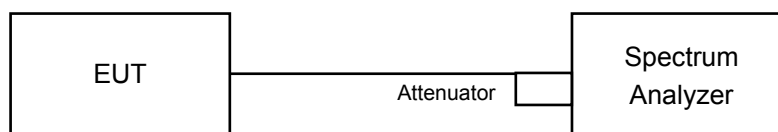
#### -26dBc Bandwidth

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 51kHz and VBW = 150kHz (Channel Bandwidth: 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz), RBW = 150kHz and VBW = 470kHz (Channel Bandwidth: 15MHz) and RBW = 200kHz and VBW = 620kHz (Channel Bandwidth: 20MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

#### Occupied Channel Bandwidth

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 51kHz and VBW = 150kHz (Channel Bandwidth: 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz), RBW = 150kHz and VBW = 470kHz (Channel Bandwidth: 15MHz) and RBW = 200kHz and VBW = 620kHz (Channel Bandwidth: 20MHz).

### 4.4.3 Test Setup

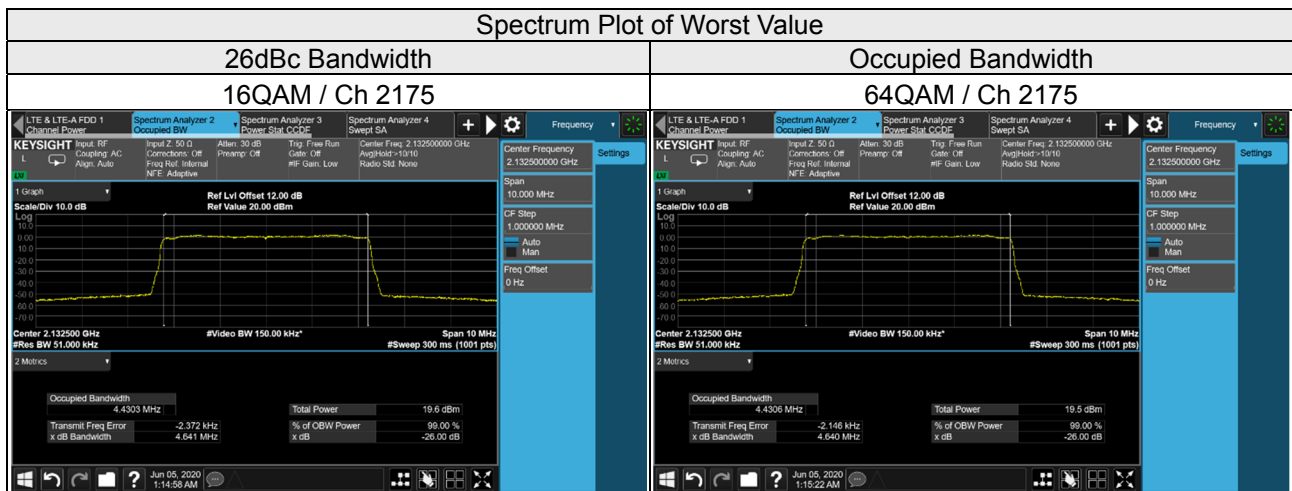


#### 4.4.4 Test Result

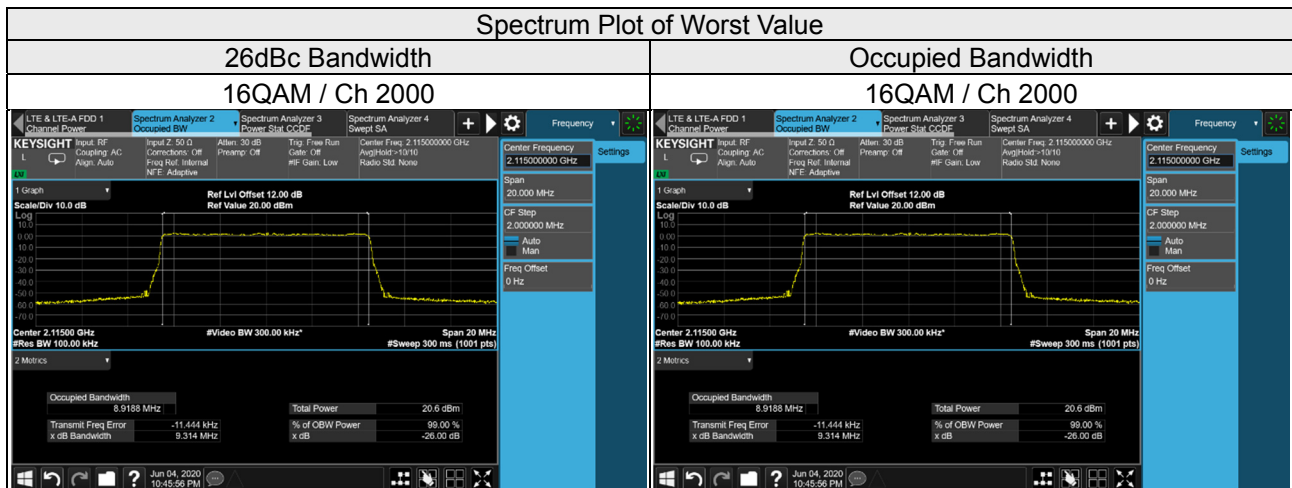
#### LTE Band 4

#### LTE Band 4 / Chain 0

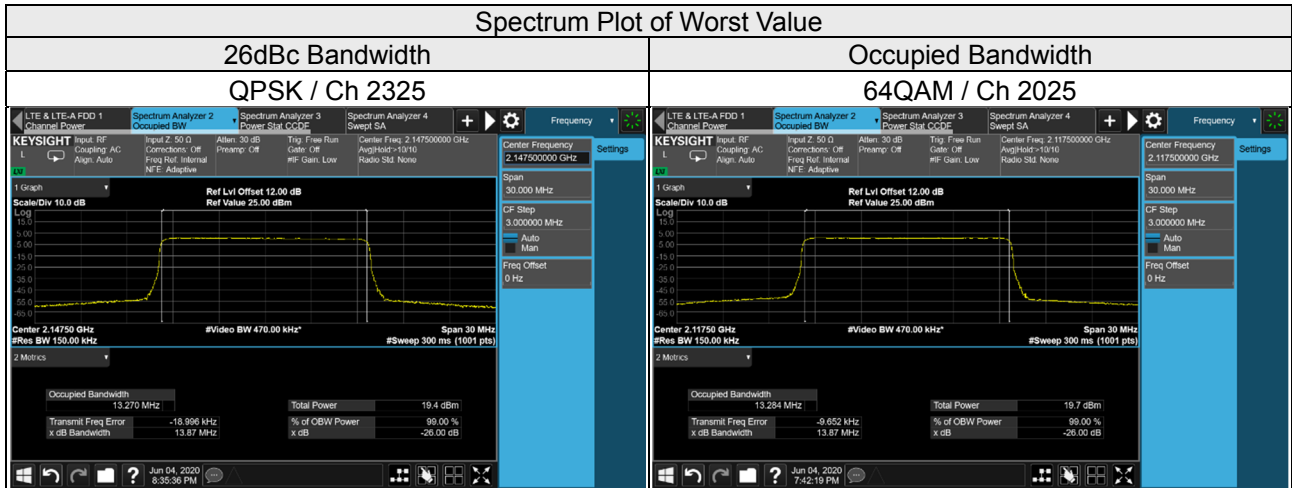
Channel Bandwidth: 5MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1975	2112.5	4.63	4.63	4.63	4.42	4.42	4.42
2175	2132.5	4.63	4.64	4.64	4.43	4.43	4.43
2375	2152.5	4.63	4.63	4.63	4.42	4.42	4.42



