

TEST REPORT

FCC LTE B2 Test for SM-F766B
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2505-FC023-R1

DATE OF ISSUE
May 27, 2025

Tested by
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Applicant

SAMSUNG Electronics Co., Ltd.

129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Product Name

Mobile Phone

Model Name

SM-F766B

Date of Test

February 24, 2025 ~ May 07, 2025

FCC ID

A3LSMF766B

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 Republic of Korea)

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

Test Standard Used

FCC Rule Part : § 24

Test Results

PASS

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	May 07, 2025	Initial Release
1	May 27, 2025	Revised the Power Supply Voltage. (DC 3.88 V → DC 3.90 V)

Notice

Content

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S.C. 853(a)

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMF766B
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 24
EUT Type:	Mobile Phone
Model(s):	SM-F766B
Tx Frequency:	1850.7 MHz – 1909.3 MHz (LTE – Band2 (1.4 MHz)) 1851.5 MHz – 1908.5 MHz (LTE – Band2 (3 MHz)) 1852.5 MHz – 1907.5 MHz (LTE – Band2 (5 MHz)) 1855.0 MHz – 1905.0 MHz (LTE – Band2 (10 MHz)) 1857.5 MHz – 1902.5 MHz (LTE – Band2 (15 MHz)) 1860.0 MHz – 1900.0 MHz (LTE – Band2 (20 MHz))
Date(s) of Tests:	February 24, 2025 ~ May 07, 2025
Serial number:	Radiated : R3CY30RSYRA Conducted : R3CY2080JGY
Antenna Information	Please refer to the Antenna Specification document.

1.1 MAXIMUM OUTPUT POWER

Main 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	1M10G7D	QPSK	0.178	22.51
		1M09W7D	16QAM	0.149	21.72
		1M09W7D	64QAM	0.113	20.52
		1M10W7D	256QAM	0.056	17.48
LTE – Band2 (3)	1851.5 - 1908.5	2M72G7D	QPSK	0.180	22.55
		2M70W7D	16QAM	0.150	21.75
		2M71W7D	64QAM	0.114	20.55
		2M72W7D	256QAM	0.056	17.51
LTE – Band2 (5)	1852.5 - 1907.5	4M53G7D	QPSK	0.180	22.55
		4M51W7D	16QAM	0.150	21.77
		4M53W7D	64QAM	0.114	20.58
		4M57W7D	256QAM	0.057	17.55
LTE – Band2 (10)	1855.0 - 1905.0	8M98G7D	QPSK	0.181	22.57
		9M00W7D	16QAM	0.150	21.75
		9M02W7D	64QAM	0.114	20.56
		9M01W7D	256QAM	0.058	17.60
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.178	22.51
		13M5W7D	16QAM	0.152	21.82
		13M5W7D	64QAM	0.115	20.62
		13M5W7D	256QAM	0.058	17.62
LTE – Band2 (20)	1860.0 - 1900.0	18M1G7D	QPSK	0.180	22.56
		18M0W7D	16QAM	0.151	21.79
		18M0W7D	64QAM	0.114	20.58
		18M0W7D	256QAM	0.058	17.62

Sub 5 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	1M10G7D	QPSK	0.042	16.23
		1M09W7D	16QAM	0.035	15.45
		1M09W7D	64QAM	0.027	14.25
		1M10W7D	256QAM	0.013	11.28
LTE – Band2 (3)	1851.5 - 1908.5	2M72G7D	QPSK	0.042	16.27
		2M70W7D	16QAM	0.036	15.53
		2M71W7D	64QAM	0.027	14.33
		2M71W7D	256QAM	0.014	11.32
LTE – Band2 (5)	1852.5 - 1907.5	4M53G7D	QPSK	0.043	16.36
		4M51W7D	16QAM	0.036	15.58
		4M53W7D	64QAM	0.027	14.38
		4M55W7D	256QAM	0.014	11.40
LTE – Band2 (10)	1855.0 - 1905.0	9M00G7D	QPSK	0.043	16.35
		9M01W7D	16QAM	0.036	15.60
		8M99W7D	64QAM	0.028	14.43
		8M99W7D	256QAM	0.014	11.43
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.043	16.37
		13M5W7D	16QAM	0.038	15.75
		13M5W7D	64QAM	0.029	14.56
		13M4W7D	256QAM	0.014	11.38
LTE – Band2 (20)	1860.0 - 1900.0	18M0G7D	QPSK	0.043	16.36
		18M0W7D	16QAM	0.038	15.76
		18M0W7D	64QAM	0.029	14.58
		18M0W7D	256QAM	0.014	11.37

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

Please refer to the [2G3G] Test Report.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Radiated Power	- ANSI C63.26-2015 – Section 5.2.4.4 - KDB 971168 D01 v03r01 – Section 5.8
Radiated Spurious and Harmonic Emissions	- ANSI C63.26-2015 – Section 5.5.3 - KDB 971168 D01 v03r01 – Section 5.8

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5 % of the expected OBW, not to exceed 1 MHz
3. VBW $\geq$ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

$$P_d \text{ (dBm)} = P_g \text{ (dBm)} - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.
These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

Test Settings

1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
2. VBW $\geq$ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10th harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
The spurious emissions is calculated by the following formula;

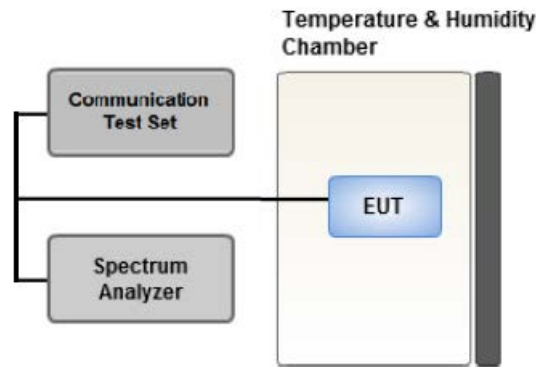
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

Where: P_g is the generator output power into the substitution antenna.

If the fundamental frequency is below 1 GHz, RF output power has been converted to EIRP.

$$\text{EIRP}_{(\text{dBm})} = \text{ERP}_{(\text{dBm})} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
 - .- for continuous transmissions, set to 1 ms,
 - .- or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1 %.

② Alternate Procedure for PAPR

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as P_{Pk} .

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as P_{Avg} . Determine the P.A.R. from:

$$P.A.R. (dB) = P_{Pk} (dBm) - P_{Avg} (dBm) \quad (P_{Avg} = \text{Average Power} + \text{Duty cycle Factor})$$

Test Settings(Peak Power)

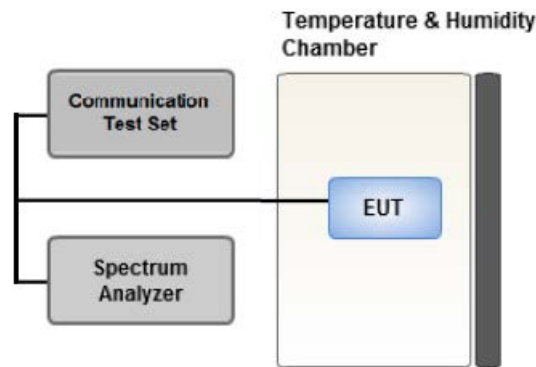
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

1. Set the RBW $\geq$ OBW.
2. Set VBW $\geq 3 \times$ RBW.
3. Set span $\geq 2 \times$ OBW.
4. Sweep time $\geq 10 \times$ (number of points in sweep) $\times$ (transmission symbol period).
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the peak amplitude level.

Test Settings(Average Power)

1. Set span to $2 \times$ to $3 \times$ the OBW.
2. Set RBW $\geq$ OBW.
3. Set VBW $\geq 3 \times$ RBW.
4. Set number of measurement points in sweep $\geq 2 \times$ span / RBW.
5. Sweep time:
Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$ for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to "free run."
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add $[10 \log (1/\text{duty cycle})]$ to the measured maximum power level to compute the average power during continuous transmission. For example, add $[10 \log (1/0.25)] = 6 \text{ dB}$ if the duty cycle is a constant 25 %.

3.5 OCCUPIED BANDWIDTH.



Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

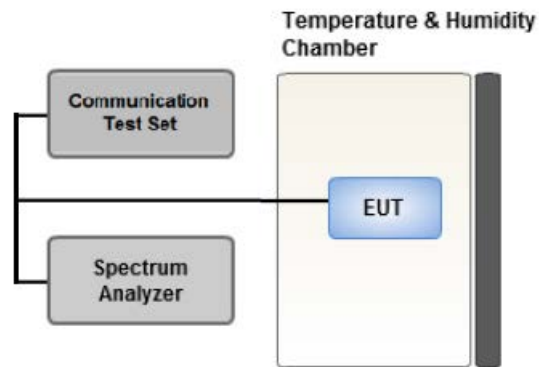
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5 % of the expected OBW
3. VBW $\geq$ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5 % of the 99 % occupied bandwidth observed in Step 7

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

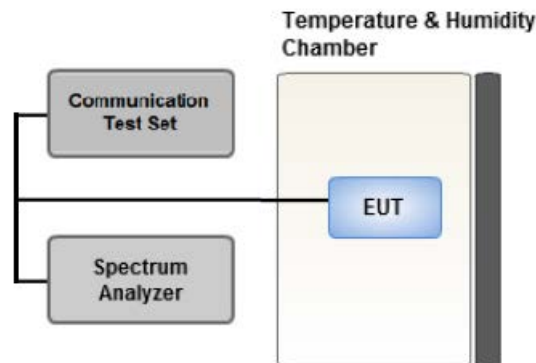
Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW $\geq$ 3 MHz
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep time = auto
6. Number of points in sweep $\geq$ 2 x Span / RBW

3.7 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

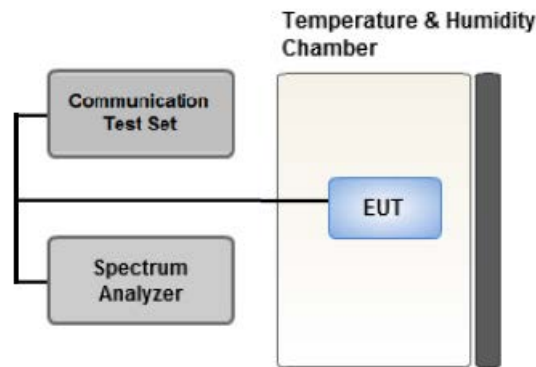
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

Where Margin < 1 dB the emission level is either corrected by $10 \log(1 \text{ MHz/ RB})$ or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.

2. Primary Supply Voltage:

- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.

- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).

2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter.

Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.9 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported. (Worst case : 10 MHz(Main 2 ANT), 15 MHz(Sub 5 ANT))
- The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported. (Worst case: Half-open(Main 2 Ant), Open mode(Sub 5 Ant))
- The worst case is reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data.
- Please refer to the table below.
- All modes of operation were investigated and the worst case configuration results are reported.
Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
Worst case : Stand alone
- All simultaneous transmission scenarios of operation were investigated, and the test results showed no additional significant emissions relative to the least restrictive limit were observed.
Therefore, only the worst case(stand-alone) results were reported.

[Main 2 ANT Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	See Section 8.1		X
Radiated Spurious and Harmonic Emissions	QPSK	See Section 8.2		X

[Sub 5 ANT Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	QPSK, 16QAM, 64QAM, 256QAM	See Section 9.1		Z
Radiated Spurious and Harmonic Emissions	QPSK	See Section 9.2		Y

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	1.4, 3, 5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	QPSK, 16QAM, 64QAM, 256QAM	1.4, 3, 5, 10, 15, 20	Mid	Full RB	0
Band Edge	QPSK	1.4	Low	1	0
			High	1	5
		3	Low	1	0
			High	1	14
		5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	49
		15	Low	1	0
			High	1	74
		20	Low	1	0
			High	1	99
		1.4, 3, 5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	QPSK	1.4, 3, 5, 10, 15, 20	Low, Mid, High	1	0

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	Switch box(1.2 G HPF+LNA)	HCT CO., LTD.	F1L1	11/11/2025	Annual
RF Switching System	Switch box(3.3 G HPF+LNA)	HCT CO., LTD.	F1L2	11/11/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.	F1L4	11/11/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.	F1L7	11/11/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/07/2025	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/19/2026	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/10/2026	Annual
DC Power Supply	E3632A	Agilent	MY40010147	08/06/2025	Annual
Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Dipole Antenna	UHAP	Schwarzbeck	01288	08/07/2026	Biennial
Chamber	SU-642	ESPEC	93008124	02/11/2026	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/17/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/11/2025	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/23/2027	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/14/2026	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/10/2026	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/06/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/28/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	08/19/2026	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/13/2025	Annual
Radio Communication Test Station	MT8000A	Anritsu Corp.	6272613402	08/28/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
Signal & Spectrum Analyzer (2 Hz~67 GHz)	FSW67	REOHDE & SCHWARZ	101736	05/23/2025	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.	-	-	-

Note:

- Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
- Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ($\pm$ kHz)
Occupied Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)

Parameter	Expanded Uncertainty ($\pm$ kHz)
Block Edge	0.70 (Confidence level about 95 %, $k=2$)
Conducted Spurious Emissions	1.18 (Confidence level about 95 %, $k=2$)
Peak- to- Average Ratio	0.68 (Confidence level about 95 %, $k=2$)
Radiated Power	4.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, $k=2$)

6. SUMMARY OF TEST RESULTS

-. The decision rule applies 'simple acceptance'

6.1 Test Condition: Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	<u>See Note1</u>
Peak- to- Average Ratio	§ 24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 24.235	Emission must remain in band	PASS

Note:

1. See SAR Report

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 24.238(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

$$\text{ERP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test, the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

$$\text{EIRP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test, the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA(Main 2 ANT)

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1850.7	LTE B2 (1.4 MHz)	QPSK	-20.34	14.18	10.40	2.07	H	< 2.00	0.178	22.51	1	0
		16-QAM	-21.13	13.39	10.40	2.07	H		0.149	21.72		
		64-QAM	-22.33	12.19	10.40	2.07	H		0.113	20.52		
		256-QAM	-25.37	9.15	10.40	2.07	H		0.056	17.48		
1880		QPSK	-21.07	13.88	10.40	2.21	H		0.161	22.07	1	0
		16-QAM	-21.83	13.12	10.40	2.21	H		0.135	21.31		
		64-QAM	-23.02	11.93	10.40	2.21	H		0.103	20.12		
		256-QAM	-26.05	8.90	10.40	2.21	H		0.051	17.09		
1909.3		QPSK	-21.79	13.15	10.40	2.17	H		0.137	21.38	1	0
		16-QAM	-22.55	12.39	10.40	2.17	H		0.115	20.62		
		64-QAM	-23.81	11.13	10.40	2.17	H		0.086	19.36		
		256-QAM	-26.87	8.07	10.40	2.17	H		0.043	16.30		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1851.5	LTE B2 (3 MHz)	QPSK	-20.30	14.22	10.40	2.07	H	< 2.00	0.180	22.55	1	0
		16-QAM	-21.10	13.42	10.40	2.07	H		0.150	21.75		
		64-QAM	-22.30	12.22	10.40	2.07	H		0.114	20.55		
		256-QAM	-25.34	9.18	10.40	2.07	H		0.056	17.51		
1880		QPSK	-21.09	13.86	10.40	2.21	H		0.160	22.05	1	0
		16-QAM	-21.84	13.11	10.40	2.21	H		0.135	21.30		
		64-QAM	-23.04	11.91	10.40	2.21	H		0.102	20.10		
		256-QAM	-26.07	8.88	10.40	2.21	H		0.051	17.07		
1908.5		QPSK	-21.70	13.24	10.40	2.17	H		0.140	21.47	1	0
		16-QAM	-22.45	12.49	10.40	2.17	H		0.118	20.72		
		64-QAM	-23.65	11.29	10.40	2.17	H		0.090	19.52		
		256-QAM	-26.76	8.18	10.40	2.17	H		0.044	16.41		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1852.5	LTE B2 (5 MHz)	QPSK	-20.34	14.23	10.40	2.08	H	< 2.00	0.180	22.55	1	0
		16-QAM	-21.12	13.45	10.40	2.08	H		0.150	21.77		
		64-QAM	-22.31	12.26	10.40	2.08	H		0.114	20.58		
		256-QAM	-25.34	9.23	10.40	2.08	H		0.057	17.55		
1880		QPSK	-21.09	13.86	10.40	2.21	H		0.160	22.05	1	0
		16-QAM	-21.88	13.07	10.40	2.21	H		0.134	21.26		
		64-QAM	-23.06	11.89	10.40	2.21	H		0.102	20.08		
		256-QAM	-26.09	8.86	10.40	2.21	H		0.051	17.05		
1907.5		QPSK	-21.57	13.37	10.40	2.17	H		0.145	21.60	1	0
		16-QAM	-22.35	12.59	10.40	2.17	H		0.121	20.82		
		64-QAM	-23.55	11.39	10.40	2.17	H		0.092	19.62		
		256-QAM	-26.61	8.33	10.40	2.17	H		0.045	16.56		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1855	LTE B2 (10 MHz)	QPSK	-20.32	14.25	10.40	2.08	H	< 2.00	0.181	22.57	1	0
		16-QAM	-21.14	13.43	10.40	2.08	H		0.150	21.75		
		64-QAM	-22.33	12.24	10.40	2.08	H		0.114	20.56		
		256-QAM	-25.29	9.28	10.40	2.08	H		0.058	17.60		
1880		QPSK	-20.85	14.10	10.40	2.21	H		0.169	22.29	1	0
		16-QAM	-21.69	13.26	10.40	2.21	H		0.140	21.45		
		64-QAM	-22.87	12.08	10.40	2.21	H		0.106	20.27		
		256-QAM	-25.85	9.10	10.40	2.21	H		0.054	17.29		
1905		QPSK	-21.29	13.63	10.40	2.19	H		0.153	21.84	1	0
		16-QAM	-22.14	12.78	10.40	2.19	H		0.126	20.99		
		64-QAM	-23.32	11.60	10.40	2.19	H		0.096	19.81		
		256-QAM	-26.33	8.59	10.40	2.19	H		0.048	16.80		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1857.5	LTE B2 (15 MHz)	QPSK	-20.43	14.21	10.40	2.10	H	< 2.00	0.178	22.51	1	0
		16-QAM	-21.12	13.52	10.40	2.10	H		0.152	21.82		
		64-QAM	-22.32	12.32	10.40	2.10	H		0.115	20.62		
		256-QAM	-25.32	9.32	10.40	2.10	H		0.058	17.62		
1880		QPSK	-20.76	14.19	10.40	2.21	H		0.173	22.38	1	0
		16-QAM	-21.56	13.39	10.40	2.21	H		0.144	21.58		
		64-QAM	-22.75	12.20	10.40	2.21	H		0.109	20.39		
		256-QAM	-25.80	9.15	10.40	2.21	H		0.054	17.34		
1902.5		QPSK	-21.22	13.70	10.40	2.19	H		0.155	21.91	1	0
		16-QAM	-22.03	12.89	10.40	2.19	H		0.129	21.10		
		64-QAM	-23.21	11.71	10.40	2.19	H		0.098	19.92		
		256-QAM	-26.34	8.58	10.40	2.19	H		0.048	16.79		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1860	LTE B2 (20 MHz)	QPSK	-20.38	14.26	10.40	2.10	H	< 2.00	0.180	22.56	1	0
		16-QAM	-21.15	13.49	10.40	2.10	H		0.151	21.79		
		64-QAM	-22.36	12.28	10.40	2.10	H		0.114	20.58		
		256-QAM	-25.32	9.32	10.40	2.10	H		0.058	17.62		
1880		QPSK	-20.83	14.12	10.40	2.21	H		0.170	22.31	1	0
		16-QAM	-21.64	13.31	10.40	2.21	H		0.141	21.50		
		64-QAM	-22.83	12.12	10.40	2.21	H		0.107	20.31		
		256-QAM	-25.89	9.06	10.40	2.21	H		0.053	17.25		
1900		QPSK	-21.15	13.73	10.40	2.20	H		0.156	21.93	1	0
		16-QAM	-21.97	12.91	10.40	2.20	H		0.129	21.11		
		64-QAM	-23.14	11.74	10.40	2.20	H		0.099	19.94		
		256-QAM	-26.25	8.63	10.40	2.20	H		0.048	16.83		

8.2 RADIATED SPURIOUS EMISSIONS

■ MODE: LTE B2
 ■ MODULATION SIGNAL: 10 MHz QPSK
 ■ DISTANCE: 3 meters
 ■ LIMIT: -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	RB	
								Size	Offset
18650 (1855.0)	3 710.00	-41.43	12.28	-58.61	3.08	H	-49.41	1	0
	5 565.00	-43.43	13.05	-55.43	3.88	H	-46.26		
	7 420.00	-43.07	10.78	-46.02	4.55	H	-39.79		
18900 (1880)	3 760.00	-42.82	12.22	-58.43	3.12	V	-49.33	1	0
	5 640.00	-43.14	13.12	-55.58	3.92	V	-46.38		
	7 520.00	-44.33	10.82	-46.98	4.61	V	-40.77		
19150 (1905.0)	3 810.00	-41.47	12.15	-57.71	3.20	H	-48.76	1	0
	5 715.00	-43.28	13.08	-55.71	4.01	H	-46.64		
	7 620.00	-42.11	11.14	-44.90	4.65	V	-38.41		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
2	1.4 MHz	1880.0	QPSK	6	0	5.24
			16-QAM			6.13
			64-QAM			6.11
			256-QAM			5.77
	3 MHz		QPSK	15		5.28
			16-QAM			6.09
			64-QAM			6.15
			256-QAM			5.91
	5 MHz		QPSK	25		5.37
			16-QAM			6.10
			64-QAM			6.16
			256-QAM			5.86
	10 MHz		QPSK	50		5.42
			16-QAM			6.09
			64-QAM			6.20
			256-QAM			5.89
	15 MHz		QPSK	75		5.33
			16-QAM			6.06
			64-QAM			6.38
			256-QAM			5.85
	20 MHz		QPSK	100		5.36
			16-QAM			6.09
			64-QAM			6.44
			256-QAM			5.93

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 77 ~ 100.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
2	1.4 MHz	1880.0	QPSK	6	0	1.0981
			16-QAM			1.0938
			64-QAM			1.0941
			256-QAM			1.0976
	3 MHz		QPSK	15		2.7167
			16-QAM			2.7038
			64-QAM			2.7060
			256-QAM			2.7148
	5 MHz		QPSK	25		4.5328
			16-QAM			4.5124
			64-QAM			4.5264
			256-QAM			4.5706
	10 MHz		QPSK	50		8.9834
			16-QAM			9.0044
			64-QAM			9.0212
			256-QAM			9.0124
	15 MHz		QPSK	75		13.466
			16-QAM			13.474
			64-QAM			13.478
			256-QAM			13.492
	20 MHz		QPSK	100		18.047
			16-QAM			17.973
			64-QAM			17.965
			256-QAM			18.012

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 101 ~ 124.