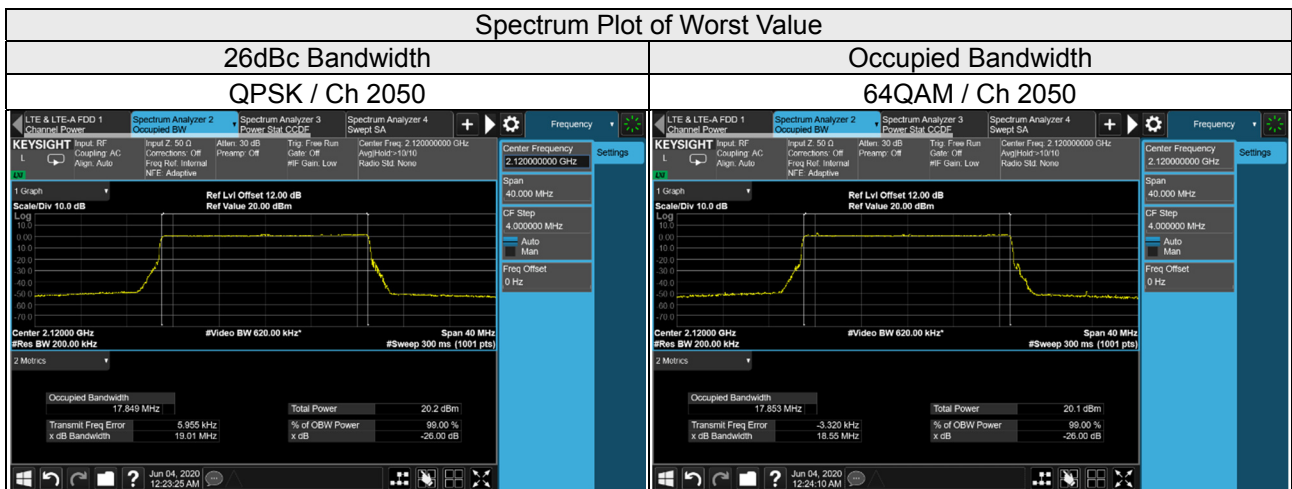
Channel Bandwidth: 10MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2000	2115.0	9.29	9.31	9.29	8.90	8.91	8.90
2175	2132.5	9.27	9.27	9.27	8.90	8.90	8.90
2350	2150.0	9.26	9.27	9.28	8.90	8.90	8.90



Channel Bandwidth: 15MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2025	2117.5	13.87	13.87	13.87	13.28	13.28	13.28
2175	2132.5	13.85	13.85	13.85	13.28	13.28	13.28
2325	2147.5	13.87	13.87	13.86	13.27	13.27	13.27

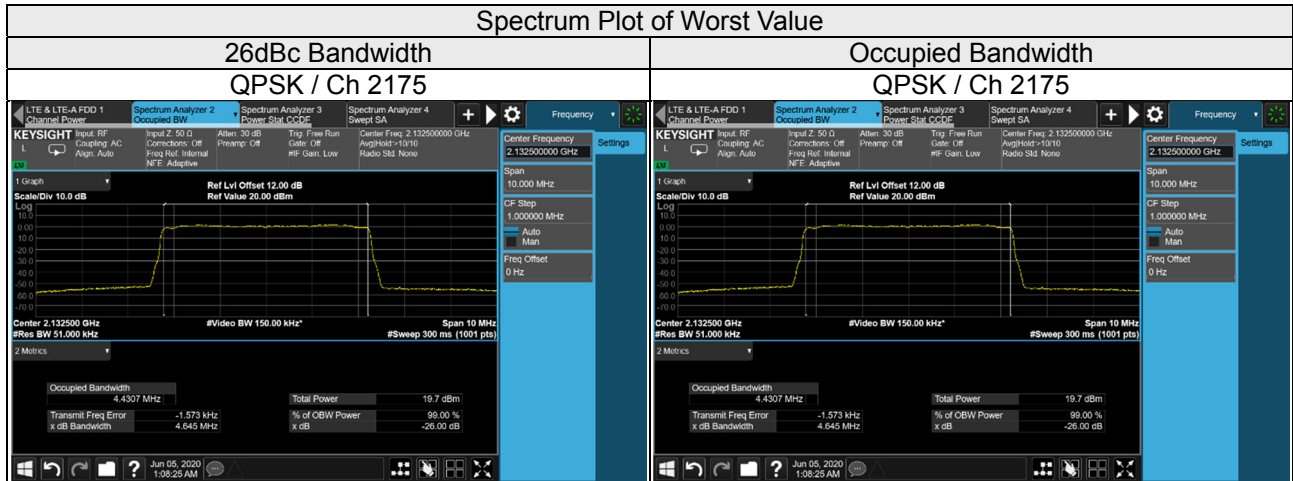


Channel Bandwidth: 20MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2050	2120.0	19.01	18.83	18.55	17.84	17.85	17.85
2175	2132.5	18.89	18.79	18.89	17.81	17.82	17.82
2300	2145.0	18.77	18.67	18.80	17.82	17.82	17.82

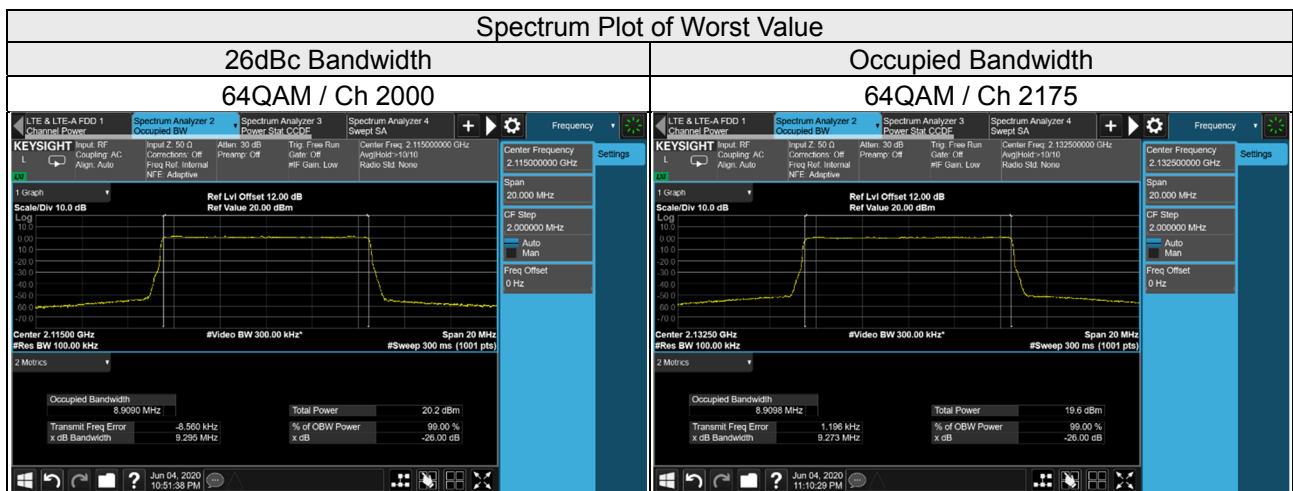


LTE Band 4 / Chain 1

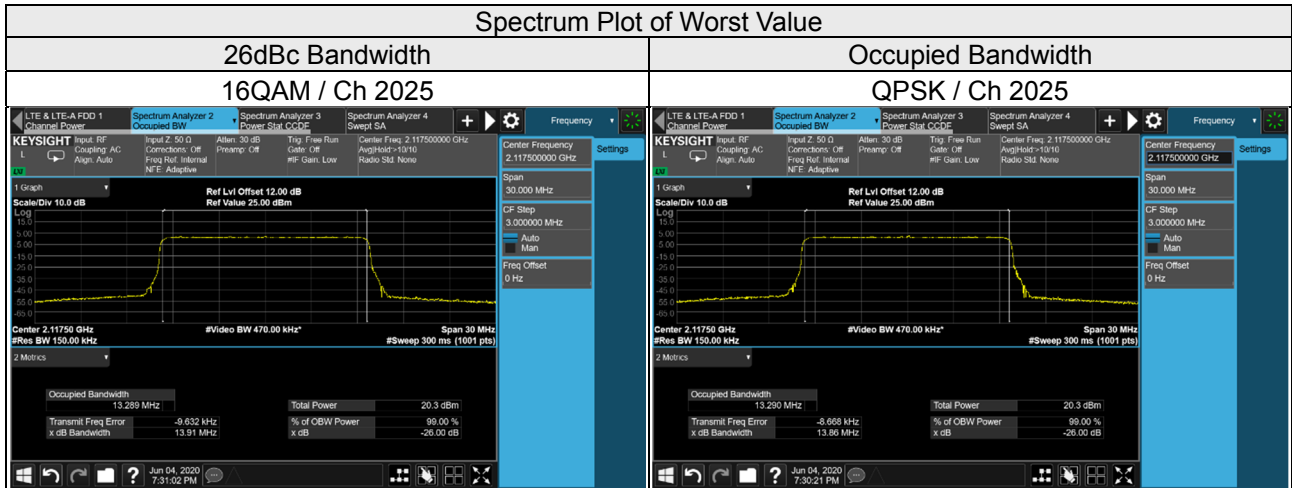
Channel Bandwidth: 5MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1975	2112.5	4.63	4.63	4.63	4.42	4.42	4.42
2175	2132.5	4.65	4.63	4.64	4.43	4.42	4.42
2375	2152.5	4.64	4.63	4.63	4.42	4.42	4.42