8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
2	1.4	1850.70	3.7588	27.976	-67.418	-39.442	-13.00
		1880.00	3.7388	27.976	-67.746	-39.770	
		1909.30	8.5544	28.591	-66.932	-38.341	
	3	1851.50	3.9482	27.976	-68.227	-40.251	
		1880.00	9.7408	28.591	-67.966	-39.375	
		1908.50	8.9232	28.591	-67.516	-38.925	
	5	1852.50	8.8734	28.591	-67.918	-39.327	
		1880.00	8.7837	28.591	-68.332	-39.741	
		1907.50	9.7408	28.591	-66.293	-37.702	
	10	1855.00	2.9712	27.976	-67.963	-39.987	
		1880.00	9.4317	28.591	-67.310	-38.719	
		1905.00	9.1326	28.591	-67.515	-38.924	
	15	1857.50	9.3021	28.591	-68.255	-39.664	
		1880.00	4.2872	27.976	-67.845	-39.869	
		1902.50	4.0679	27.976	-67.447	-39.471	
	20	1860.00	5.7827	28.591	-67.366	-38.775	
		1880.00	10.0000	28.591	-67.267	-38.676	
		1900.00	9.7508	28.591	-67.078	-38.487	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 125 ~ 160.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor (dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

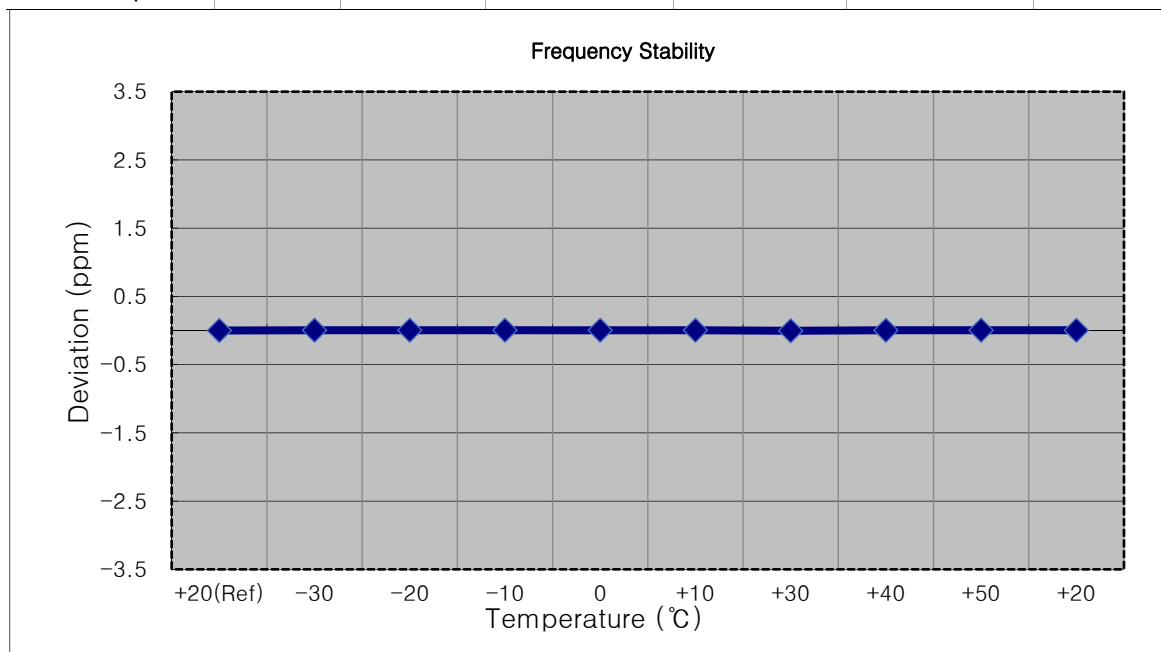
8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 161 ~ 196.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

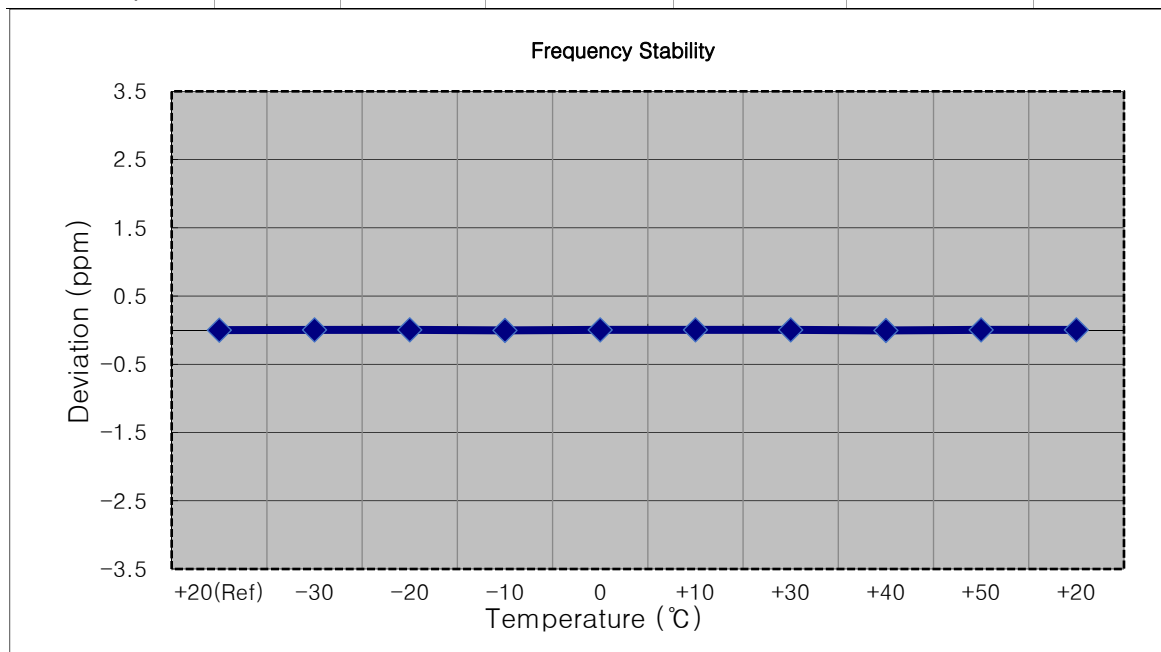
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1850,700,000 Hz</u>
CHANNEL:	<u>18607 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.900	+20(Ref)	1850 700 007	0.0	0.000 000	0.000
100 %		-30	1850 700 013	6.8	0.000 000	0.004
100 %		-20	1850 700 013	6.8	0.000 000	0.004
100 %		-10	1850 700 014	7.4	0.000 000	0.004
100 %		0	1850 700 012	5.8	0.000 000	0.003
100 %		+10	1850 700 013	6.7	0.000 000	0.004
100 %		+30	1850 699 999	-7.6	0.000 000	-0.004
100 %		+40	1850 700 013	6.1	0.000 000	0.003
100 %		+50	1850 700 014	7.8	0.000 000	0.004
Batt. Endpoint	3.300	+20	1850 700 013	6.0	0.000 000	0.003



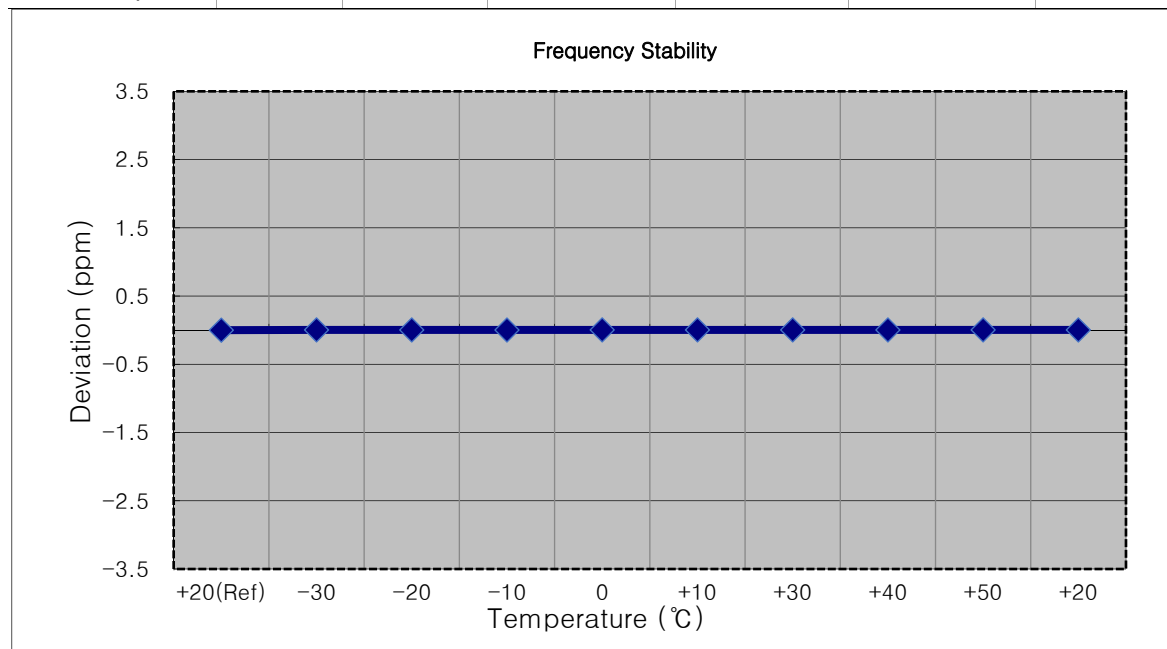
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1851,500,000 Hz</u>
CHANNEL:	<u>18615 (3 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1851 500 008	0.0	0.000 000	0.000
100 %		-30	1851 500 015	7.0	0.000 000	0.004
100 %		-20	1851 500 016	7.9	0.000 000	0.004
100 %		-10	1851 500 000	-7.3	0.000 000	-0.004
100 %		0	1851 500 015	7.5	0.000 000	0.004
100 %		+10	1851 500 017	8.8	0.000 000	0.005
100 %		+30	1851 500 016	7.8	0.000 000	0.004
100 %		+40	1851 500 000	-8.1	0.000 000	-0.004
100 %		+50	1851 500 015	7.7	0.000 000	0.004
Batt. Endpoint	3.300	+20	1851 500 015	7.1	0.000 000	0.004



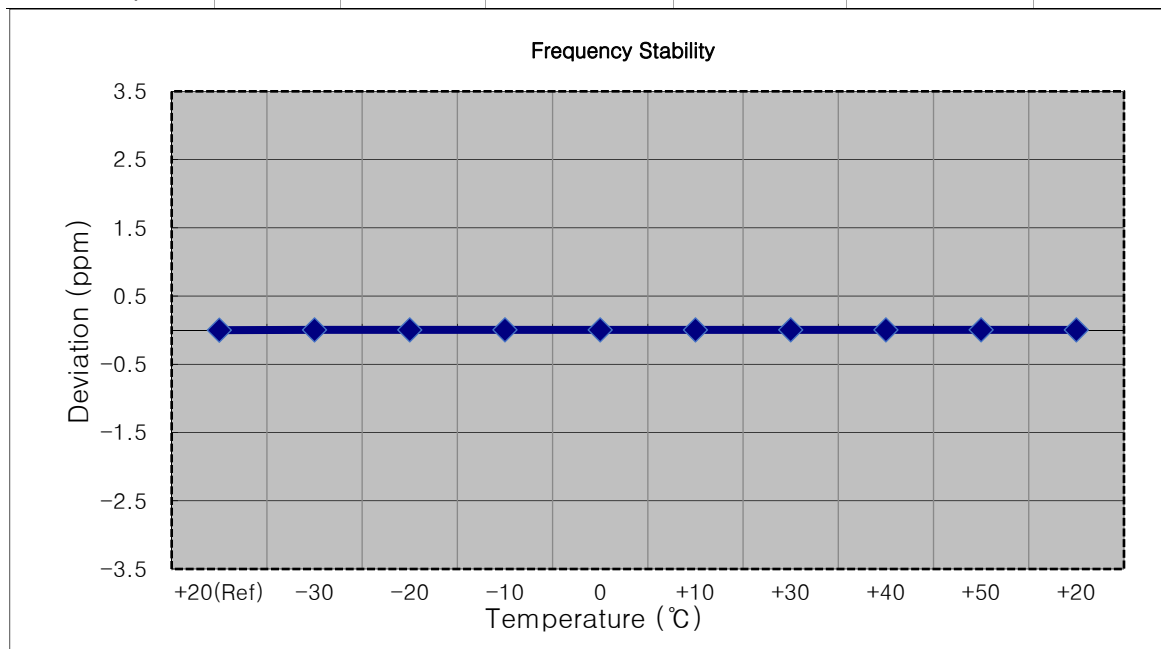
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1852,500,000 Hz
 ■ CHANNEL: 18625 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1852 500 006	0.0	0.000 000	0.000
100 %		-30	1852 500 013	6.8	0.000 000	0.004
100 %		-20	1852 500 012	5.4	0.000 000	0.003
100 %		-10	1852 500 011	4.9	0.000 000	0.003
100 %		0	1852 500 014	7.2	0.000 000	0.004
100 %		+10	1852 500 013	7.1	0.000 000	0.004
100 %		+30	1852 500 013	6.4	0.000 000	0.003
100 %		+40	1852 500 012	6.1	0.000 000	0.003
100 %		+50	1852 500 013	7.1	0.000 000	0.004
Batt. Endpoint	3.300	+20	1852 500 012	5.7	0.000 000	0.003



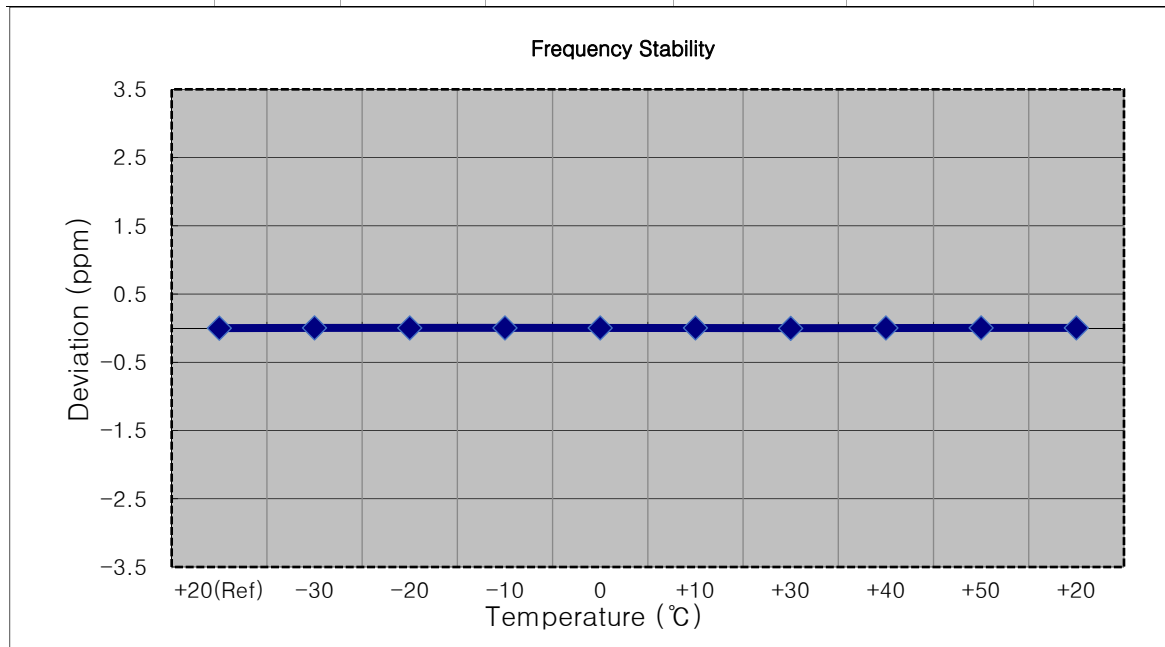
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1855,000,000 Hz
- ▣ CHANNEL: 18650 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1855 000 007	0.0	0.000 000	0.000
100 %		-30	1855 000 015	7.7	0.000 000	0.004
100 %		-20	1855 000 014	6.9	0.000 000	0.004
100 %		-10	1855 000 016	8.8	0.000 000	0.005
100 %		0	1855 000 014	7.0	0.000 000	0.004
100 %		+10	1855 000 015	7.5	0.000 000	0.004
100 %		+30	1855 000 015	8.2	0.000 000	0.004
100 %		+40	1855 000 014	6.8	0.000 000	0.004
100 %		+50	1855 000 015	8.1	0.000 000	0.004
Batt. Endpoint	3.300	+20	1855 000 014	6.5	0.000 000	0.004



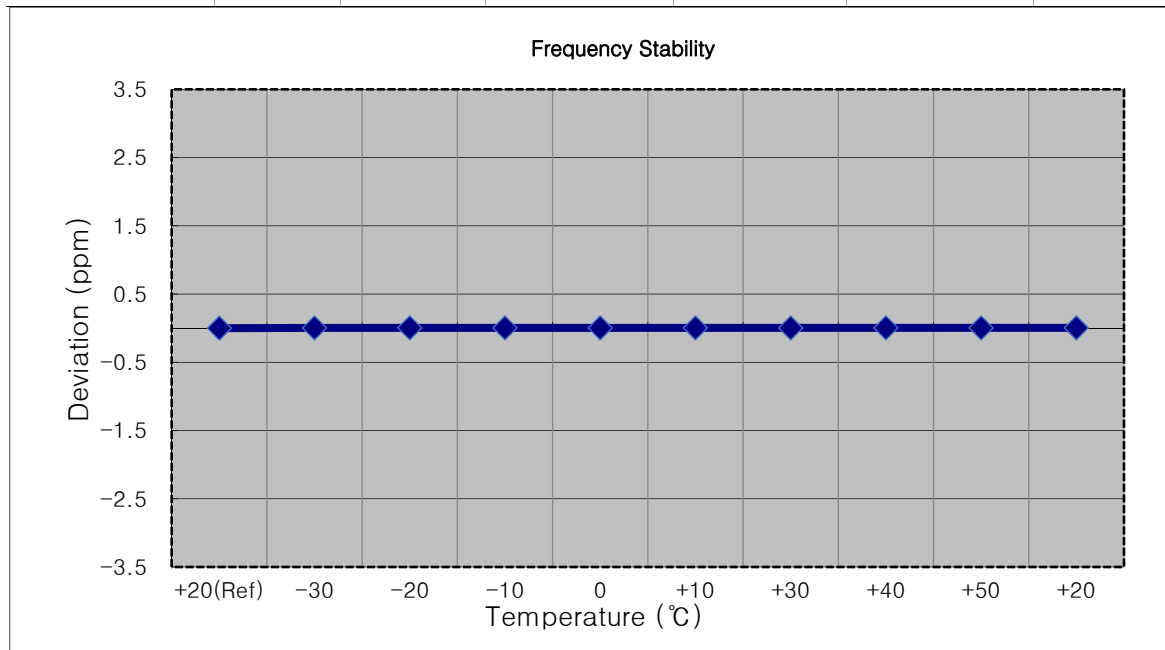
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1857,500,000 Hz
 ■ CHANNEL: 18675 (15 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1857 500 006	0.0	0.000 000	0.000
100 %		-30	1857 500 013	6.6	0.000 000	0.004
100 %		-20	1857 500 013	6.2	0.000 000	0.003
100 %		-10	1857 500 013	6.3	0.000 000	0.003
100 %		0	1857 500 013	6.1	0.000 000	0.003
100 %		+10	1857 500 014	7.1	0.000 000	0.004
100 %		+30	1857 500 001	-5.7	0.000 000	-0.003
100 %		+40	1857 500 013	6.2	0.000 000	0.003
100 %		+50	1857 500 013	6.7	0.000 000	0.004
Batt. Endpoint	3.300	+20	1857 500 014	7.3	0.000 000	0.004



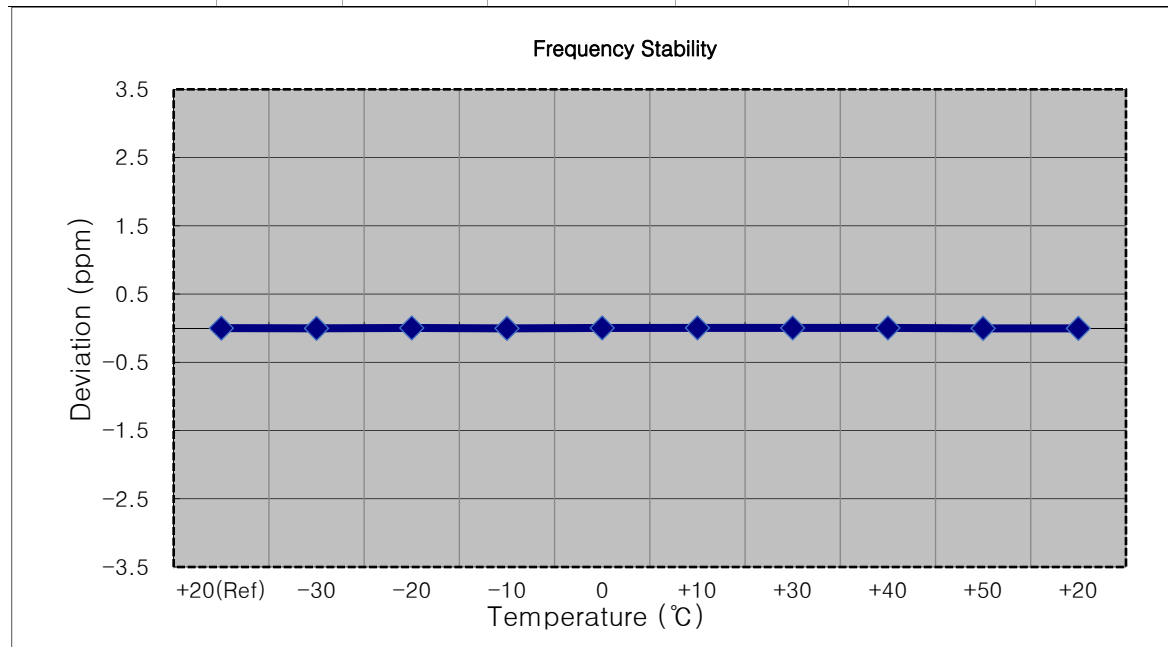
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1860,000,000 Hz
 ■ CHANNEL: 18700 (20 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1860 000 007	0.0	0.000 000	0.000
100 %		-30	1860 000 013	6.6	0.000 000	0.004
100 %		-20	1860 000 015	8.0	0.000 000	0.004
100 %		-10	1860 000 014	7.1	0.000 000	0.004
100 %		0	1860 000 014	7.4	0.000 000	0.004
100 %		+10	1860 000 013	6.8	0.000 000	0.004
100 %		+30	1860 000 013	6.3	0.000 000	0.003
100 %		+40	1860 000 016	8.9	0.000 000	0.005
100 %		+50	1860 000 014	7.8	0.000 000	0.004
Batt. Endpoint	3.300	+20	1860 000 015	8.3	0.000 000	0.004



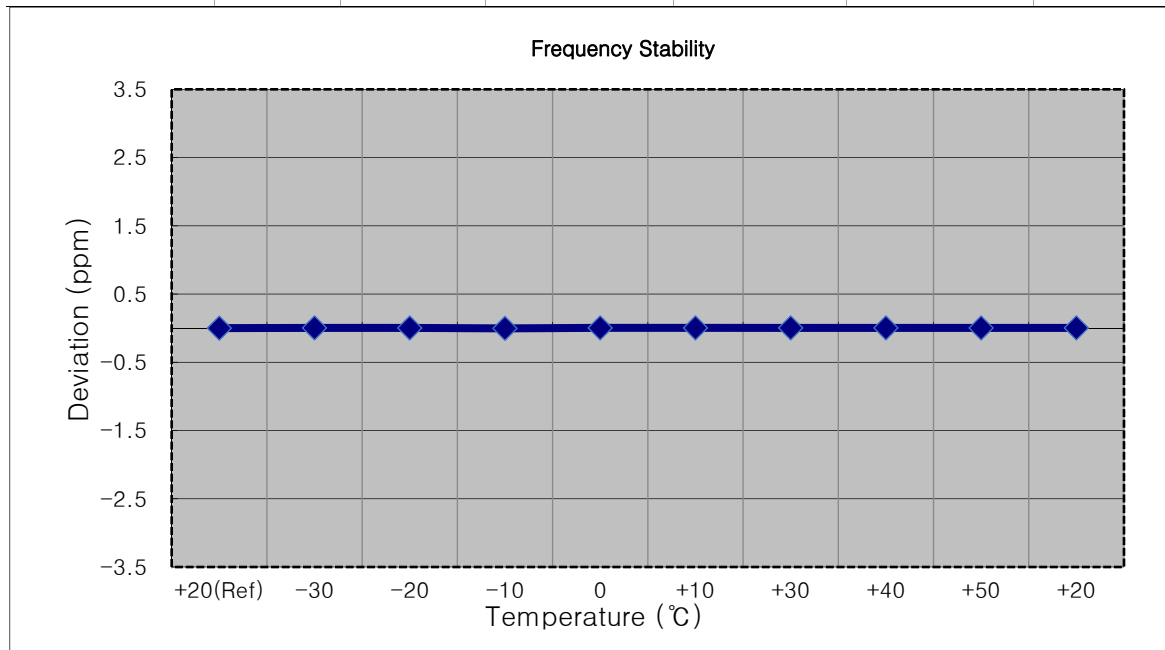
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1880,000,000 Hz
 ■ CHANNEL: 18900 (1.4 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1879 999 994	0.0	0.000 000	0.000
100 %		-30	1879 999 989	-5.4	0.000 000	-0.003
100 %		-20	1879 999 999	5.5	0.000 000	0.003
100 %		-10	1879 999 988	-6.2	0.000 000	-0.003
100 %		0	1879 999 999	5.5	0.000 000	0.003
100 %		+10	1880 000 001	6.8	0.000 000	0.004
100 %		+30	1880 000 000	6.1	0.000 000	0.003
100 %		+40	1880 000 000	5.8	0.000 000	0.003
100 %		+50	1879 999 988	-6.2	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1879 999 987	-6.6	0.000 000	-0.004



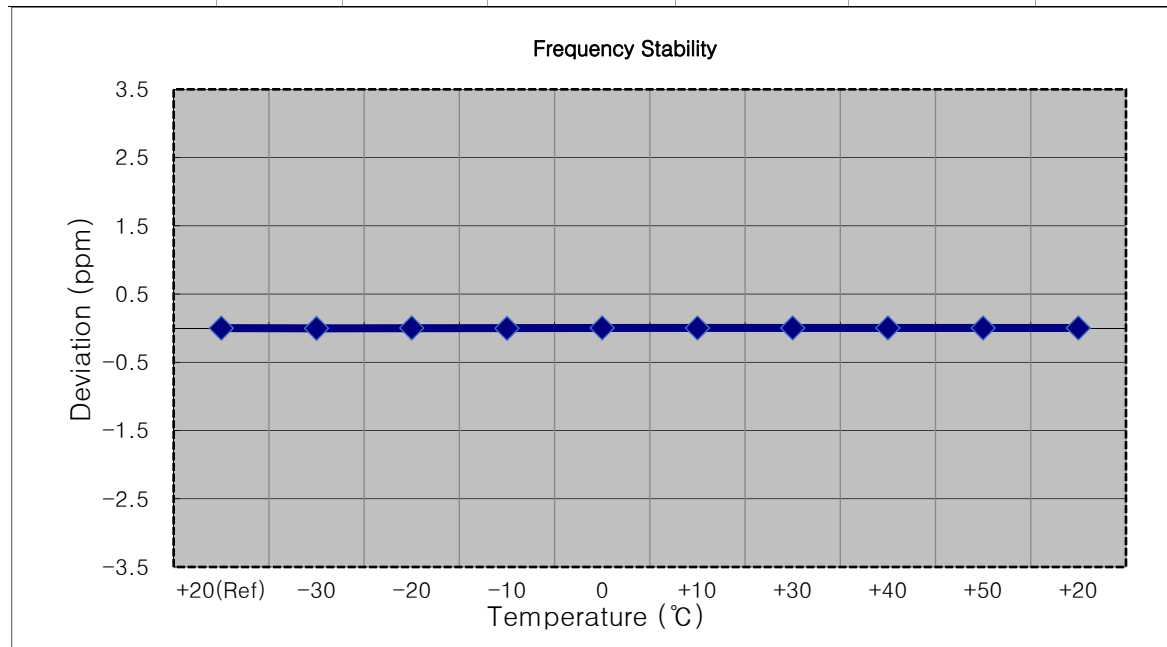
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 006	0.0	0.000 000	0.000
100 %		-30	1880 000 013	6.8	0.000 000	0.004
100 %		-20	1880 000 013	6.3	0.000 000	0.003
100 %		-10	1880 000 000	-6.2	0.000 000	-0.003
100 %		0	1880 000 014	7.4	0.000 000	0.004
100 %		+10	1880 000 014	7.4	0.000 000	0.004
100 %		+30	1880 000 013	6.6	0.000 000	0.004
100 %		+40	1880 000 014	7.6	0.000 000	0.004
100 %		+50	1880 000 013	6.2	0.000 000	0.003
Batt. Endpoint	3.300	+20	1880 000 013	7.0	0.000 000	0.004