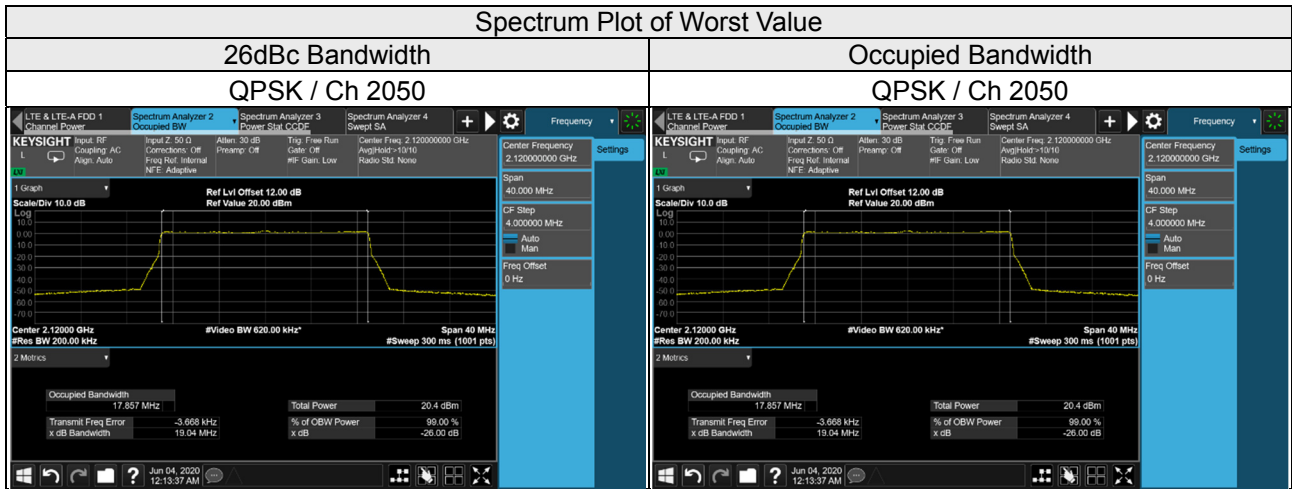
Channel Bandwidth: 10MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2000	2115.0	9.29	9.28	9.30	8.91	8.91	8.91
2175	2132.5	9.27	9.27	9.27	8.91	8.91	8.91
2350	2150.0	9.28	9.27	9.28	8.91	8.91	8.91



Channel Bandwidth: 15MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2025	2117.5	13.86	13.91	13.88	13.29	13.28	13.28
2175	2132.5	13.86	13.86	13.86	13.28	13.27	13.27
2325	2147.5	13.86	13.87	13.86	13.27	13.27	13.27



Channel Bandwidth: 20MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2050	2120.0	19.04	18.83	18.84	17.86	17.85	17.85
2175	2132.5	18.76	18.79	18.75	17.82	17.83	17.83
2300	2145.0	18.52	18.56	18.66	17.82	17.83	17.83

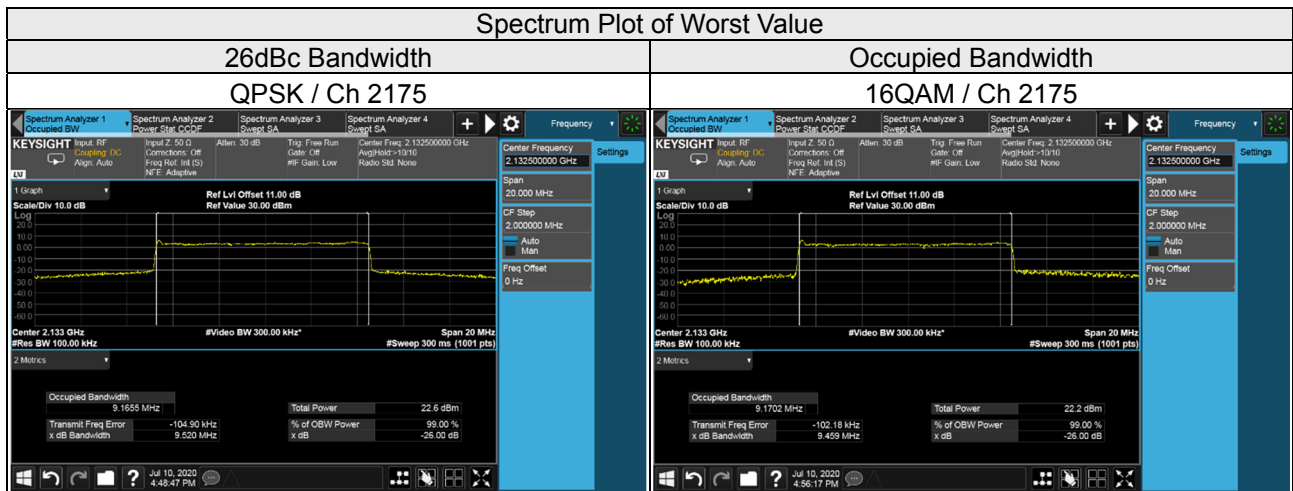




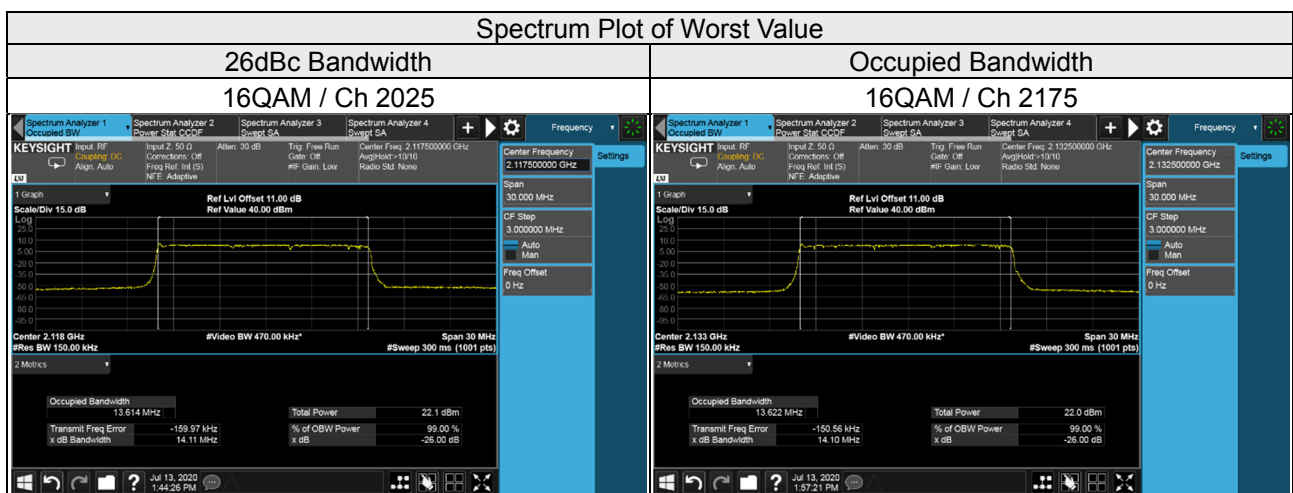
### LTE Band 4 NB-IoT Guard band

Signal at lower

Channel Bandwidth: 10MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2000	2115.0	9.45	9.46	9.43	9.13	9.14	9.15
2175	2132.5	9.52	9.45	9.46	9.16	9.17	9.16
2350	2150.0	9.44	9.44	9.43	9.13	9.13	9.14



Channel Bandwidth: 15MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2025	2117.5	14.10	14.11	14.10	13.61	13.61	13.61
2175	2132.5	14.10	14.10	14.10	13.61	13.62	13.61
2325	2147.5	14.09	14.09	14.09	13.59	13.59	13.59



Channel Bandwidth: 20MHz

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2050	2120.0	18.66	18.70	18.70	18.08	18.11	18.10
2175	2132.5	18.72	18.72	18.70	18.10	18.10	18.09
2300	2145.0	18.68	18.67	18.66	18.06	18.07	18.08

Spectrum Plot of Worst Value