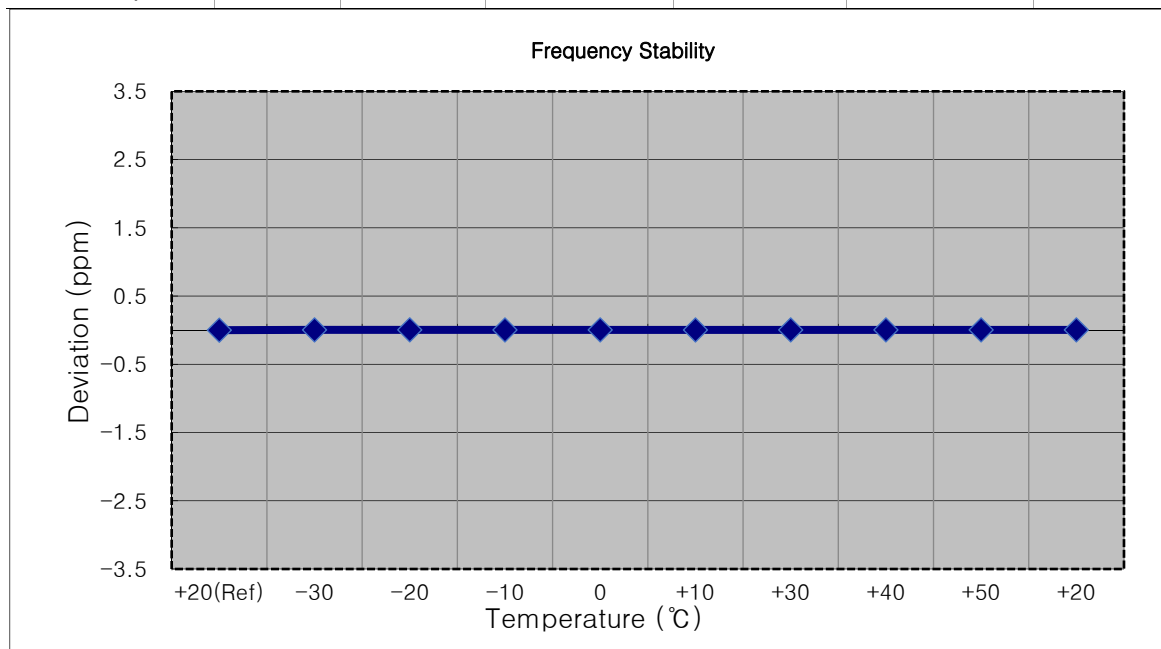
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 004	0.0	0.000 000	0.000
100 %		-30	1879 999 999	-5.4	0.000 000	-0.003
100 %		-20	1880 000 010	5.5	0.000 000	0.003
100 %		-10	1879 999 998	-5.7	0.000 000	-0.003
100 %		0	1880 000 011	6.5	0.000 000	0.003
100 %		+10	1880 000 009	4.9	0.000 000	0.003
100 %		+30	1880 000 010	6.2	0.000 000	0.003
100 %		+40	1880 000 010	5.9	0.000 000	0.003
100 %		+50	1880 000 009	4.9	0.000 000	0.003
Batt. Endpoint	3.300	+20	1880 000 009	5.1	0.000 000	0.003



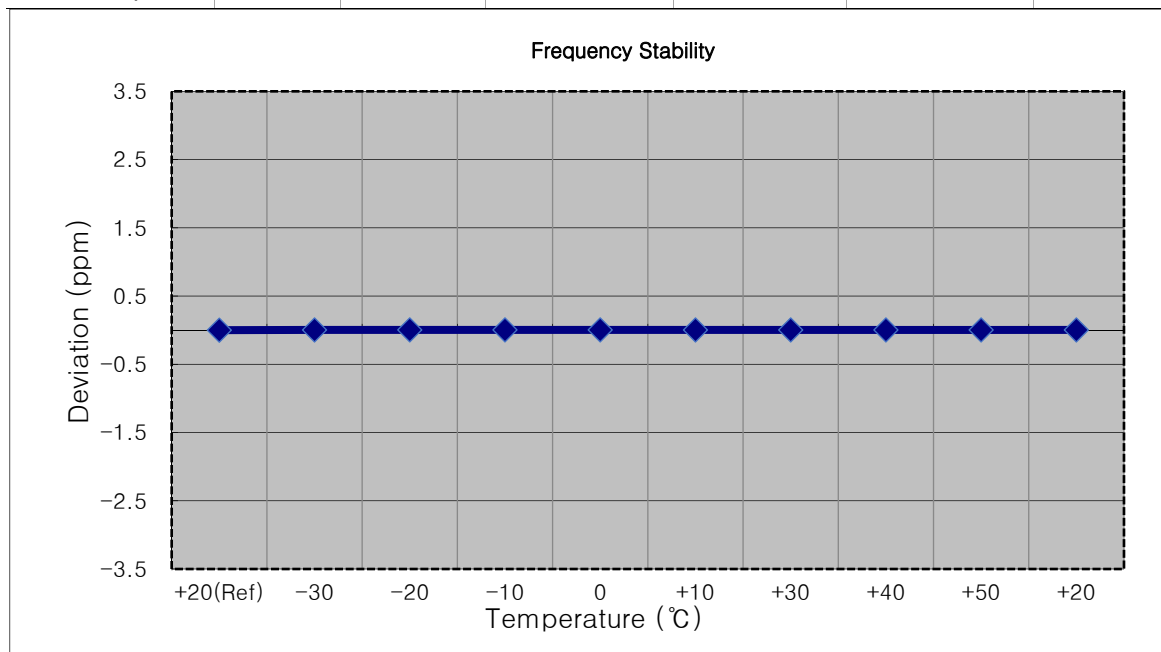
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 007	0.0	0.000 000	0.000
100 %		-30	1880 000 014	7.3	0.000 000	0.004
100 %		-20	1880 000 015	8.5	0.000 000	0.005
100 %		-10	1880 000 013	6.2	0.000 000	0.003
100 %		0	1880 000 014	6.8	0.000 000	0.004
100 %		+10	1880 000 013	6.4	0.000 000	0.003
100 %		+30	1880 000 014	6.8	0.000 000	0.004
100 %		+40	1880 000 014	6.7	0.000 000	0.004
100 %		+50	1880 000 014	7.0	0.000 000	0.004
Batt. Endpoint	3.300	+20	1880 000 014	6.9	0.000 000	0.004



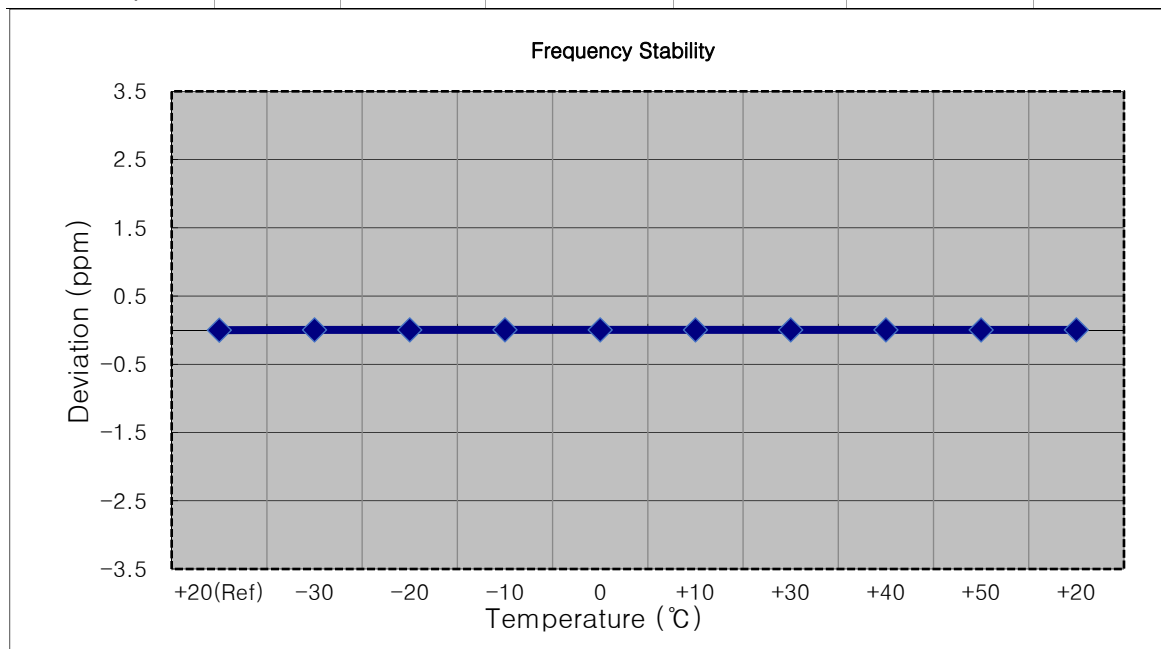
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1880,000,000 Hz</u>
CHANNEL:	<u>18900 (15 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 006	0.0	0.000 000	0.000
100 %		-30	1880 000 013	6.4	0.000 000	0.003
100 %		-20	1880 000 013	7.0	0.000 000	0.004
100 %		-10	1880 000 013	6.7	0.000 000	0.004
100 %		0	1880 000 014	7.5	0.000 000	0.004
100 %		+10	1880 000 012	5.5	0.000 000	0.003
100 %		+30	1880 000 013	6.3	0.000 000	0.003
100 %		+40	1880 000 013	6.4	0.000 000	0.003
100 %		+50	1880 000 012	5.2	0.000 000	0.003
Batt. Endpoint	3.300	+20	1880 000 013	6.4	0.000 000	0.003



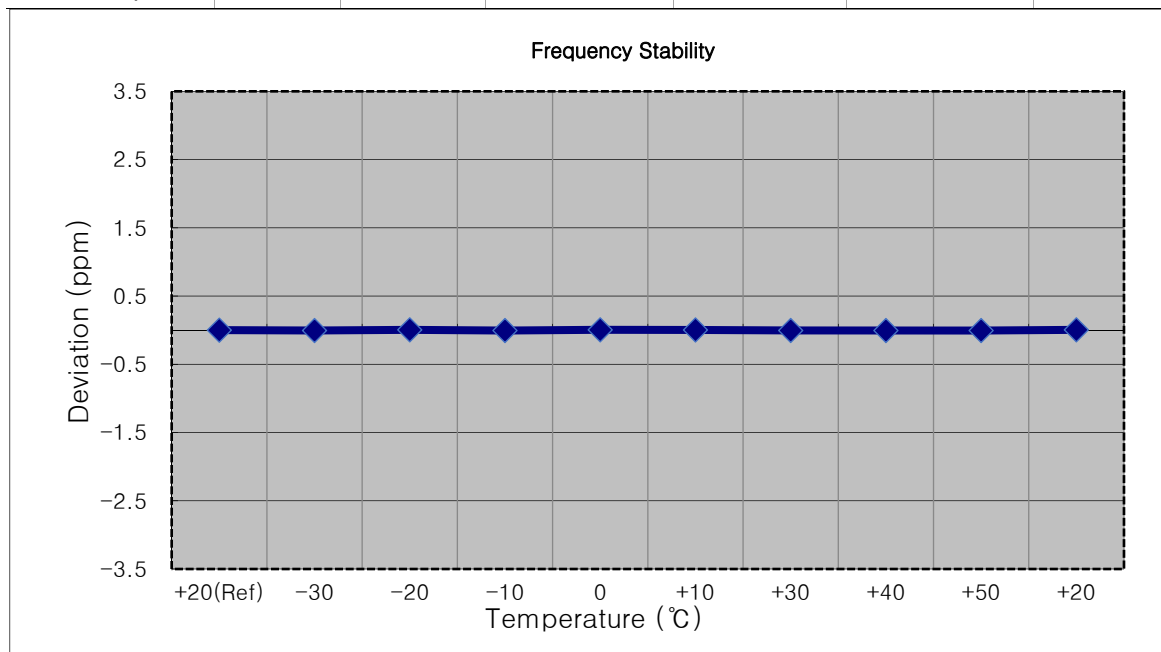
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 007	0.0	0.000 000	0.000
100 %		-30	1880 000 014	7.0	0.000 000	0.004
100 %		-20	1880 000 015	7.6	0.000 000	0.004
100 %		-10	1880 000 015	8.1	0.000 000	0.004
100 %		0	1880 000 014	7.2	0.000 000	0.004
100 %		+10	1880 000 015	7.6	0.000 000	0.004
100 %		+30	1880 000 014	7.1	0.000 000	0.004
100 %		+40	1880 000 014	7.1	0.000 000	0.004
100 %		+50	1880 000 013	6.1	0.000 000	0.003
Batt. Endpoint	3.300	+20	1880 000 014	6.8	0.000 000	0.004



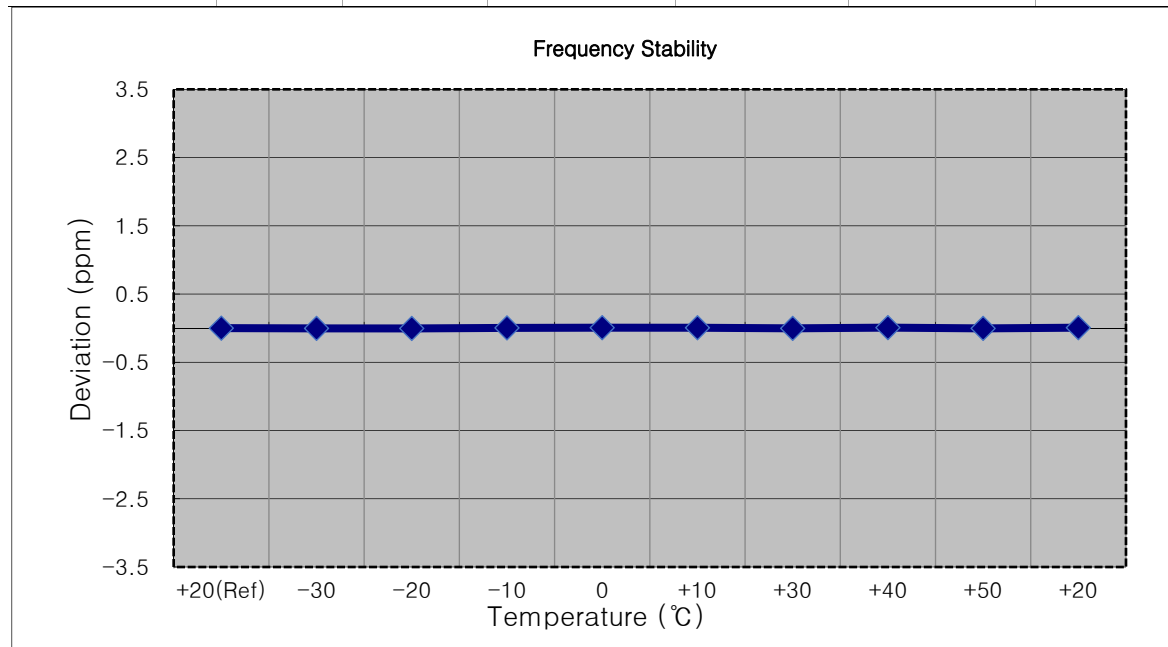
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1909,300,000 Hz</u>
CHANNEL:	<u>19193 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1909 299 991	0.0	0.000 000	0.000
100 %		-30	1909 299 981	-10.1	-0.000 001	-0.005
100 %		-20	1909 300 000	9.2	0.000 000	0.005
100 %		-10	1909 299 980	-10.6	-0.000 001	-0.006
100 %		0	1909 300 000	9.0	0.000 000	0.005
100 %		+10	1909 299 996	5.2	0.000 000	0.003
100 %		+30	1909 299 982	-8.9	0.000 000	-0.005
100 %		+40	1909 299 981	-10.3	-0.000 001	-0.005
100 %		+50	1909 299 980	-11.1	-0.000 001	-0.006
Batt. Endpoint	3.300	+20	1909 300 000	8.8	0.000 000	0.005



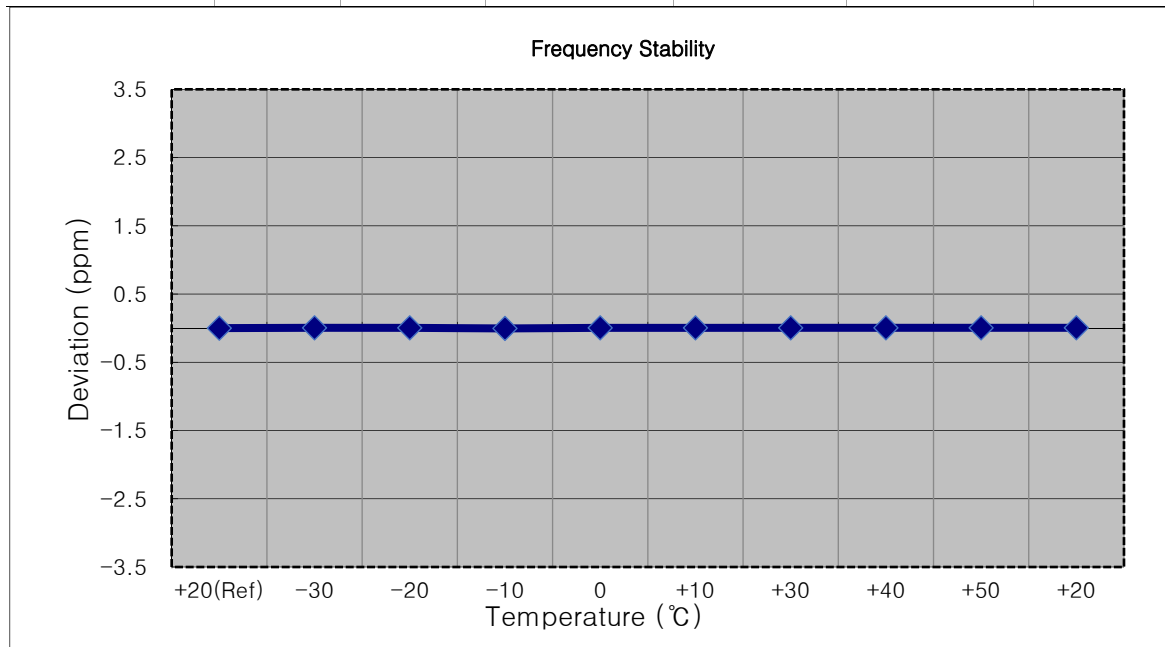
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1908,500,000 Hz
 ■ CHANNEL: 19185 (3 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1908 500 014	0.0	0.000 000	0.000
100 %		-30	1908 500 007	-6.7	0.000 000	-0.004
100 %		-20	1908 500 006	-8.1	0.000 000	-0.004
100 %		-10	1908 500 021	6.8	0.000 000	0.004
100 %		0	1908 500 027	12.6	0.000 001	0.007
100 %		+10	1908 500 026	11.8	0.000 001	0.006
100 %		+30	1908 500 008	-5.5	0.000 000	-0.003
100 %		+40	1908 500 029	15.0	0.000 001	0.008
100 %		+50	1908 500 008	-6.2	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1908 500 027	13.1	0.000 001	0.007



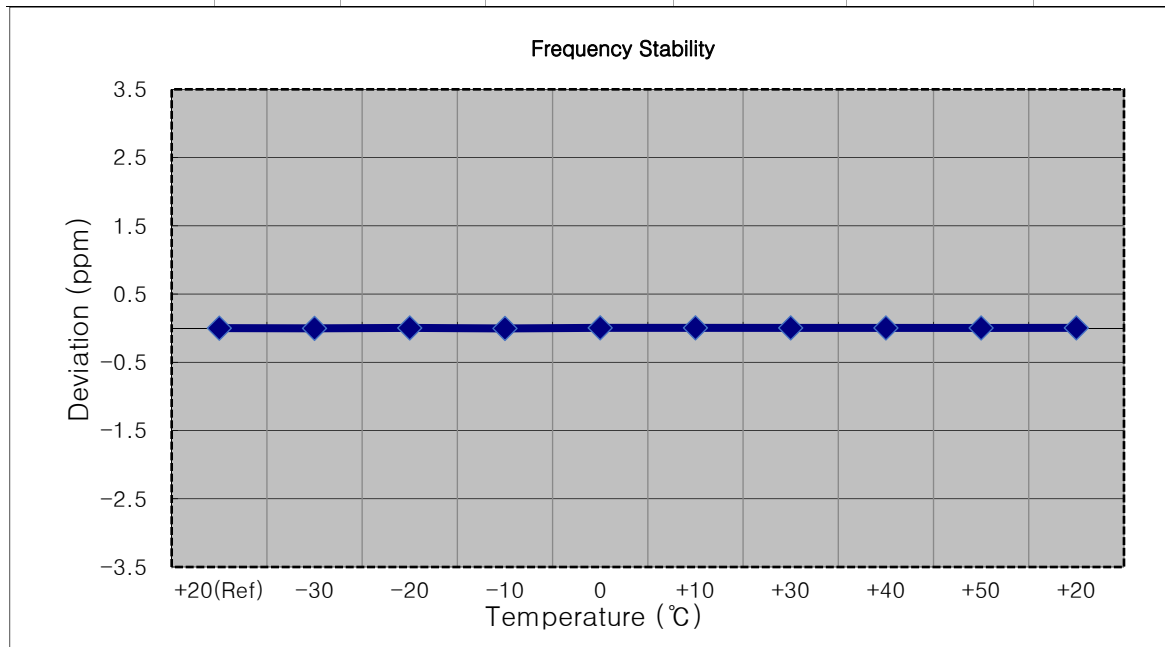
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1907,500,000 Hz
 ■ CHANNEL: 19175 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1907 499 990	0.0	0.000 000	0.000
100 %		-30	1907 499 999	9.4	0.000 000	0.005
100 %		-20	1907 499 999	8.8	0.000 000	0.005
100 %		-10	1907 499 982	-7.6	0.000 000	-0.004
100 %		0	1907 499 998	8.1	0.000 000	0.004
100 %		+10	1907 499 998	8.1	0.000 000	0.004
100 %		+30	1907 499 999	8.9	0.000 000	0.005
100 %		+40	1907 499 999	9.0	0.000 000	0.005
100 %		+50	1907 499 999	9.1	0.000 000	0.005
Batt. Endpoint	3.300	+20	1907 500 000	10.3	0.000 001	0.005



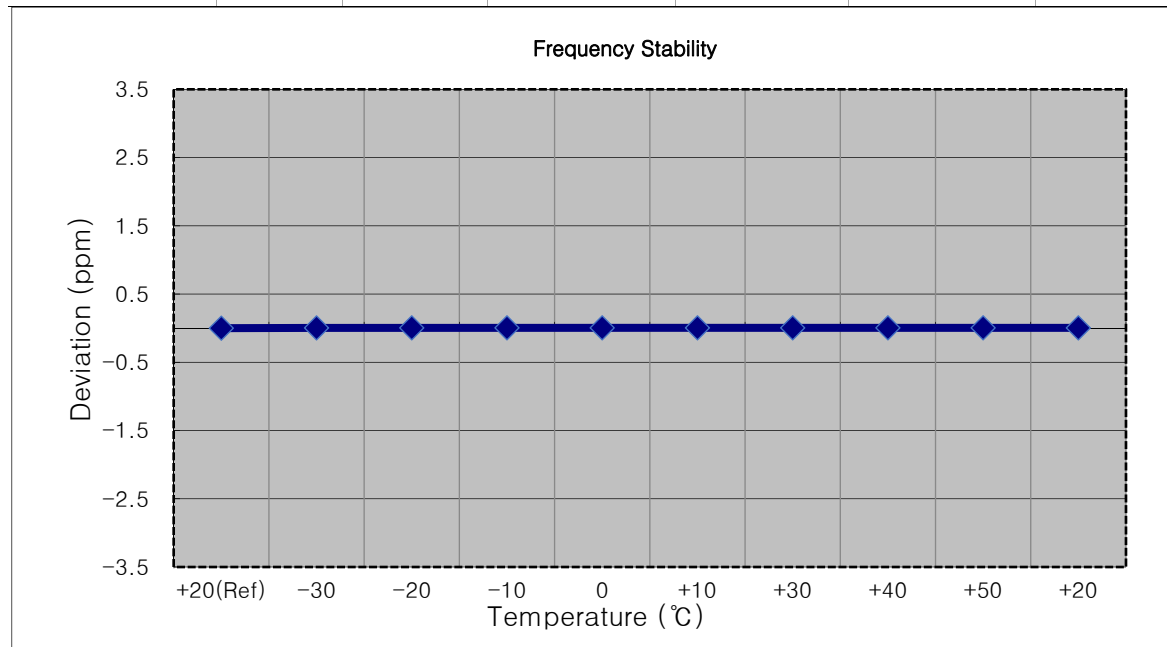
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1905,000,000 Hz
 ■ CHANNEL: 19150 (10 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1905 000 006	0.0	0.000 000	0.000
100 %		-30	1905 000 001	-5.4	0.000 000	-0.003
100 %		-20	1905 000 013	6.4	0.000 000	0.003
100 %		-10	1904 999 999	-7.5	0.000 000	-0.004
100 %		0	1905 000 016	9.2	0.000 000	0.005
100 %		+10	1905 000 015	8.3	0.000 000	0.004
100 %		+30	1905 000 013	6.6	0.000 000	0.003
100 %		+40	1905 000 013	6.5	0.000 000	0.003
100 %		+50	1905 000 012	5.5	0.000 000	0.003
Batt. Endpoint	3.300	+20	1905 000 014	7.8	0.000 000	0.004



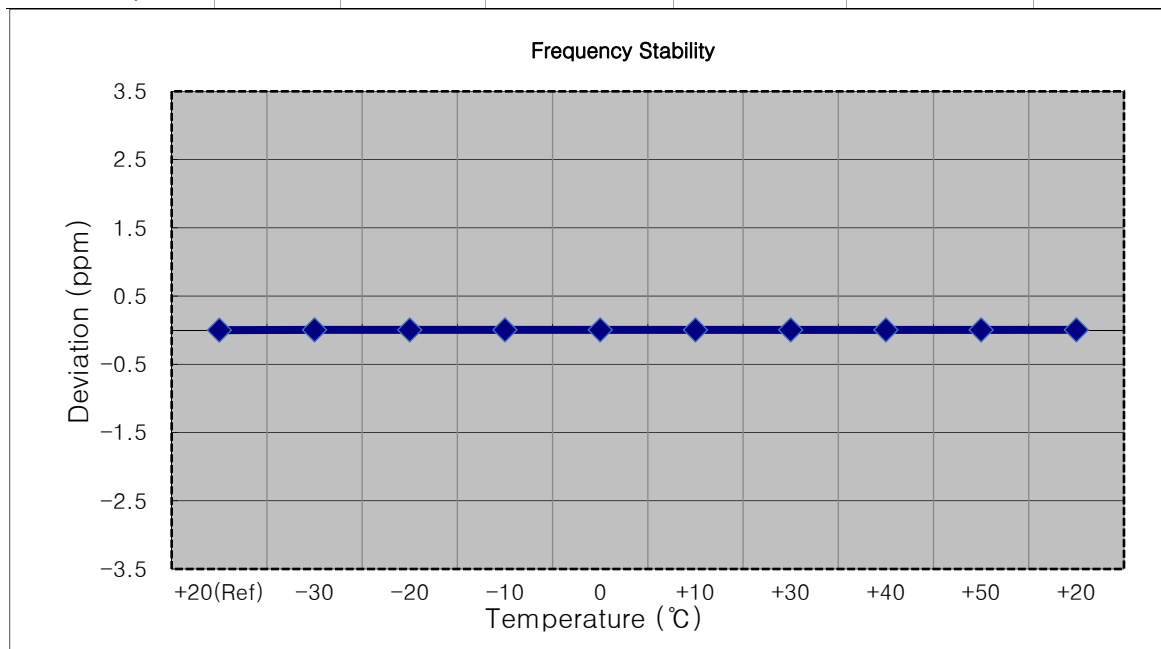
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1902,500,000 Hz
- ▣ CHANNEL: 19125 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1902 500 007	0.0	0.000 000	0.000
100 %		-30	1902 500 014	7.1	0.000 000	0.004
100 %		-20	1902 500 016	8.9	0.000 000	0.005
100 %		-10	1902 500 016	8.2	0.000 000	0.004
100 %		0	1902 500 016	8.7	0.000 000	0.005
100 %		+10	1902 500 016	8.3	0.000 000	0.004
100 %		+30	1902 500 016	8.2	0.000 000	0.004
100 %		+40	1902 500 016	8.7	0.000 000	0.005
100 %		+50	1902 500 017	9.2	0.000 000	0.005
Batt. Endpoint	3.300	+20	1902 500 015	7.5	0.000 000	0.004



■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1900,000,000 Hz
 ■ CHANNEL: 19100 (20 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1900 000 007	0.0	0.000 000	0.000
100 %		-30	1900 000 015	7.7	0.000 000	0.004
100 %		-20	1900 000 013	6.4	0.000 000	0.003
100 %		-10	1900 000 014	7.4	0.000 000	0.004
100 %		0	1900 000 014	7.4	0.000 000	0.004
100 %		+10	1900 000 013	6.4	0.000 000	0.003
100 %		+30	1900 000 015	7.9	0.000 000	0.004
100 %		+40	1900 000 015	7.7	0.000 000	0.004
100 %		+50	1900 000 014	6.6	0.000 000	0.003
Batt. Endpoint	3.300	+20	1900 000 015	7.8	0.000 000	0.004



9. TEST DATA(Sub 5 ANT)

9.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1850.7	LTE B2 (1.4 MHz)	QPSK	-26.62	7.90	10.40	2.07	V	< 2.00	0.042	16.23	1	5
		16-QAM	-27.40	7.12	10.40	2.07	V		0.035	15.45		
		64-QAM	-28.60	5.92	10.40	2.07	V		0.027	14.25		
		256-QAM	-31.57	2.95	10.40	2.07	V		0.013	11.28		
1880		QPSK	-26.97	7.98	10.40	2.21	V		0.041	16.17	1	0
		16-QAM	-27.72	7.23	10.40	2.21	V		0.035	15.42		
		64-QAM	-28.91	6.04	10.40	2.21	V		0.027	14.23		
		256-QAM	-31.91	3.04	10.40	2.21	V		0.013	11.23		
1909.3		QPSK	-27.64	7.30	10.40	2.17	V		0.036	15.53	1	0
		16-QAM	-28.40	6.54	10.40	2.17	V		0.030	14.77		
		64-QAM	-29.61	5.33	10.40	2.17	V		0.023	13.56		
		256-QAM	-32.65	2.29	10.40	2.17	V		0.011	10.52		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1851.5	LTE B2 (3 MHz)	QPSK	-26.58	7.94	10.40	2.07	V	< 2.00	0.042	16.27	1	14
		16-QAM	-27.32	7.20	10.40	2.07	V		0.036	15.53		
		64-QAM	-28.52	6.00	10.40	2.07	V		0.027	14.33		
		256-QAM	-31.53	2.99	10.40	2.07	V		0.014	11.32		
1880		QPSK	-27.01	7.94	10.40	2.21	V		0.041	16.13	1	0
		16-QAM	-27.80	7.15	10.40	2.21	V		0.034	15.34		
		64-QAM	-29.01	5.94	10.40	2.21	V		0.026	14.13		
		256-QAM	-31.89	3.06	10.40	2.21	V		0.013	11.25		
1908.5		QPSK	-27.44	7.50	10.40	2.17	V		0.037	15.73	1	0
		16-QAM	-28.26	6.68	10.40	2.17	V		0.031	14.91		
		64-QAM	-29.47	5.47	10.40	2.17	V		0.023	13.70		
		256-QAM	-32.51	2.43	10.40	2.17	V		0.012	10.66		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1852.5	LTE B2 (5 MHz)	QPSK	-26.53	8.04	10.40	2.08	V	< 2.00	0.043	16.36	1	24
		16-QAM	-27.31	7.26	10.40	2.08	V		0.036	15.58		
		64-QAM	-28.51	6.06	10.40	2.08	V		0.027	14.38		
		256-QAM	-31.49	3.08	10.40	2.08	V		0.014	11.40		
1880		QPSK	-26.97	7.98	10.40	2.21	V		0.041	16.17	1	0
		16-QAM	-27.75	7.20	10.40	2.21	V		0.035	15.39		
		64-QAM	-28.94	6.01	10.40	2.21	V		0.026	14.20		
		256-QAM	-31.93	3.02	10.40	2.21	V		0.013	11.21		
1907.5		QPSK	-27.31	7.63	10.40	2.17	V		0.039	15.86	1	0
		16-QAM	-28.07	6.87	10.40	2.17	V		0.032	15.10		
		64-QAM	-29.28	5.66	10.40	2.17	V		0.025	13.89		
		256-QAM	-32.32	2.62	10.40	2.17	V		0.012	10.85		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1855	LTE B2 (10 MHz)	QPSK	-26.57	8.00	10.40	2.08	V	< 2.00	0.043	16.32	1	49
		16-QAM	-27.34	7.23	10.40	2.08	V		0.036	15.55		
		64-QAM	-28.55	6.02	10.40	2.08	V		0.027	14.34		
		256-QAM	-31.62	2.95	10.40	2.08	V		0.013	11.27		
1880		QPSK	-26.79	8.16	10.40	2.21	V		0.043	16.35	1	0
		16-QAM	-27.54	7.41	10.40	2.21	V		0.036	15.60		
		64-QAM	-28.71	6.24	10.40	2.21	V		0.028	14.43		
		256-QAM	-31.71	3.24	10.40	2.21	V		0.014	11.43		
1905		QPSK	-27.11	7.81	10.40	2.19	V		0.040	16.02	1	0
		16-QAM	-27.82	7.10	10.40	2.19	V		0.034	15.31		
		64-QAM	-28.98	5.94	10.40	2.19	V		0.026	14.15		
		256-QAM	-32.08	2.84	10.40	2.19	V		0.013	11.05		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1857.5	LTE B2 (15 MHz)	QPSK	-26.57	8.07	10.40	2.10	V	< 2.00	0.043	16.37	1	74
		16-QAM	-27.19	7.45	10.40	2.10	V		0.038	15.75		
		64-QAM	-28.38	6.26	10.40	2.10	V		0.029	14.56		
		256-QAM	-31.56	3.08	10.40	2.10	V		0.014	11.38		
1880		QPSK	-26.78	8.17	10.40	2.21	V		0.043	16.36	1	0
		16-QAM	-27.47	7.48	10.40	2.21	V		0.037	15.67		
		64-QAM	-28.63	6.32	10.40	2.21	V		0.028	14.51		
		256-QAM	-31.76	3.19	10.40	2.21	V		0.014	11.38		
1902.5		QPSK	-27.18	7.74	10.40	2.19	V		0.039	15.95	1	0
		16-QAM	-27.81	7.11	10.40	2.19	V		0.034	15.32		
		64-QAM	-29.01	5.91	10.40	2.19	V		0.026	14.12		
		256-QAM	-32.24	2.68	10.40	2.19	V		0.012	10.89		

Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1860	LTE B2 (20 MHz)	QPSK	-26.58	8.06	10.40	2.10	V	< 2.00	0.043	16.36	1	99
		16-QAM	-27.18	7.46	10.40	2.10	V		0.038	15.76		
		64-QAM	-28.36	6.28	10.40	2.10	V		0.029	14.58		
		256-QAM	-31.57	3.07	10.40	2.10	V		0.014	11.37		
1880		QPSK	-26.88	8.07	10.40	2.21	V		0.042	16.26	1	0
		16-QAM	-27.51	7.44	10.40	2.21	V		0.037	15.63		
		64-QAM	-28.66	6.29	10.40	2.21	V		0.028	14.48		
		256-QAM	-31.83	3.12	10.40	2.21	V		0.014	11.31		
1900		QPSK	-27.12	7.76	10.40	2.20	V		0.039	15.96	1	50
		16-QAM	-27.77	7.11	10.40	2.20	V		0.034	15.31		
		64-QAM	-28.95	5.93	10.40	2.20	V		0.026	14.13		
		256-QAM	-32.09	2.79	10.40	2.20	V		0.013	10.99		

9.2 RADIATED SPURIOUS EMISSIONS

■ MODE: LTE B2
 ■ MODULATION SIGNAL: 15 MHz QPSK
 ■ DISTANCE: 3 meters
 ■ LIMIT: -13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	RB	
								Size	Offset
18675 (1857.5)	3 715.00	-31.51	12.28	-48.60	3.11	H	-39.43	1	74
	5 572.50	-42.29	13.06	-54.44	3.89	H	-45.27		
	7 430.00	-43.99	10.78	-47.00	4.56	V	-40.78		
18900 (1880)	3 760.00	-35.48	12.22	-51.09	3.12	V	-41.99	1	0
	5 640.00	-41.27	13.12	-53.71	3.92	H	-44.51		
	7 520.00	-44.38	10.82	-47.03	4.61	V	-40.82		
19125 (1902.5)	3 805.00	-32.99	12.16	-49.27	3.21	H	-40.32	1	0
	5 707.50	-40.87	13.09	-53.26	4.02	V	-44.19		
	7 610.00	-43.36	11.11	-46.34	4.64	H	-39.87		

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
2	1.4 MHz	1880.0	QPSK	6	0	5.68
			16-QAM			6.44
			64-QAM			6.33
			256-QAM			6.26
	3 MHz		QPSK	15		5.77
			16-QAM			6.45
			64-QAM			6.48
			256-QAM			6.43
	5 MHz		QPSK	25		5.85
			16-QAM			6.46
			64-QAM			6.44
			256-QAM			6.41
	10 MHz		QPSK	50		5.91
			16-QAM			6.46
			64-QAM			6.50
			256-QAM			6.39
	15 MHz		QPSK	75		5.71
			16-QAM			6.42
			64-QAM			6.49
			256-QAM			6.36
	20 MHz		QPSK	100		5.74
			16-QAM			6.44
			64-QAM			6.55
			256-QAM			6.45

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 198 ~ 221.

9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
2	1.4 MHz	1880.0	QPSK	6	0	1.0984
			16-QAM			1.0927
			64-QAM			1.0939
			256-QAM			1.0957
	3 MHz		QPSK	15		2.7157
			16-QAM			2.7021
			64-QAM			2.7058
			256-QAM			2.7091
	5 MHz		QPSK	25		4.5315
			16-QAM			4.5115
			64-QAM			4.5268
			256-QAM			4.5507
	10 MHz		QPSK	50		9.0020
			16-QAM			9.0051
			64-QAM			8.9942
			256-QAM			8.9941
	15 MHz		QPSK	75		13.448
			16-QAM			13.489
			64-QAM			13.497
			256-QAM			13.419
	20 MHz		QPSK	100		17.968
			16-QAM			17.956
			64-QAM			17.960
			256-QAM			17.953

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 222 ~ 245.

9.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
2	1.4	1850.70	8.5643	28.591	-68.094	-39.503	-13.00
		1880.00	8.3649	28.591	-67.514	-38.923	
		1909.30	3.2204	27.976	-68.060	-40.084	
	3	1851.50	9.8804	28.591	-66.815	-38.224	
		1880.00	8.2752	28.591	-67.118	-38.527	
		1908.50	7.9362	28.591	-67.360	-38.769	
	5	1852.50	9.6610	28.591	-68.577	-39.986	
		1880.00	4.3071	27.976	-67.351	-39.375	
		1907.50	6.0319	28.591	-66.484	-37.893	
	10	1855.00	9.1226	28.591	-67.380	-38.789	
		1880.00	6.0120	28.591	-67.080	-38.489	
		1905.00	8.0359	28.591	-67.528	-38.937	
	15	1857.50	4.9352	27.976	-67.962	-39.986	
		1880.00	7.3181	28.591	-66.939	-38.348	
		1902.50	8.2852	28.591	-67.651	-39.060	
	20	1860.00	9.7009	28.591	-68.326	-39.735	
		1880.00	7.7268	28.591	-66.822	-38.231	
		1900.00	3.7987	27.976	-67.597	-39.621	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 246 ~ 281.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor (dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

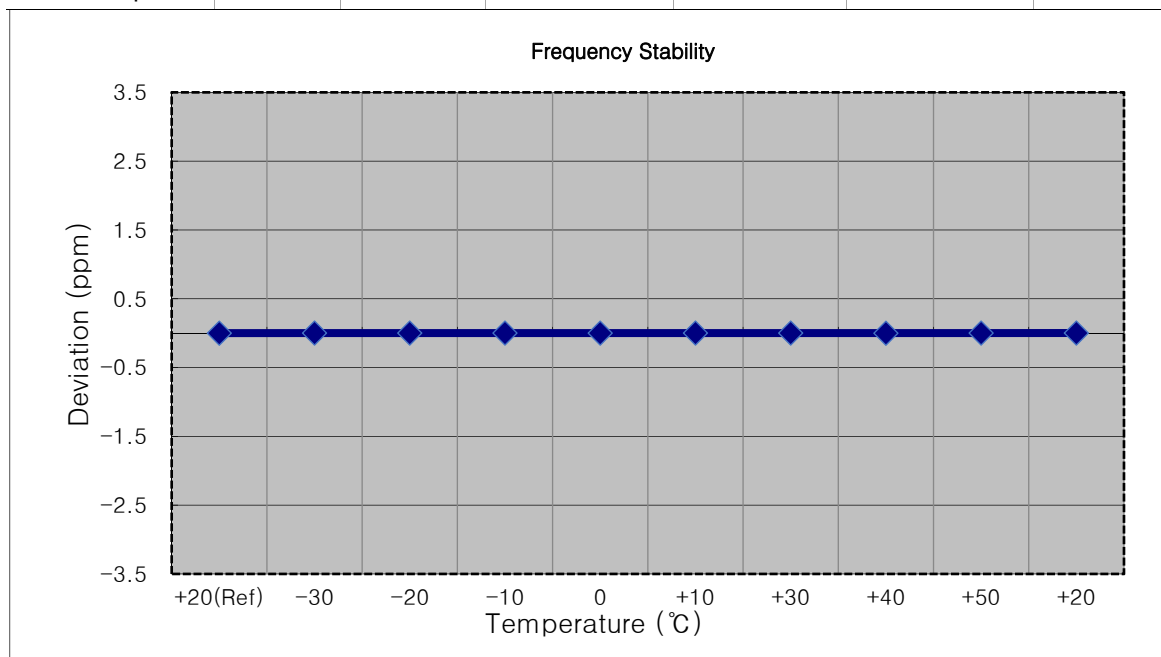
9.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 282 ~ 317.

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

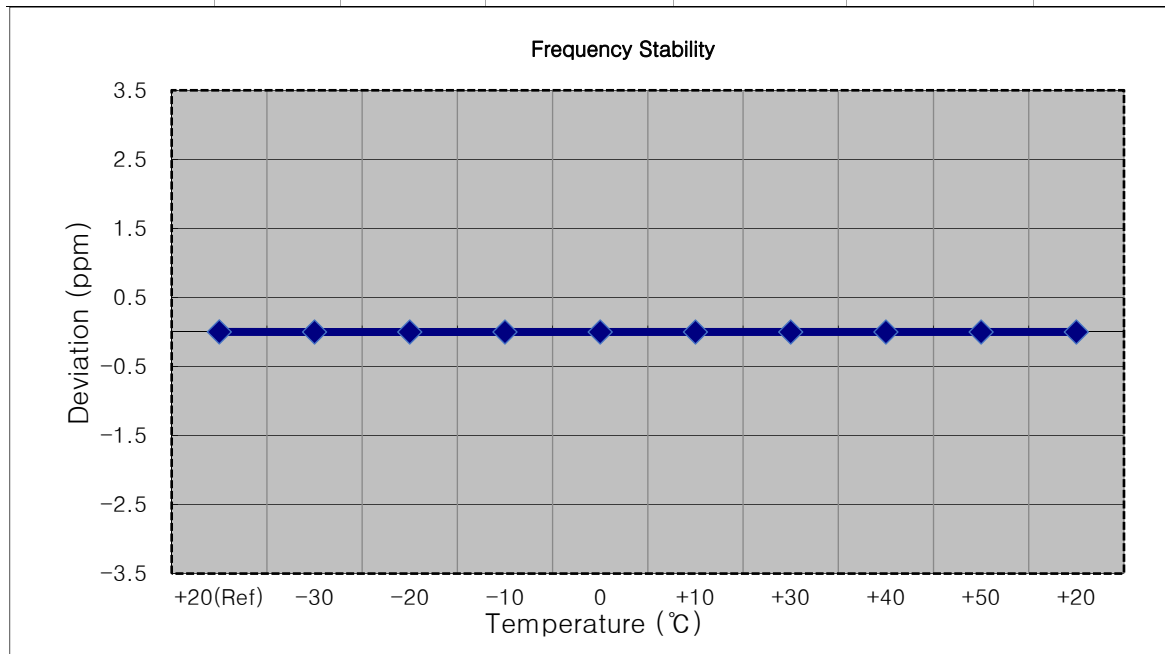
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1850,700,000 Hz</u>
CHANNEL:	<u>18607 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.900	+20(Ref)	1850 699 998	0.0	0.000 000	0.000
100 %		-30	1850 700 000	1.6	0.000 000	0.001
100 %		-20	1850 700 000	2.4	0.000 000	0.001
100 %		-10	1850 700 000	1.7	0.000 000	0.001
100 %		0	1850 699 999	1.3	0.000 000	0.001
100 %		+10	1850 700 000	2.5	0.000 000	0.001
100 %		+30	1850 700 000	1.9	0.000 000	0.001
100 %		+40	1850 699 995	-2.5	0.000 000	-0.001
100 %		+50	1850 700 001	2.8	0.000 000	0.002
Batt. Endpoint	3.300	+20	1850 700 000	2.5	0.000 000	0.001



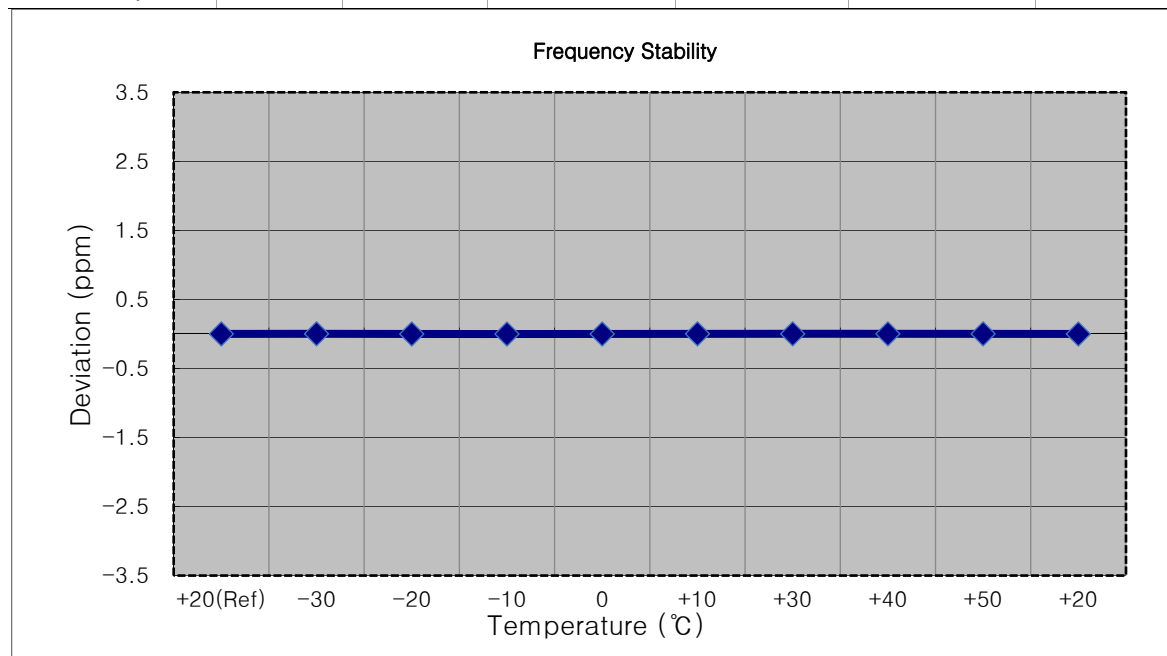
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1851,500,000 Hz
- ▣ CHANNEL: 18615 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1851 499 996	0.0	0.000 000	0.000
100 %		-30	1851 499 993	-3.0	0.000 000	-0.002
100 %		-20	1851 499 994	-2.6	0.000 000	-0.001
100 %		-10	1851 499 994	-2.3	0.000 000	-0.001
100 %		0	1851 499 995	-1.9	0.000 000	-0.001
100 %		+10	1851 499 994	-2.0	0.000 000	-0.001
100 %		+30	1851 499 994	-2.0	0.000 000	-0.001
100 %		+40	1851 499 994	-2.7	0.000 000	-0.001
100 %		+50	1851 499 994	-2.3	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1851 499 995	-1.6	0.000 000	-0.001



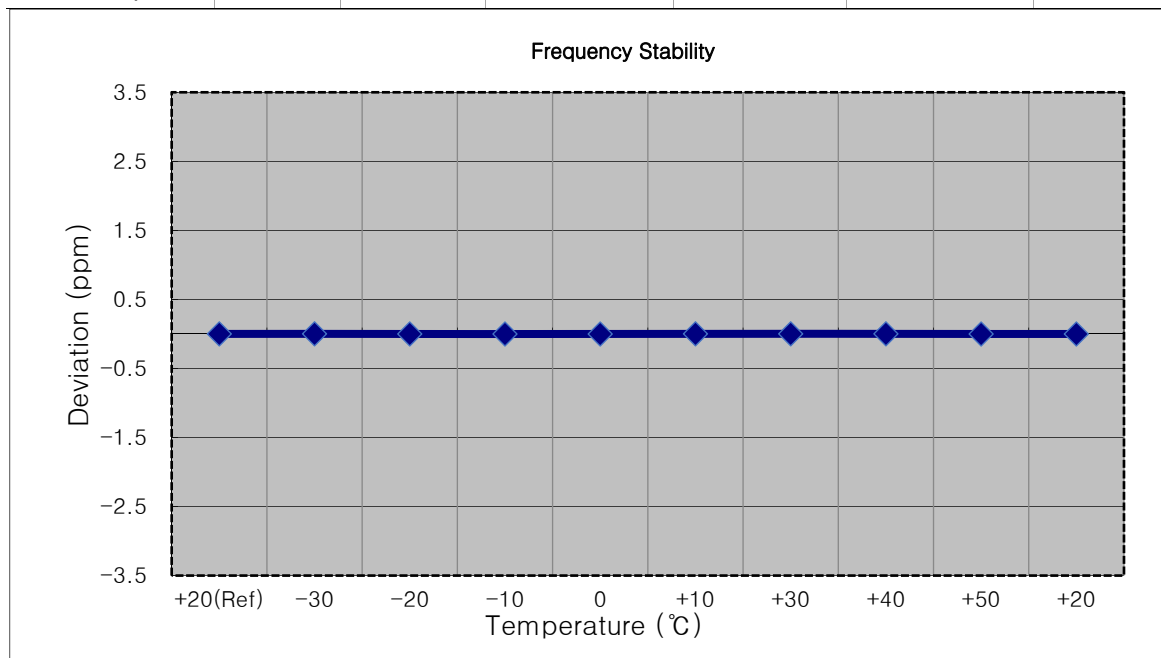
■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1852,500,000 Hz
 ■ CHANNEL: 18625 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1852 499 997	0.0	0.000 000	0.000
100 %		-30	1852 500 000	2.8	0.000 000	0.002
100 %		-20	1852 499 994	-2.8	0.000 000	-0.002
100 %		-10	1852 499 995	-2.1	0.000 000	-0.001
100 %		0	1852 499 995	-2.4	0.000 000	-0.001
100 %		+10	1852 500 000	2.6	0.000 000	0.001
100 %		+30	1852 499 999	1.9	0.000 000	0.001
100 %		+40	1852 500 000	2.4	0.000 000	0.001
100 %		+50	1852 499 999	1.7	0.000 000	0.001
Batt. Endpoint	3.300	+20	1852 499 995	-1.9	0.000 000	-0.001



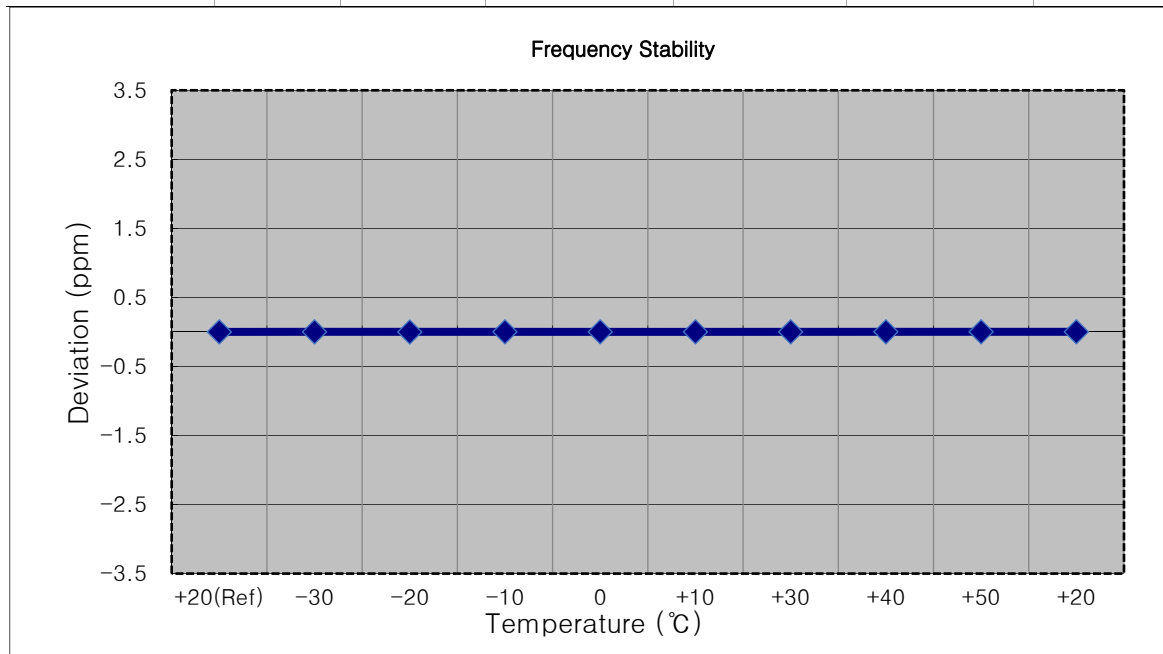
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1855,000,000 Hz</u>
CHANNEL:	<u>18650 (10 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1855 000 001	0.0	0.000 000	0.000
100 %		-30	1855 000 003	2.3	0.000 000	0.001
100 %		-20	1855 000 000	-1.1	0.000 000	-0.001
100 %		-10	1854 999 998	-2.8	0.000 000	-0.002
100 %		0	1854 999 999	-2.1	0.000 000	-0.001
100 %		+10	1855 000 002	1.4	0.000 000	0.001
100 %		+30	1855 000 003	1.7	0.000 000	0.001
100 %		+40	1855 000 003	2.0	0.000 000	0.001
100 %		+50	1854 999 999	-2.0	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1854 999 999	-1.9	0.000 000	-0.001



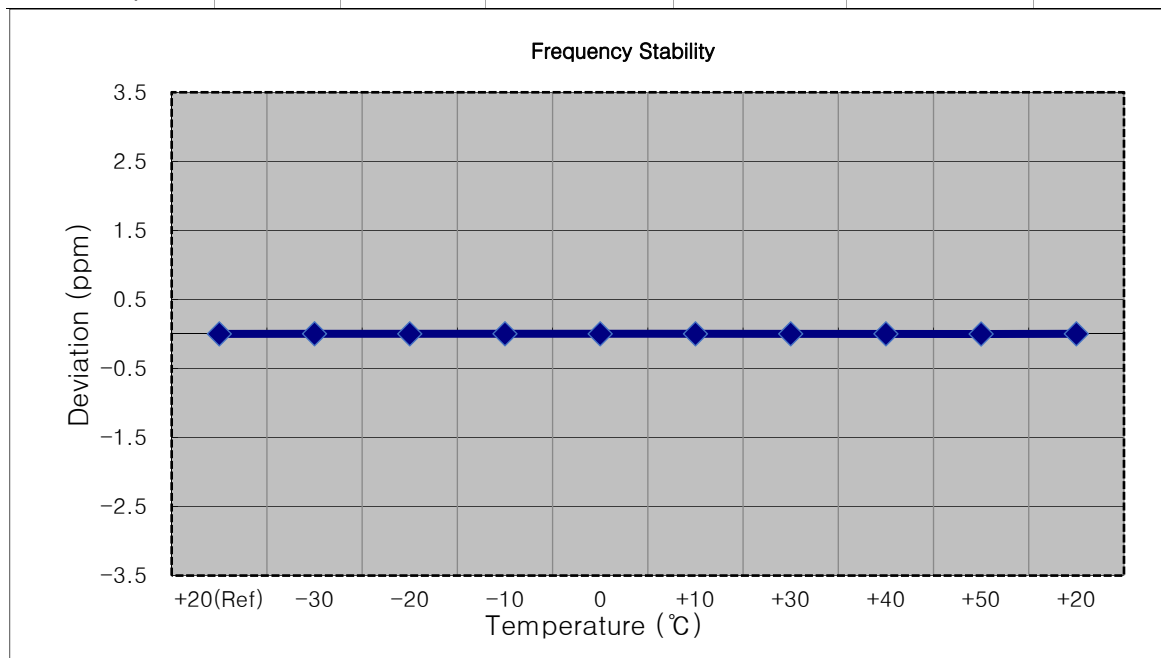
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1857,500,000 Hz
- ▣ CHANNEL: 18675 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1857 499 999	0.0	0.000 000	0.000
100 %		-30	1857 500 001	2.0	0.000 000	0.001
100 %		-20	1857 499 997	-2.0	0.000 000	-0.001
100 %		-10	1857 500 001	2.2	0.000 000	0.001
100 %		0	1857 500 001	2.7	0.000 000	0.001
100 %		+10	1857 500 000	1.3	0.000 000	0.001
100 %		+30	1857 500 000	1.4	0.000 000	0.001
100 %		+40	1857 500 002	3.4	0.000 000	0.002
100 %		+50	1857 500 001	2.6	0.000 000	0.001
Batt. Endpoint	3.300	+20	1857 500 001	2.9	0.000 000	0.002



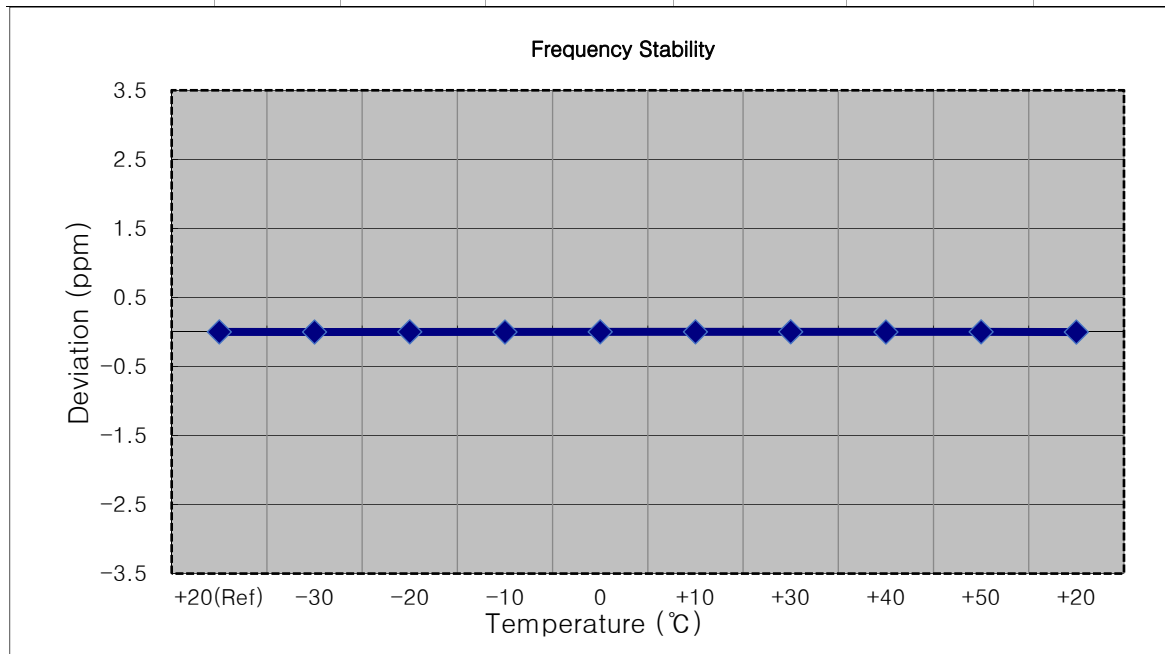
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1860,000,000 Hz</u>
CHANNEL:	<u>18700 (20 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1860 000 002	0.0	0.000 000	0.000
100 %		-30	1860 000 005	2.8	0.000 000	0.002
100 %		-20	1860 000 005	2.7	0.000 000	0.001
100 %		-10	1860 000 005	2.9	0.000 000	0.002
100 %		0	1860 000 005	2.6	0.000 000	0.001
100 %		+10	1860 000 005	2.4	0.000 000	0.001
100 %		+30	1860 000 005	2.6	0.000 000	0.001
100 %		+40	1860 000 004	1.6	0.000 000	0.001
100 %		+50	1860 000 000	-2.1	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1860 000 005	2.3	0.000 000	0.001



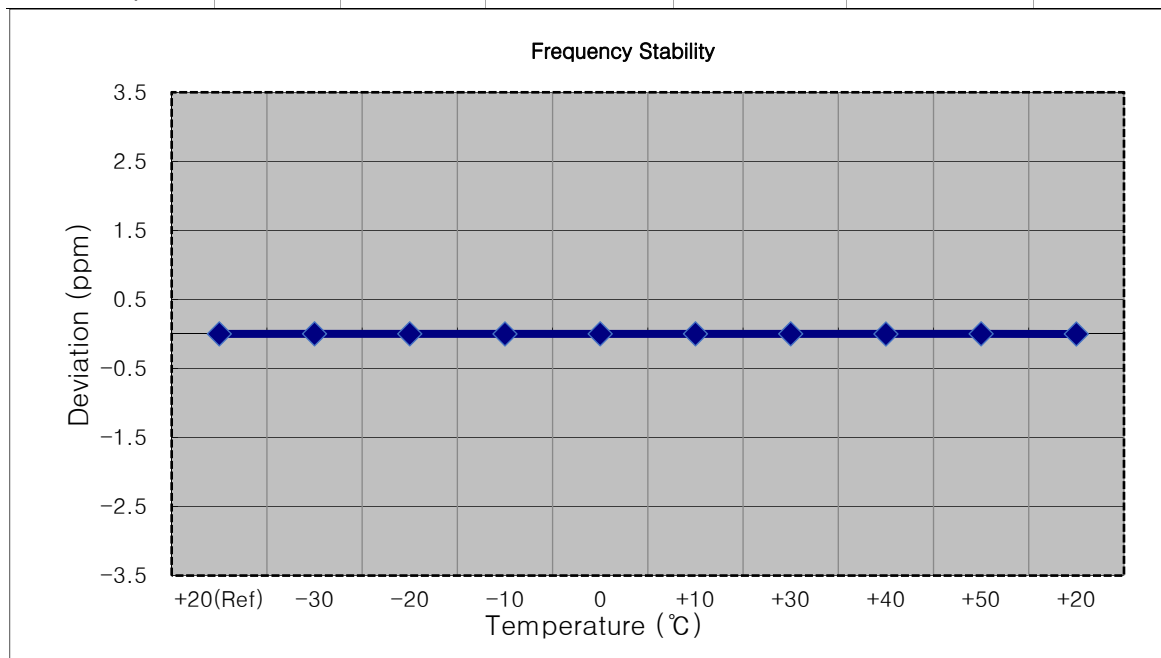
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 003	0.0	0.000 000	0.000
100 %		-30	1880 000 000	-2.5	0.000 000	-0.001
100 %		-20	1880 000 005	2.4	0.000 000	0.001
100 %		-10	1880 000 000	-2.6	0.000 000	-0.001
100 %		0	1880 000 005	2.2	0.000 000	0.001
100 %		+10	1880 000 005	1.9	0.000 000	0.001
100 %		+30	1880 000 006	3.1	0.000 000	0.002
100 %		+40	1880 000 001	-1.8	0.000 000	-0.001
100 %		+50	1880 000 005	2.0	0.000 000	0.001
Batt. Endpoint	3.300	+20	1879 999 998	-4.4	0.000 000	-0.002



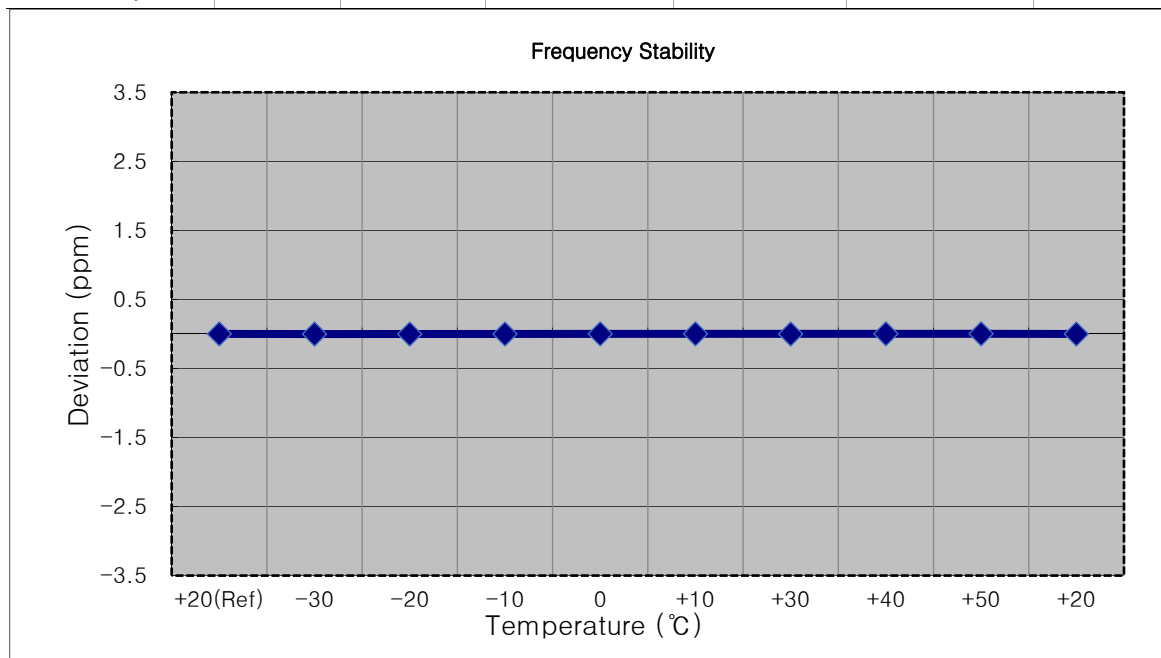
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1880,000,000 Hz</u>
CHANNEL:	<u>18900 (3 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1879 999 997	0.0	0.000 000	0.000
100 %		-30	1879 999 998	1.3	0.000 000	0.001
100 %		-20	1880 000 000	2.6	0.000 000	0.001
100 %		-10	1879 999 995	-1.6	0.000 000	-0.001
100 %		0	1879 999 999	2.0	0.000 000	0.001
100 %		+10	1879 999 999	1.5	0.000 000	0.001
100 %		+30	1879 999 998	1.4	0.000 000	0.001
100 %		+40	1879 999 995	-1.7	0.000 000	-0.001
100 %		+50	1879 999 999	1.5	0.000 000	0.001
Batt. Endpoint	3.300	+20	1879 999 995	-2.0	0.000 000	-0.001



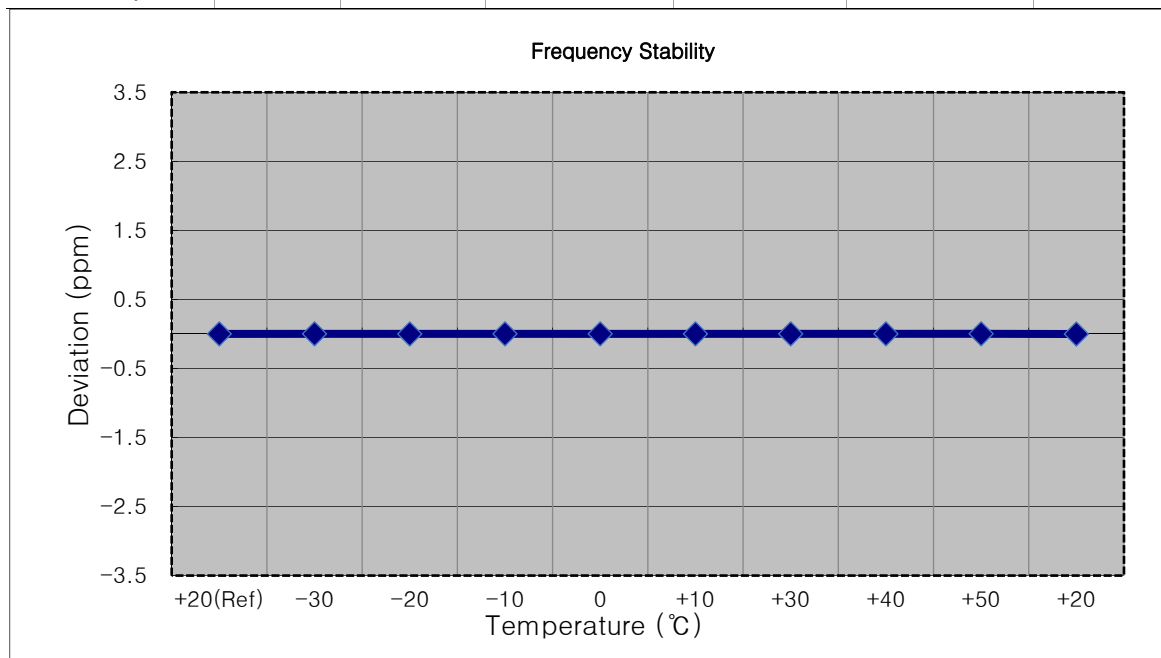
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1880,000,000 Hz</u>
CHANNEL:	<u>18900 (5 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1879 999 998	0.0	0.000 000	0.000
100 %		-30	1879 999 994	-4.0	0.000 000	-0.002
100 %		-20	1879 999 995	-3.3	0.000 000	-0.002
100 %		-10	1879 999 996	-2.5	0.000 000	-0.001
100 %		0	1880 000 000	2.2	0.000 000	0.001
100 %		+10	1880 000 000	2.3	0.000 000	0.001
100 %		+30	1879 999 996	-2.0	0.000 000	-0.001
100 %		+40	1880 000 001	2.9	0.000 000	0.002
100 %		+50	1880 000 001	3.2	0.000 000	0.002
Batt. Endpoint	3.300	+20	1879 999 996	-2.1	0.000 000	-0.001



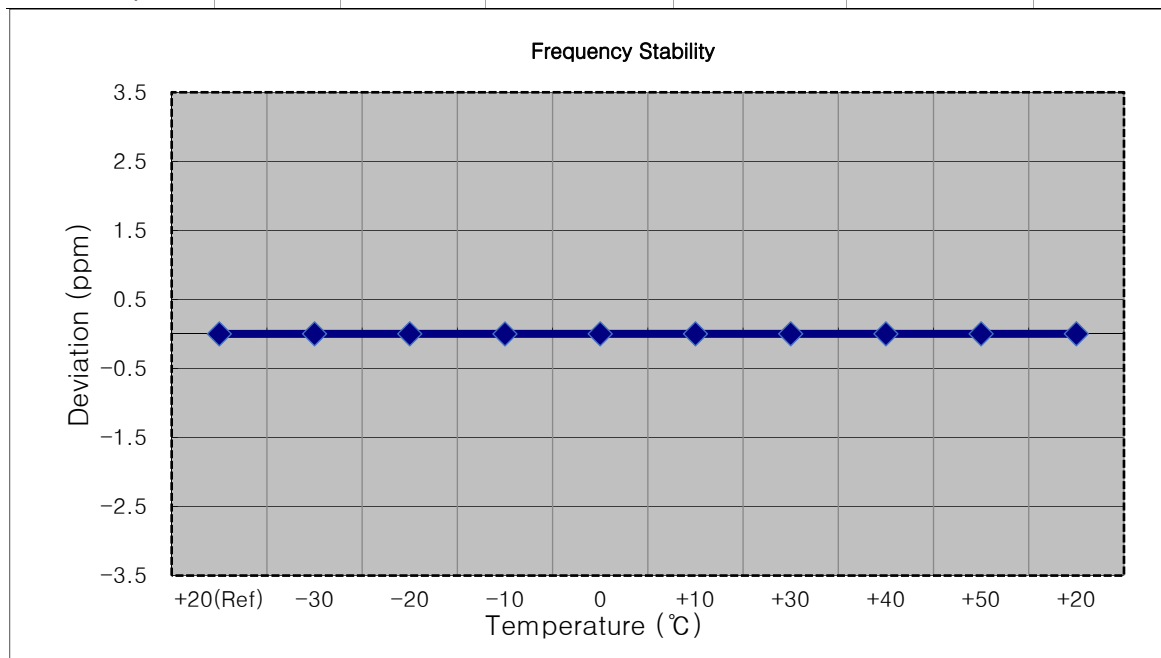
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1880,000,000 Hz</u>
CHANNEL:	<u>18900 (10 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 003	0.0	0.000 000	0.000
100 %		-30	1880 000 005	2.0	0.000 000	0.001
100 %		-20	1880 000 001	-1.3	0.000 000	-0.001
100 %		-10	1880 000 005	2.0	0.000 000	0.001
100 %		0	1880 000 005	2.5	0.000 000	0.001
100 %		+10	1880 000 005	1.9	0.000 000	0.001
100 %		+30	1880 000 004	1.5	0.000 000	0.001
100 %		+40	1880 000 004	1.6	0.000 000	0.001
100 %		+50	1880 000 006	2.8	0.000 000	0.001
Batt. Endpoint	3.300	+20	1880 000 001	-1.8	0.000 000	-0.001



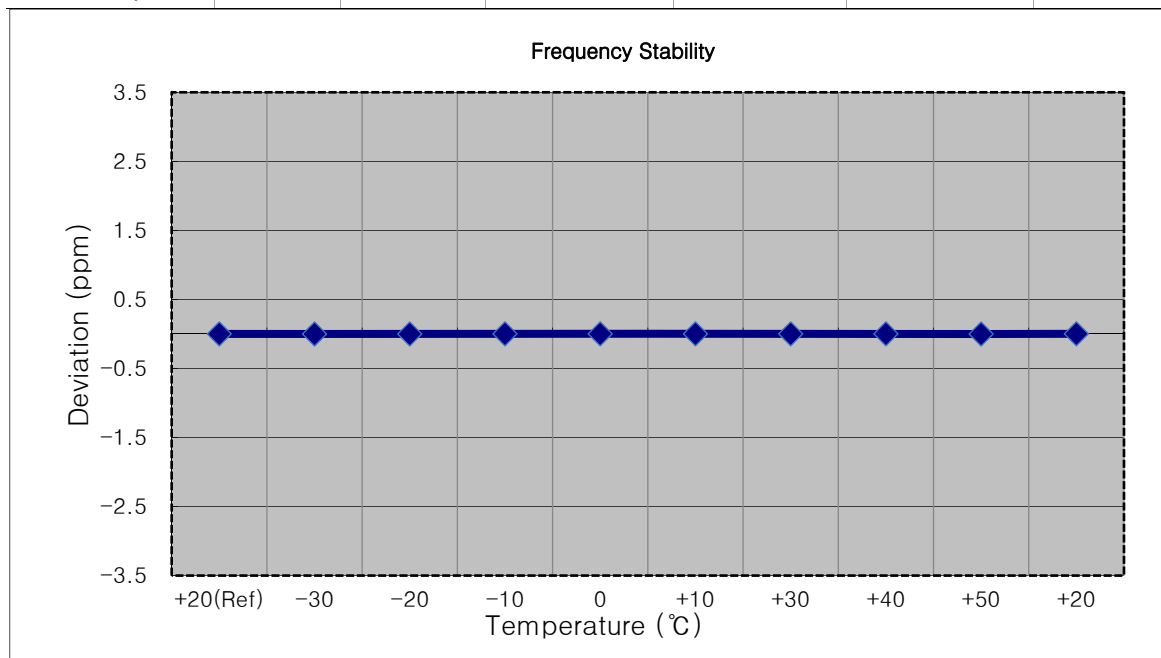
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1879 999 998	0.0	0.000 000	0.000
100 %		-30	1880 000 000	1.5	0.000 000	0.001
100 %		-20	1880 000 000	2.0	0.000 000	0.001
100 %		-10	1879 999 997	-1.6	0.000 000	-0.001
100 %		0	1880 000 001	2.5	0.000 000	0.001
100 %		+10	1880 000 000	2.0	0.000 000	0.001
100 %		+30	1880 000 001	2.8	0.000 000	0.001
100 %		+40	1880 000 001	2.6	0.000 000	0.001
100 %		+50	1880 000 000	1.4	0.000 000	0.001
Batt. Endpoint	3.300	+20	1880 000 001	2.8	0.000 000	0.001



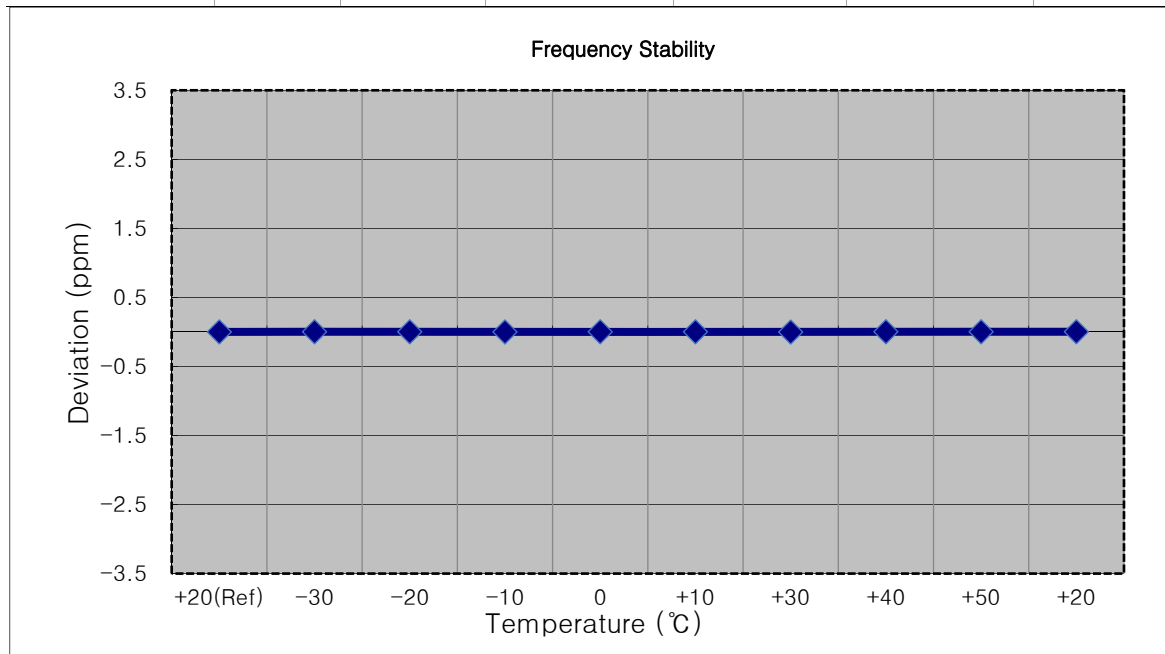
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 18900 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1880 000 002	0.0	0.000 000	0.000
100 %		-30	1879 999 999	-2.3	0.000 000	-0.001
100 %		-20	1880 000 000	-1.4	0.000 000	-0.001
100 %		-10	1880 000 004	2.1	0.000 000	0.001
100 %		0	1880 000 004	2.6	0.000 000	0.001
100 %		+10	1880 000 003	1.9	0.000 000	0.001
100 %		+30	1880 000 003	1.9	0.000 000	0.001
100 %		+40	1880 000 004	2.1	0.000 000	0.001
100 %		+50	1879 999 999	-2.5	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1880 000 004	2.9	0.000 000	0.002



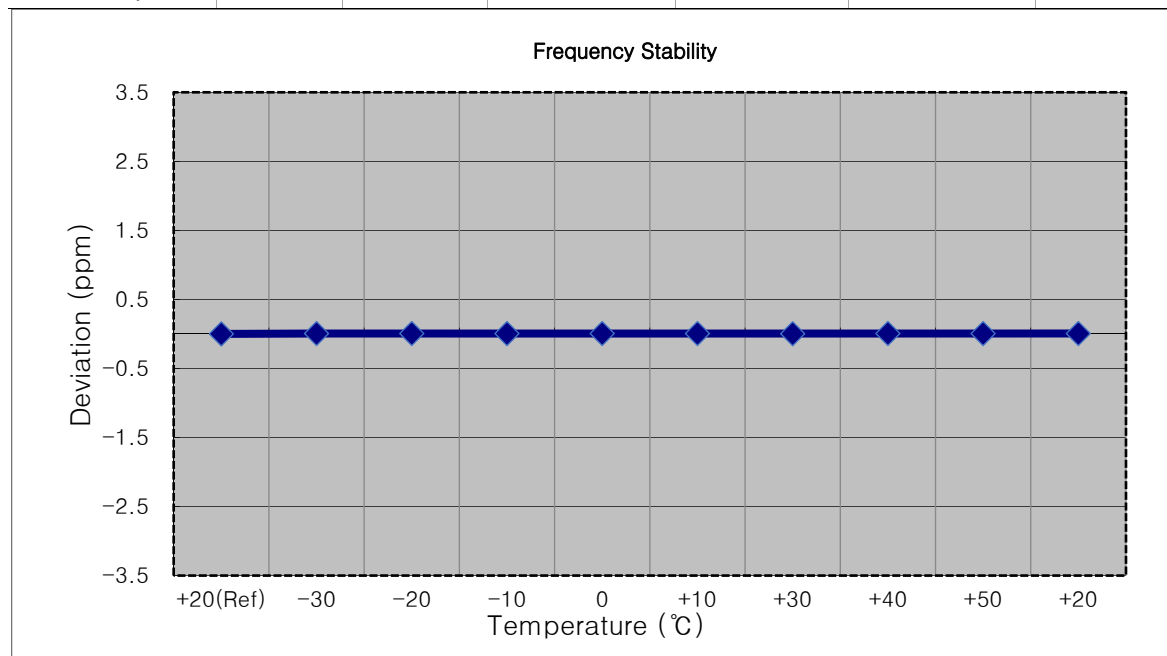
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1909,300,000 Hz
- ▣ CHANNEL: 19193 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1909 299 996	0.0	0.000 000	0.000
100 %		-30	1909 300 000	4.1	0.000 000	0.002
100 %		-20	1909 299 999	3.0	0.000 000	0.002
100 %		-10	1909 299 994	-1.5	0.000 000	-0.001
100 %		0	1909 300 000	3.8	0.000 000	0.002
100 %		+10	1909 299 999	3.1	0.000 000	0.002
100 %		+30	1909 299 992	-3.6	0.000 000	-0.002
100 %		+40	1909 300 000	4.3	0.000 000	0.002
100 %		+50	1909 300 000	4.2	0.000 000	0.002
Batt. Endpoint	3.300	+20	1909 300 000	4.7	0.000 000	0.002



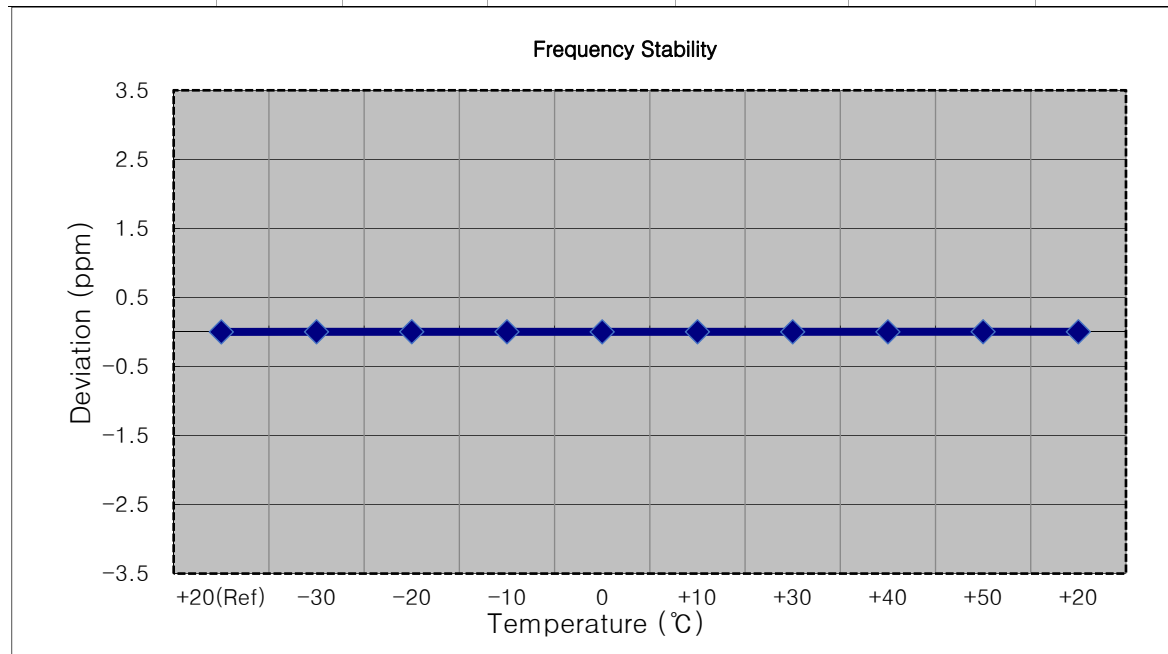
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1908,500,000 Hz
- ▣ CHANNEL: 19185 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1908 500 004	0.0	0.000 000	0.000
100 %		-30	1908 500 015	10.4	0.000 001	0.005
100 %		-20	1908 500 015	10.5	0.000 001	0.006
100 %		-10	1908 500 014	9.7	0.000 001	0.005
100 %		0	1908 500 015	11.1	0.000 001	0.006
100 %		+10	1908 500 015	10.7	0.000 001	0.006
100 %		+30	1908 500 010	5.4	0.000 000	0.003
100 %		+40	1908 500 017	12.3	0.000 001	0.006
100 %		+50	1908 500 014	9.9	0.000 001	0.005
Batt. Endpoint	3.300	+20	1908 500 015	11.0	0.000 001	0.006



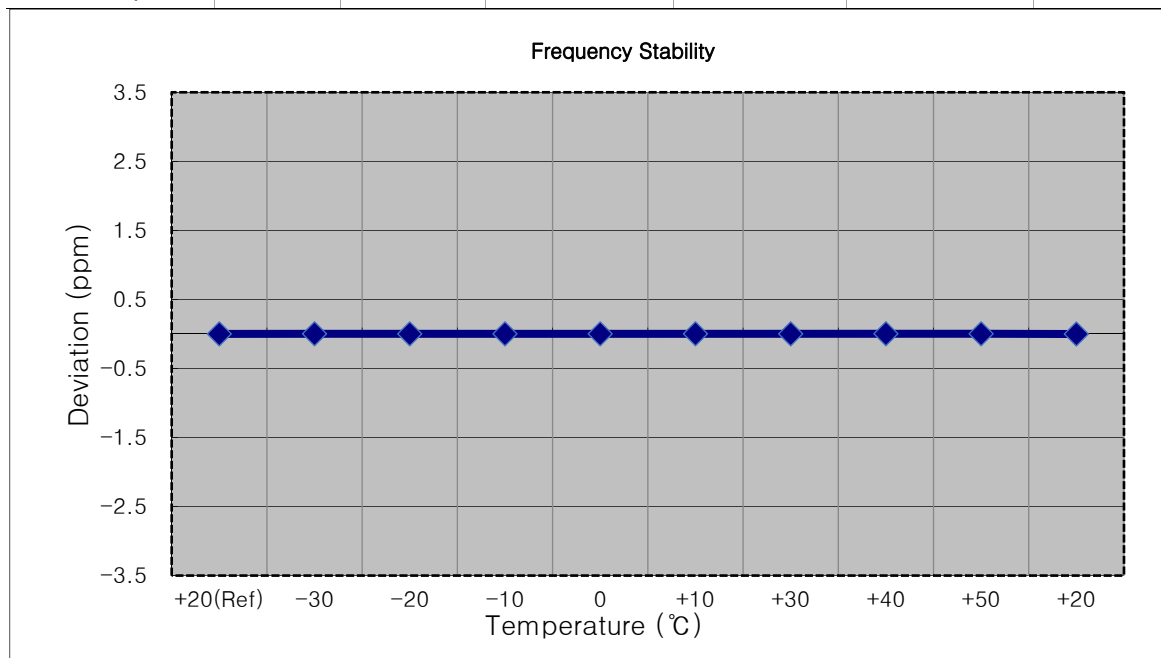
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1907,500,000 Hz
- ▣ CHANNEL: 19175 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1907 500 002	0.0	0.000 000	0.000
100 %		-30	1907 500 006	3.5	0.000 000	0.002
100 %		-20	1907 500 007	4.6	0.000 000	0.002
100 %		-10	1907 500 006	3.2	0.000 000	0.002
100 %		0	1907 500 005	2.1	0.000 000	0.001
100 %		+10	1907 500 006	3.3	0.000 000	0.002
100 %		+30	1907 500 004	1.5	0.000 000	0.001
100 %		+40	1907 500 004	1.9	0.000 000	0.001
100 %		+50	1907 500 008	5.1	0.000 000	0.003
Batt. Endpoint	3.300	+20	1907 500 006	3.3	0.000 000	0.002



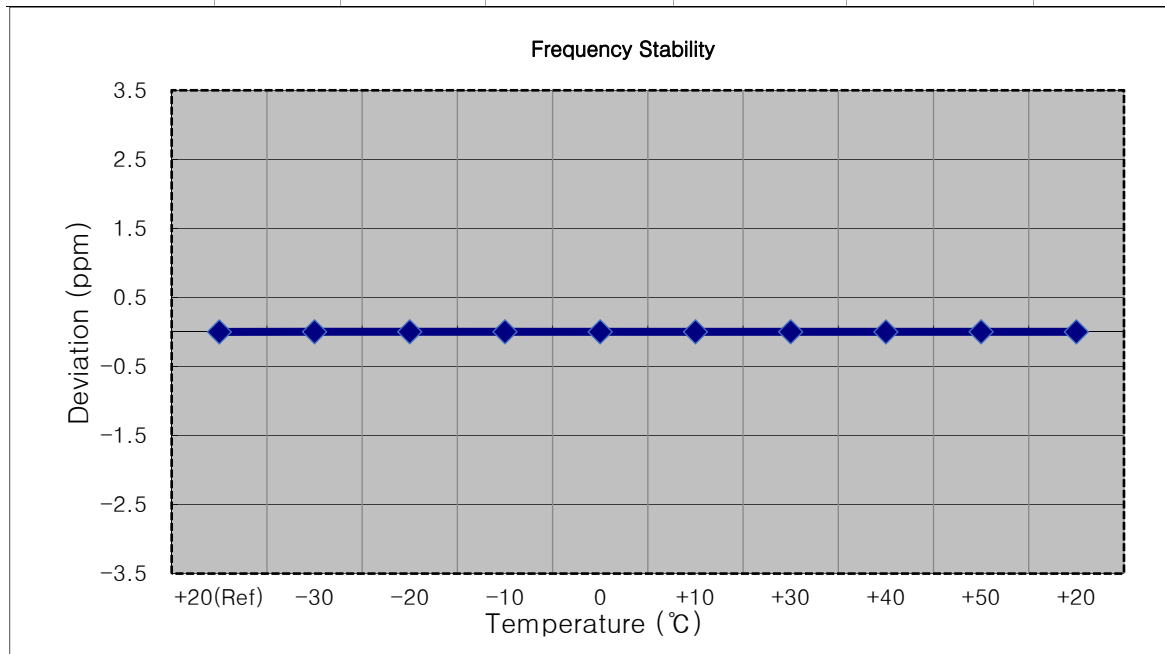
MODE:	<u>LTE B2</u>
OPERATING FREQUENCY:	<u>1905,000,000 Hz</u>
CHANNEL:	<u>19150 (10 MHz)</u>
REFERENCE VOLTAGE:	<u>3.900 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1904 999 997	0.0	0.000 000	0.000
100 %		-30	1905 000 000	3.3	0.000 000	0.002
100 %		-20	1904 999 999	2.4	0.000 000	0.001
100 %		-10	1904 999 999	2.6	0.000 000	0.001
100 %		0	1904 999 998	1.8	0.000 000	0.001
100 %		+10	1905 000 000	3.1	0.000 000	0.002
100 %		+30	1904 999 998	1.5	0.000 000	0.001
100 %		+40	1905 000 002	5.7	0.000 000	0.003
100 %		+50	1905 000 000	3.7	0.000 000	0.002
Batt. Endpoint	3.300	+20	1904 999 994	-2.5	0.000 000	-0.001



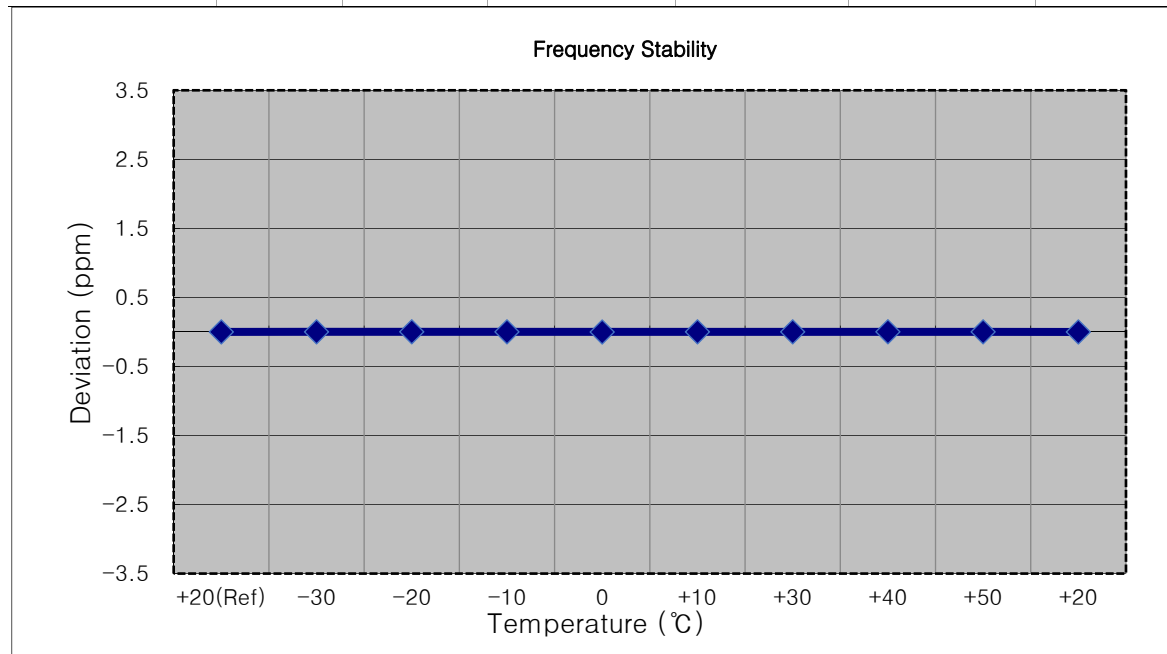
- ▣ MODE: LTE B2
- ▣ OPERATING FREQUENCY: 1902,500,000 Hz
- ▣ CHANNEL: 19125 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.900 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1902 500 004	0.0	0.000 000	0.000
100 %		-30	1902 500 008	3.7	0.000 000	0.002
100 %		-20	1902 500 007	2.9	0.000 000	0.002
100 %		-10	1902 500 008	3.6	0.000 000	0.002
100 %		0	1902 500 006	2.0	0.000 000	0.001
100 %		+10	1902 500 007	3.0	0.000 000	0.002
100 %		+30	1902 500 008	4.2	0.000 000	0.002
100 %		+40	1902 500 005	1.2	0.000 000	0.001
100 %		+50	1902 500 007	3.0	0.000 000	0.002
Batt. Endpoint	3.300	+20	1902 500 007	2.7	0.000 000	0.001



■ MODE: LTE B2
 ■ OPERATING FREQUENCY: 1900,000,000 Hz
 ■ CHANNEL: 19100 (20 MHz)
 ■ REFERENCE VOLTAGE: 3.900 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.900	+20(Ref)	1900 000 004	0.0	0.000 000	0.000
100 %		-30	1900 000 006	2.3	0.000 000	0.001
100 %		-20	1900 000 007	3.2	0.000 000	0.002
100 %		-10	1900 000 006	2.7	0.000 000	0.001
100 %		0	1900 000 001	-2.6	0.000 000	-0.001
100 %		+10	1900 000 006	2.2	0.000 000	0.001
100 %		+30	1900 000 006	2.3	0.000 000	0.001
100 %		+40	1900 000 007	2.9	0.000 000	0.002
100 %		+50	1900 000 006	1.9	0.000 000	0.001
Batt. Endpoint	3.300	+20	1900 000 002	-1.6	0.000 000	-0.001



10. TEST DATA

10.1 UPLINK CARRIER AGGREGATION

Test Note

1. All tests were evaluated for the two bands using various combinations of RB size, RB offset, modulation, and channel bandwidth.
2. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

3. The worst case is reported with the modulations, RB sizes and offsets.

- 2A(Main2)-4A(Sub5)

(PCC - Modulation: QPSK, RB: 1, RB Offset: 49, SCC - Modulation: QPSK, RB: 1, RB Offset: 0)

Radiated Spurious Emissions

PCC	SCC	PCC		SCC	
		BW(MHz)	Channel	BW(MHz)	Channel
2A(Main2)	4A(Sub5)	10	18650	5	20375

10.1.1 RADIATED SPURIOUS EMISSIONS

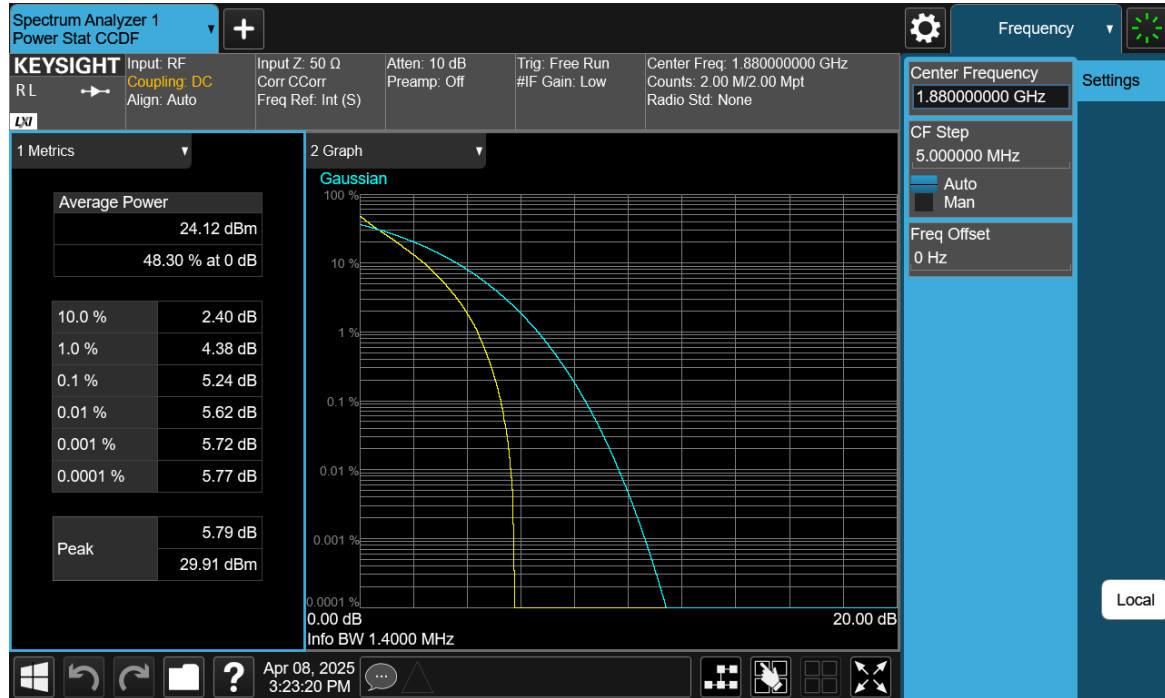
2A(Main2)(PCC)-4A(Sub5)(SCC)

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 710.00	-38.34	12.28	-55.52	3.08	H	-46.32	-13.00
5 565.00	-43.98	13.05	-55.98	3.88	H	-46.81	-13.00
7 420.00	-44.29	10.78	-47.24	4.55	H	-41.01	-13.00

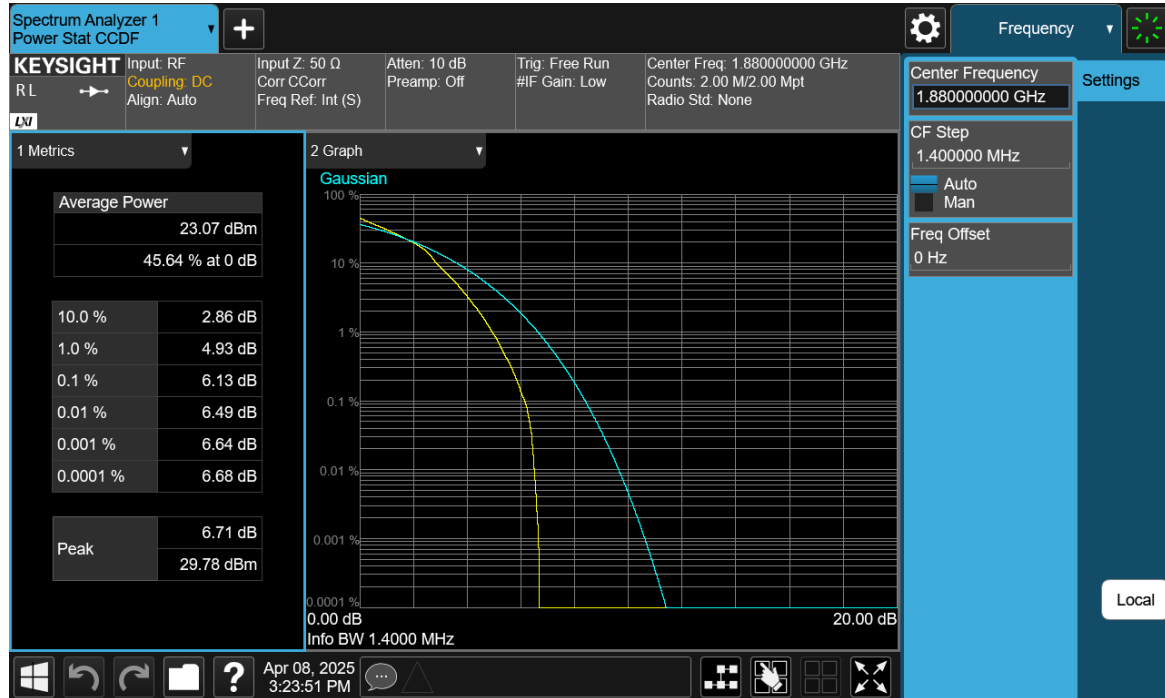
Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 495.00	-37.13	12.34	-55.09	3.05	H	-45.80	-13.00
5 242.50	-44.06	12.99	-56.43	3.79	H	-47.23	-13.00
6 990.00	-43.63	11.26	-48.88	4.42	H	-42.04	-13.00

11. TEST PLOTS(Main 2 ANT)

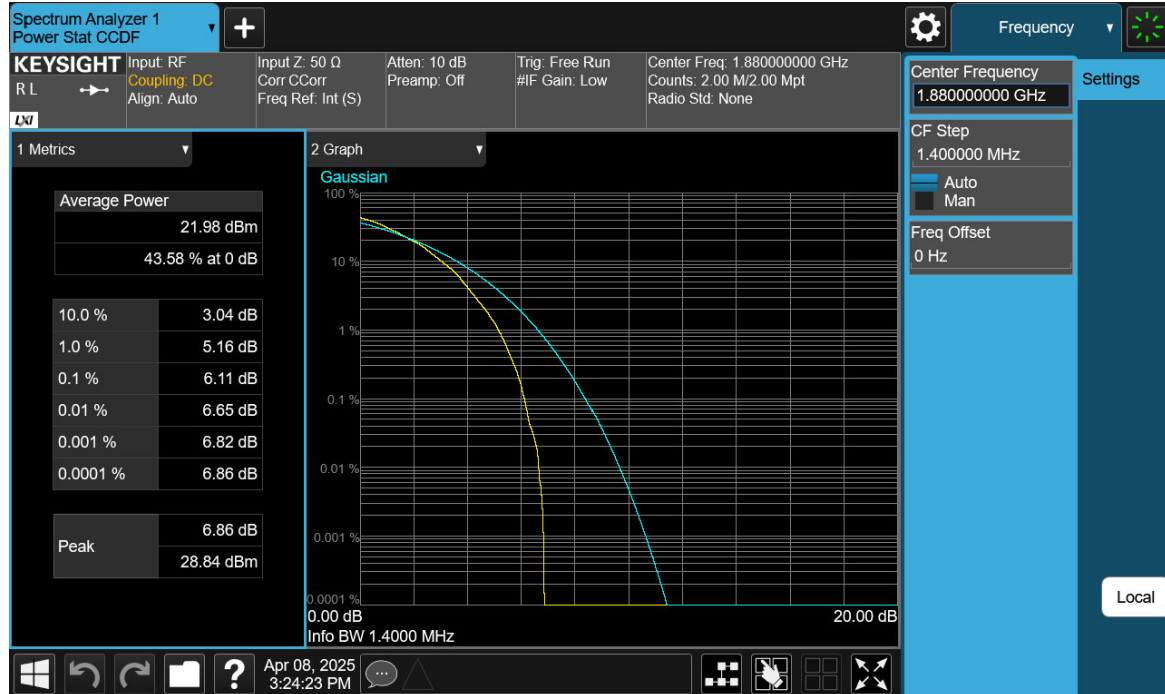
LTE B2_1.4M_PAR_Mid_QPSK_FullRB



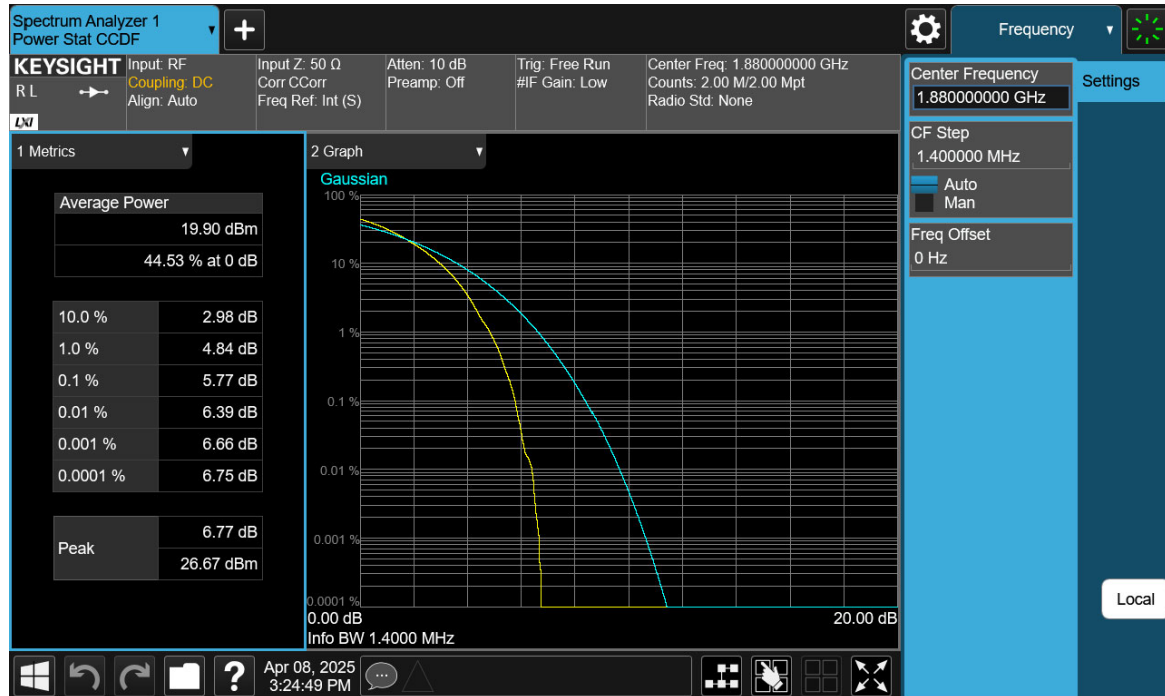
LTE B2_1.4M_PAR_Mid_16QAM_FullRB



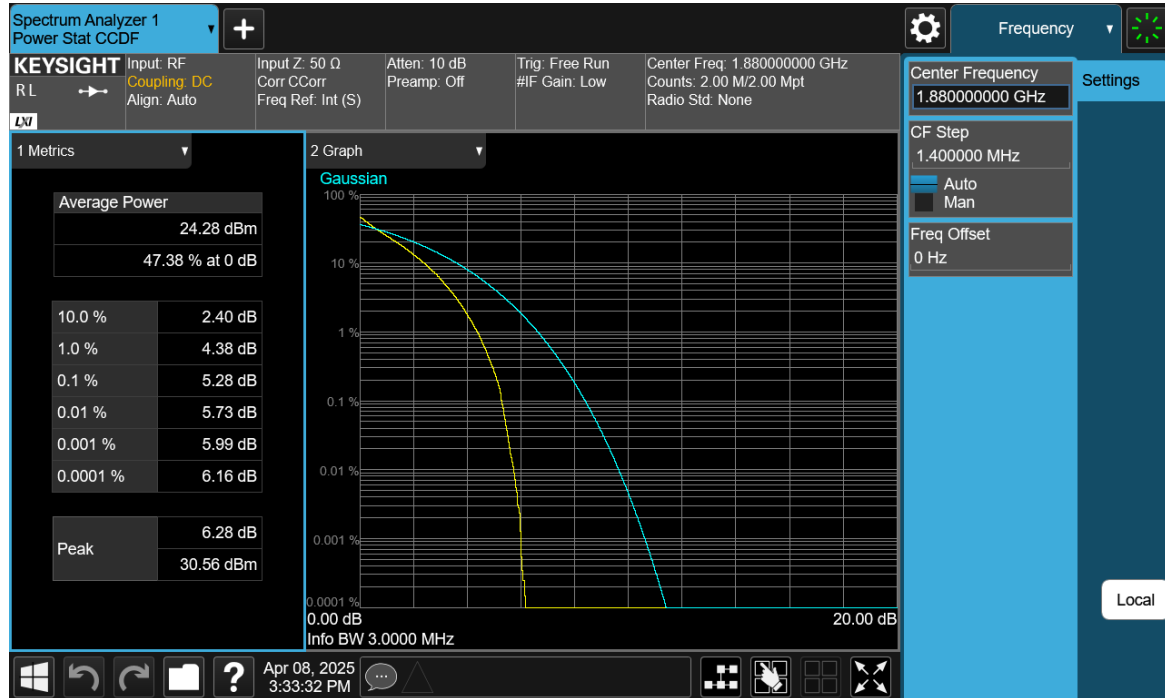
LTE B2_1.4M_PAR_Mid_64QAM_FullRB



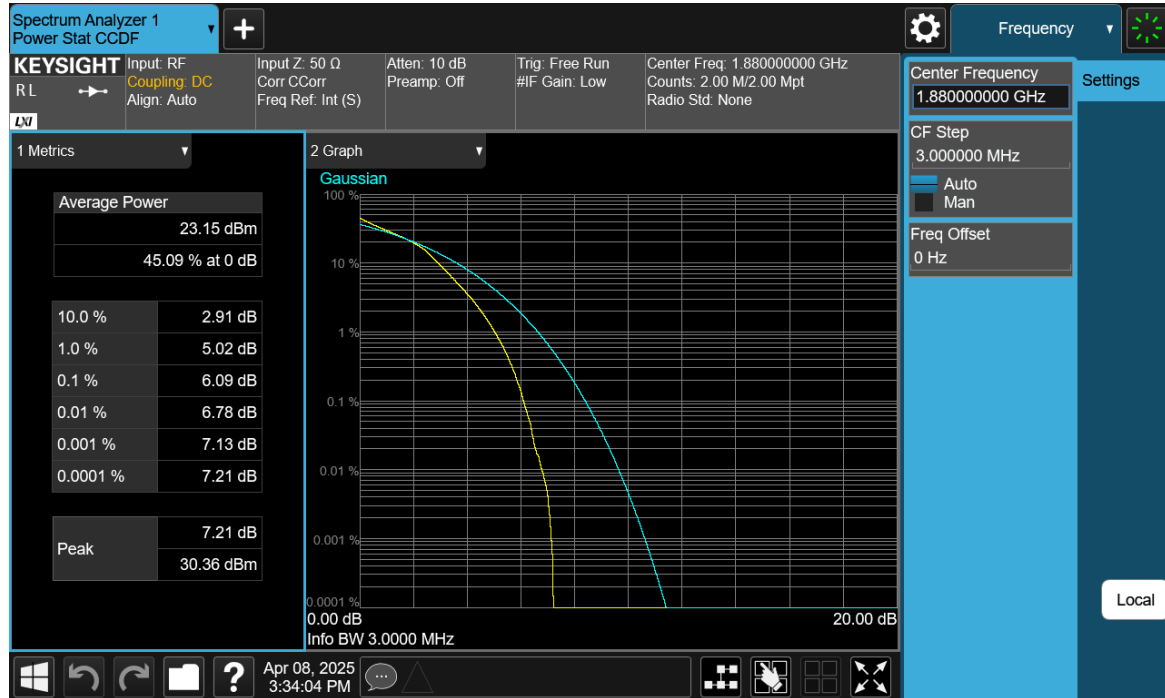
LTE B2_1.4M_PAR_Mid_256QAM_FullRB



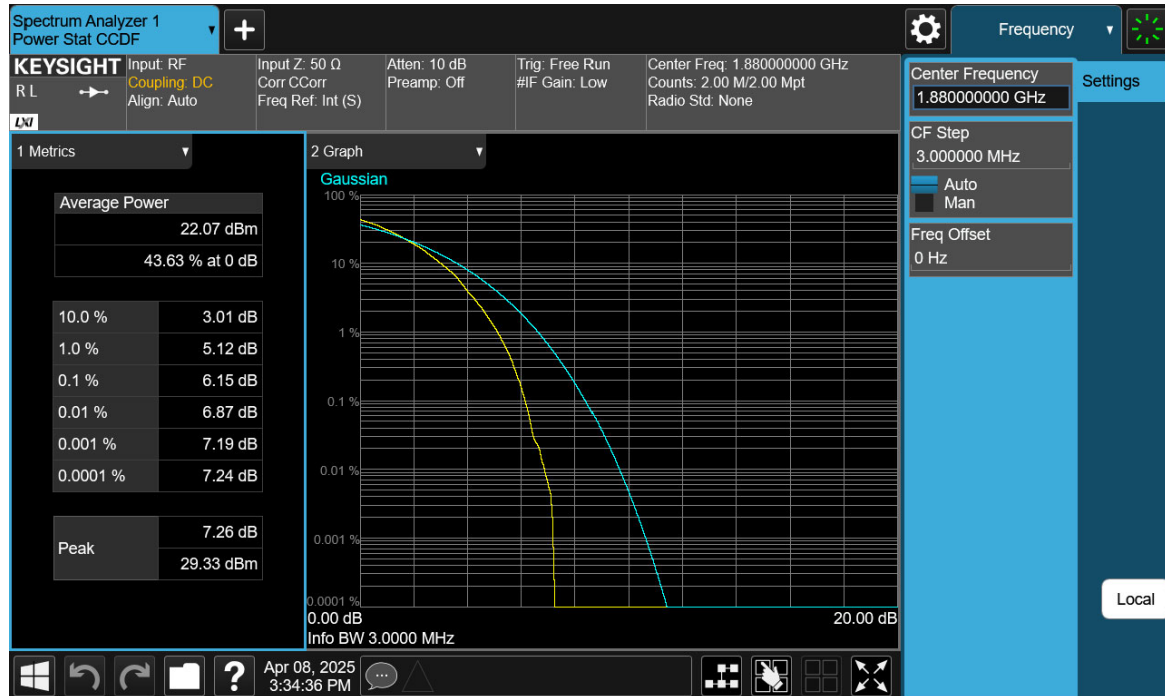
LTE B2_3 M_PAR_Mid_QPSK_FullRB



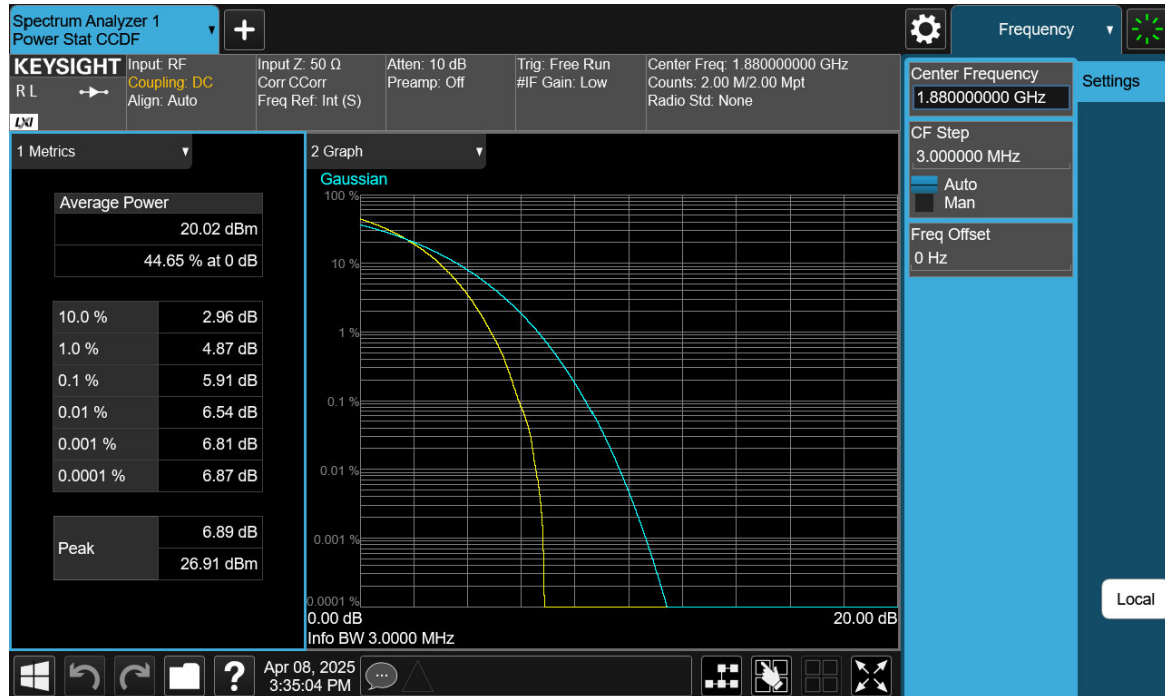
LTE B2_3 M_PAR_Mid_16QAM_FullRB



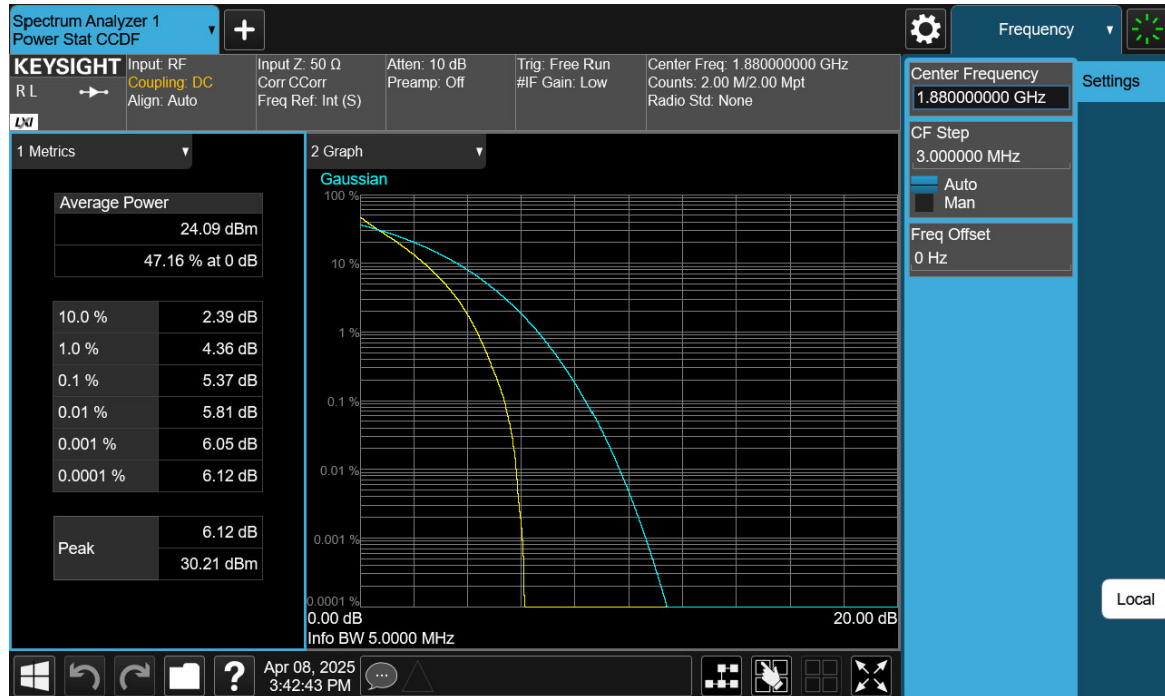
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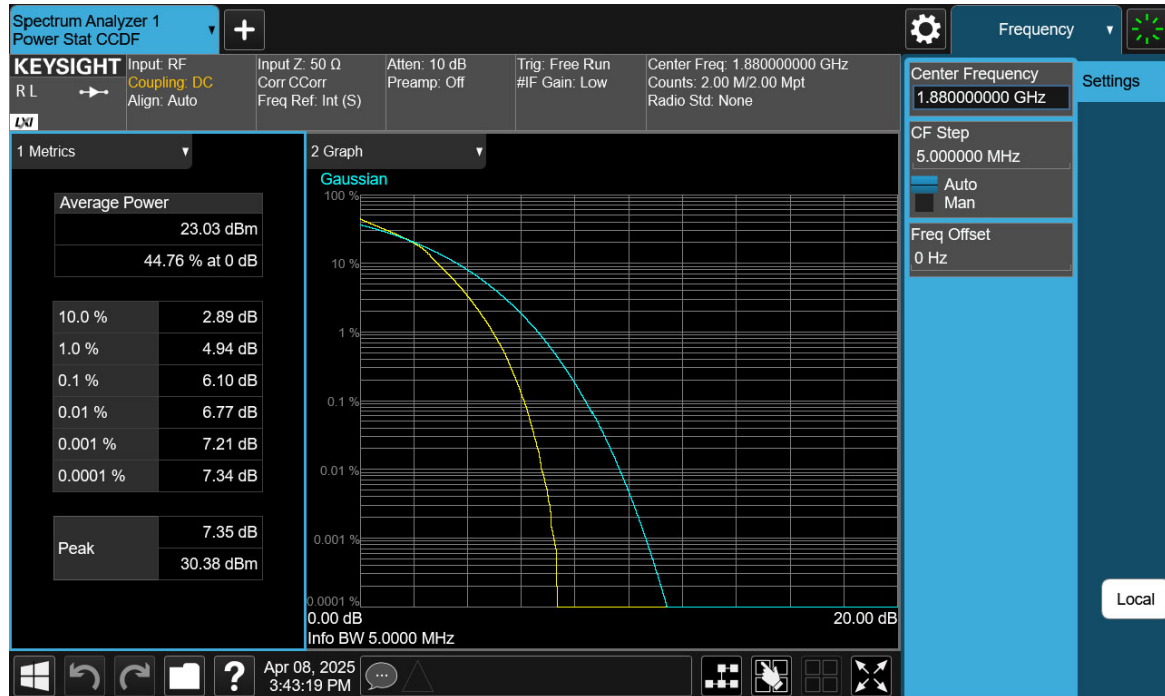
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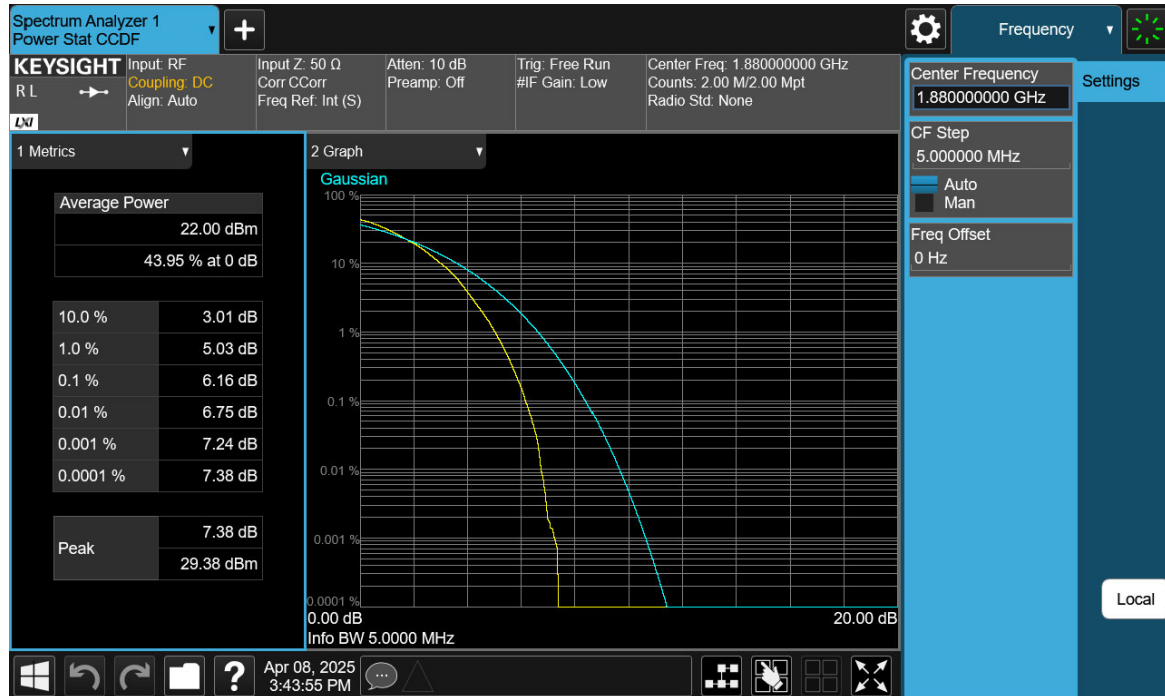
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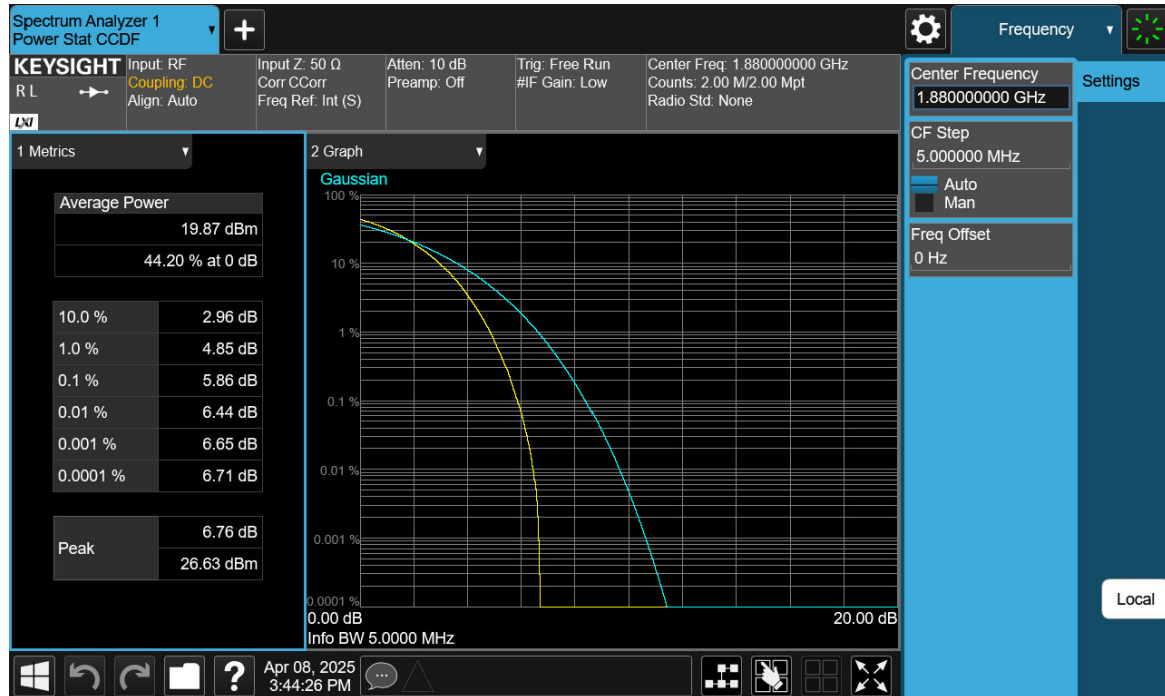
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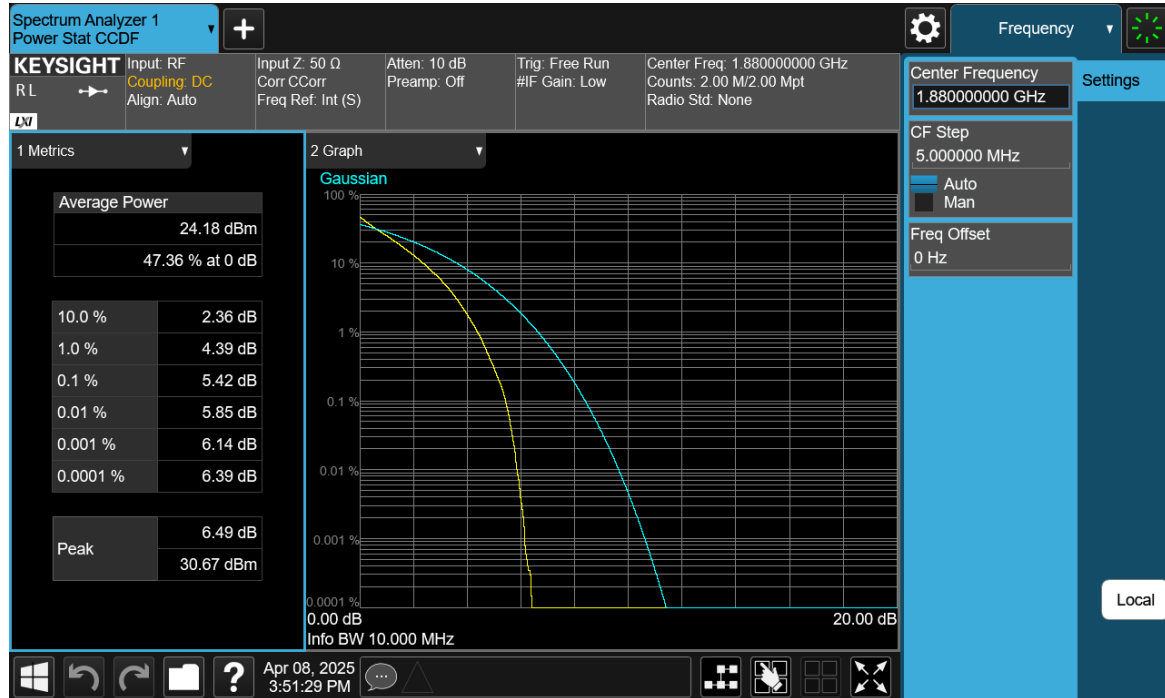
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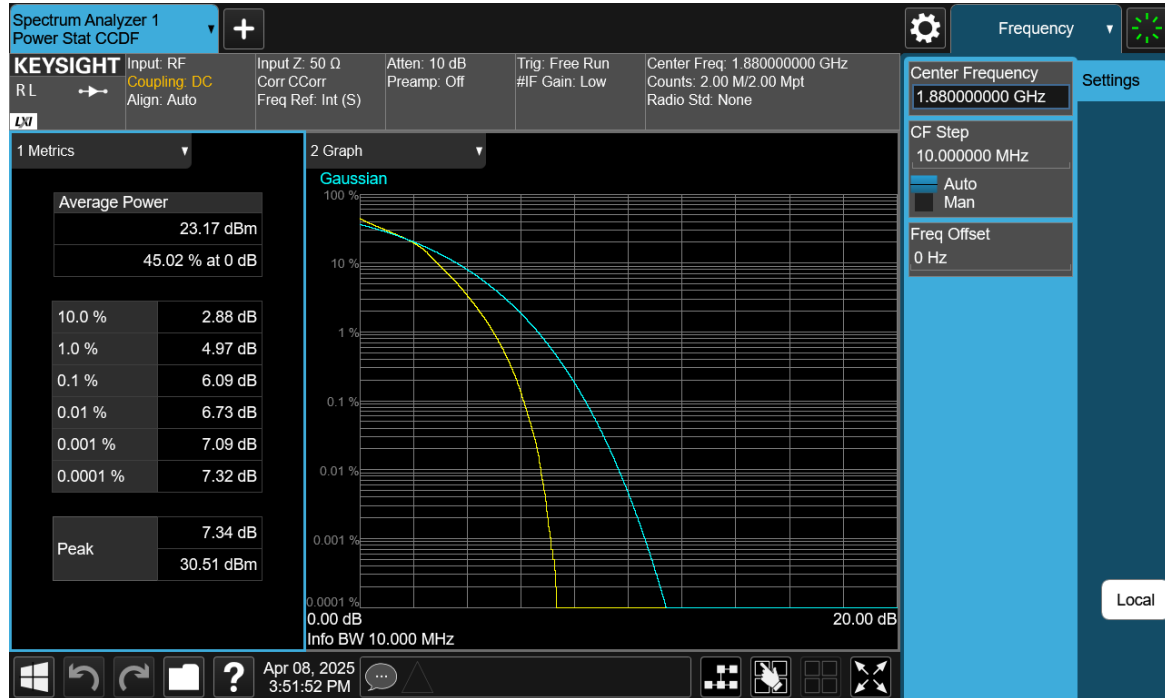
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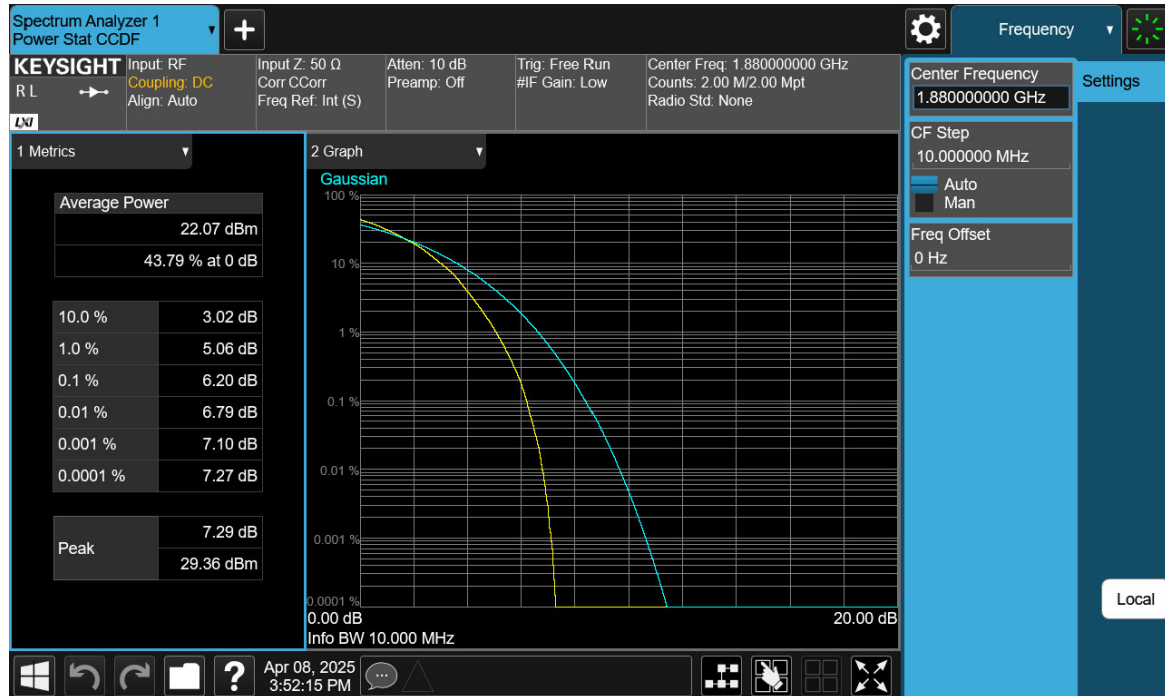
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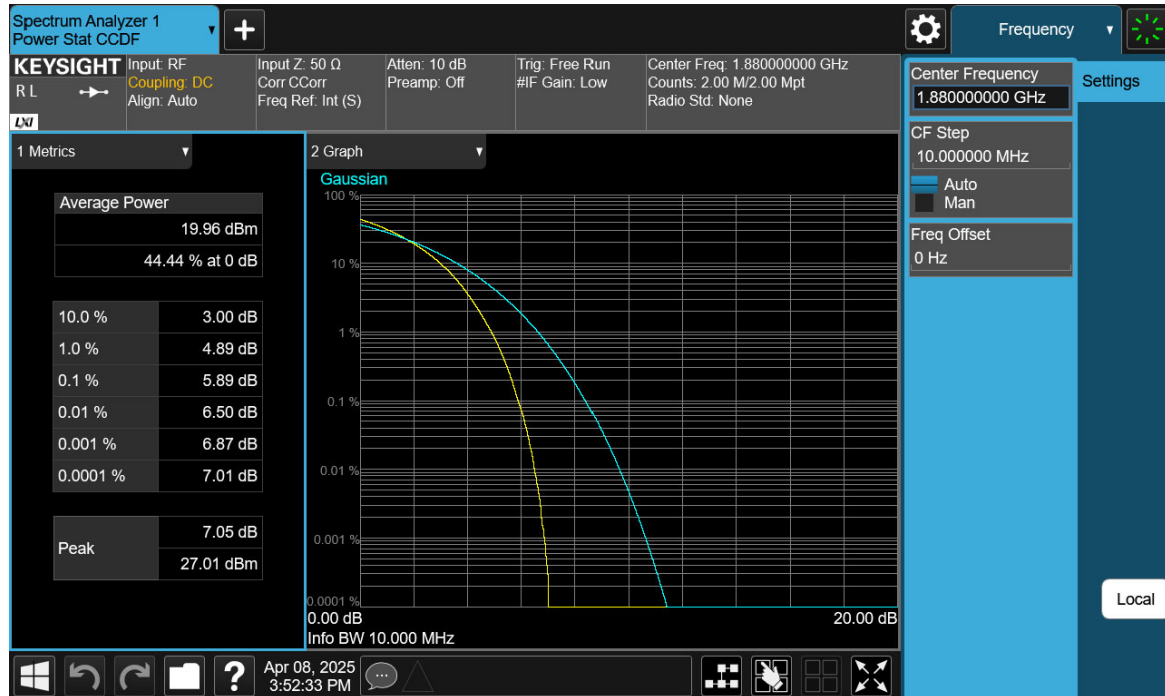
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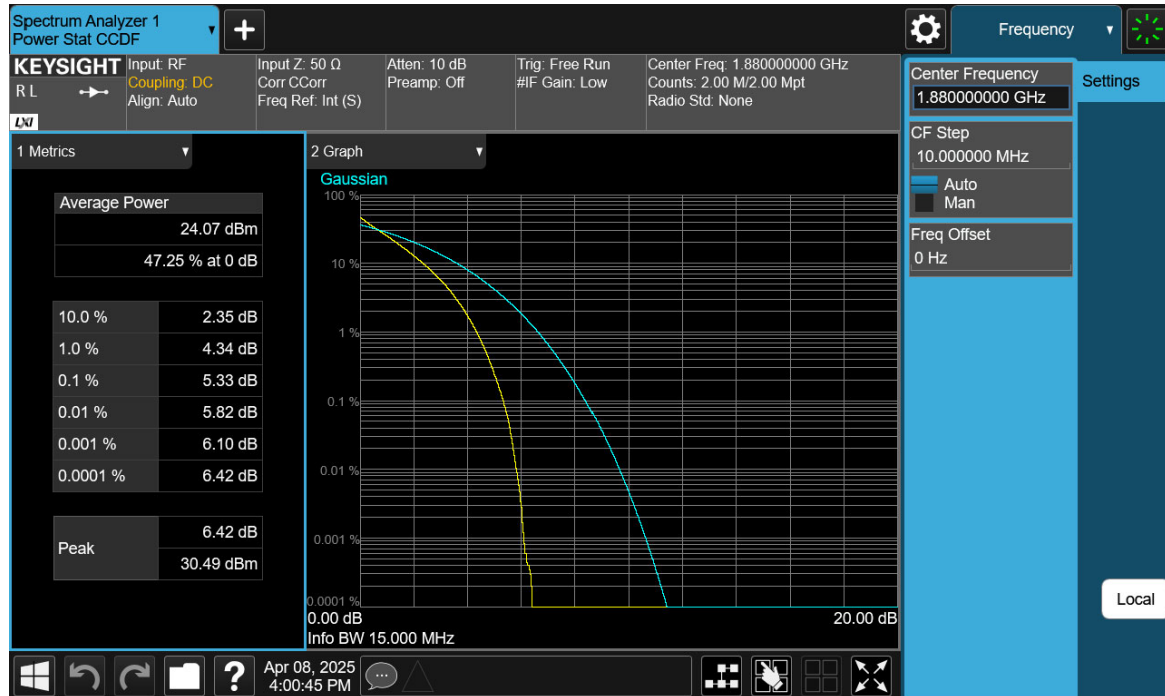
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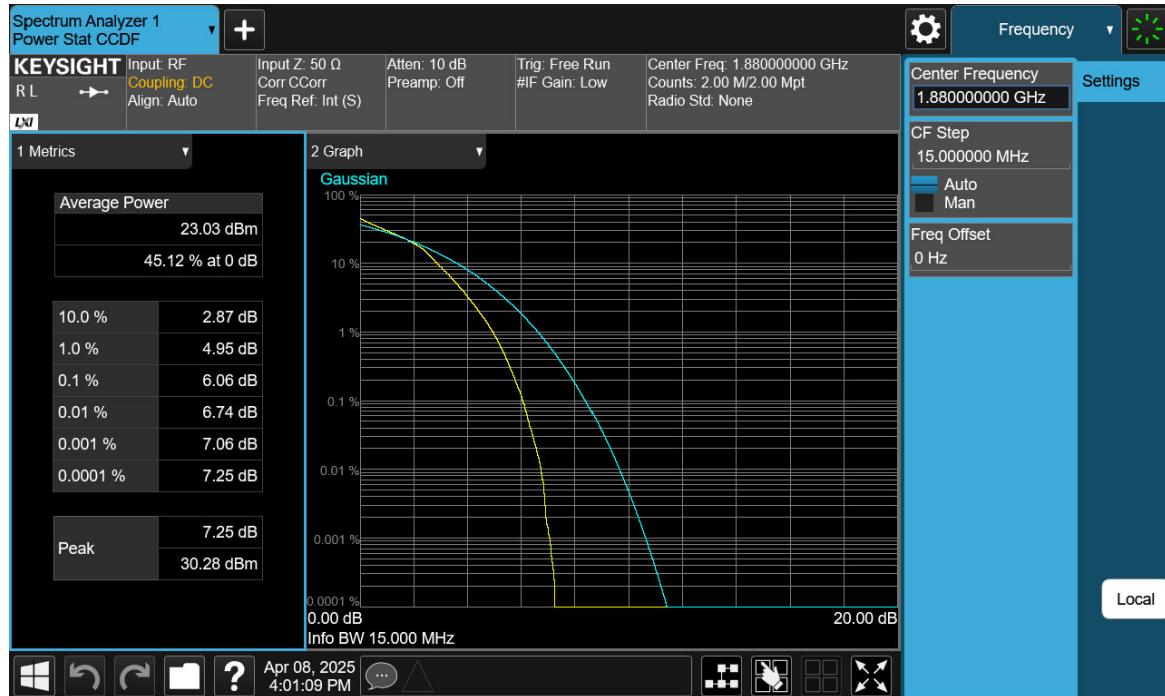
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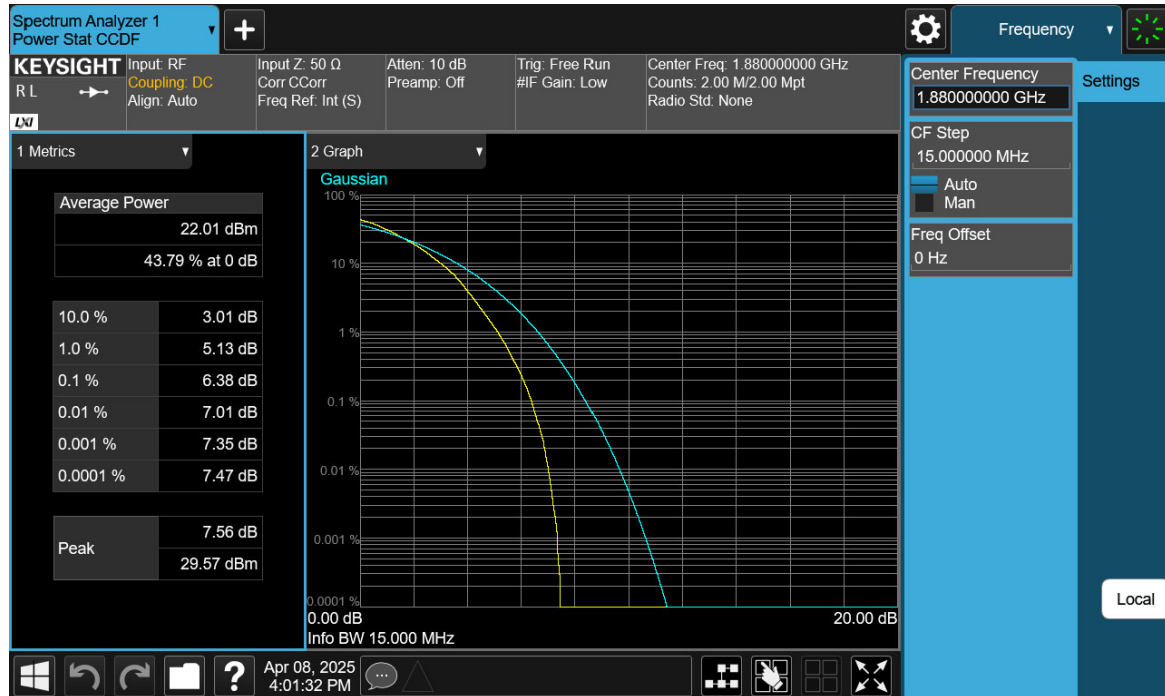
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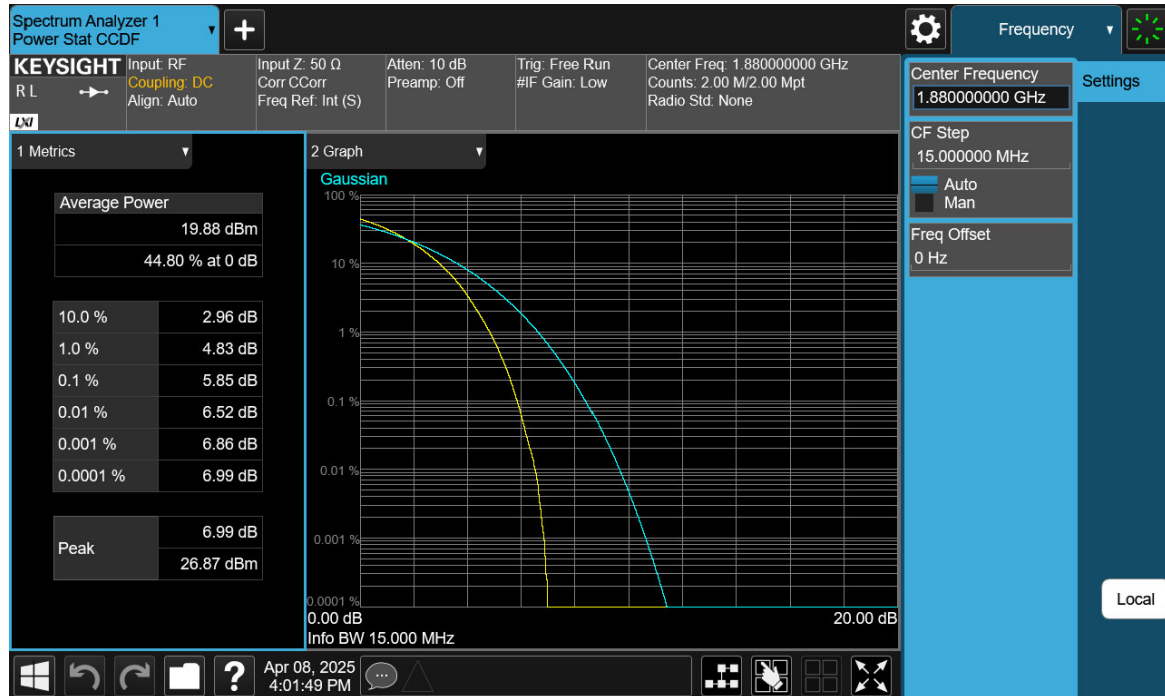
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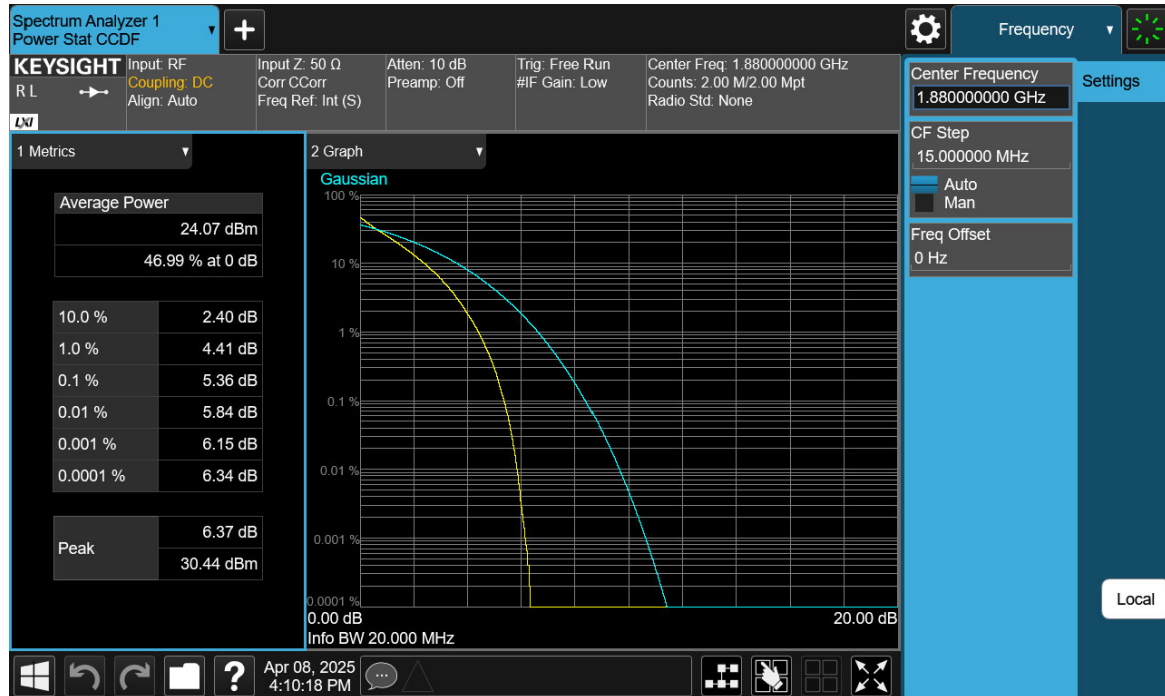
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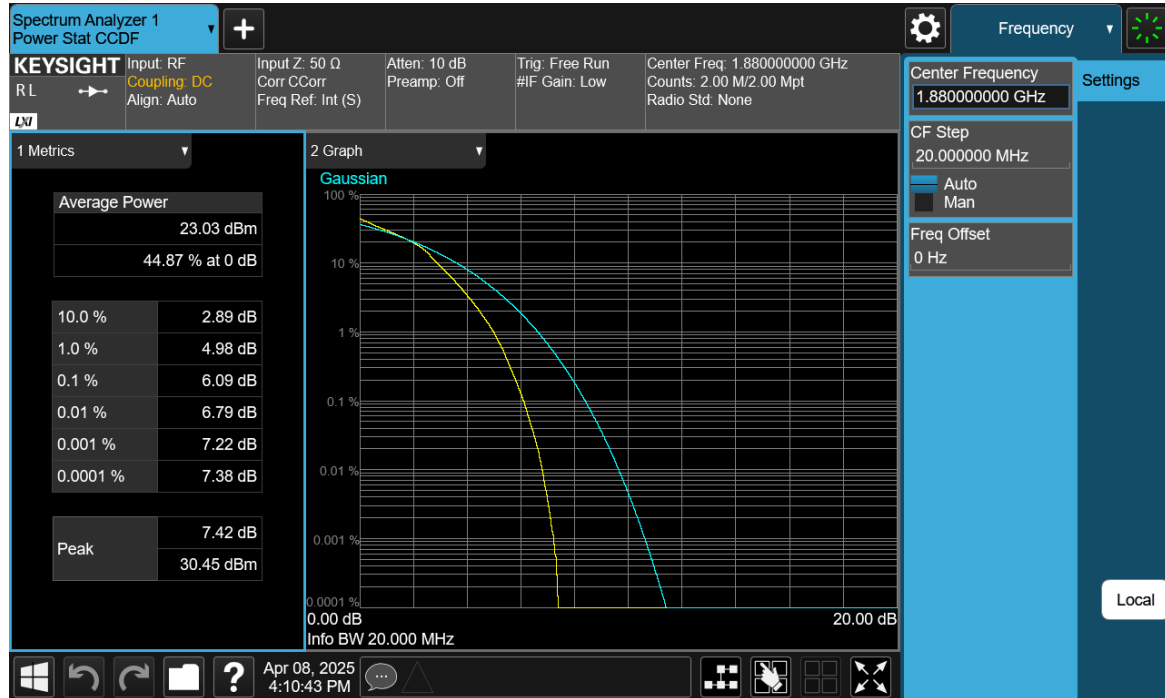
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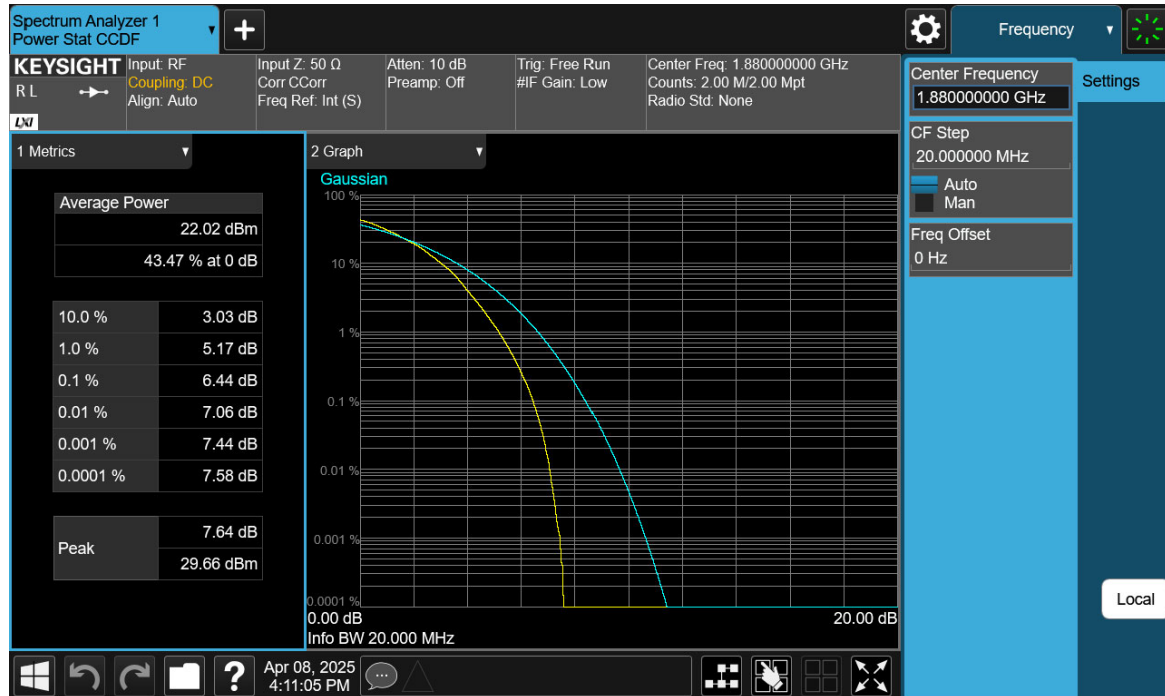
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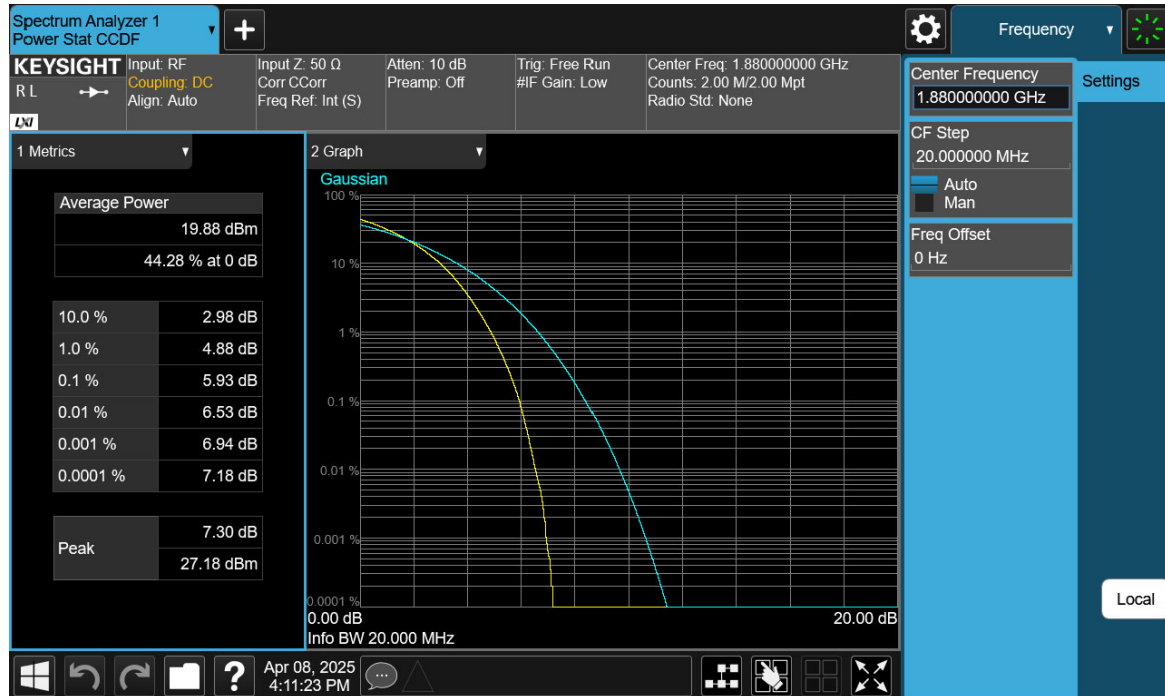
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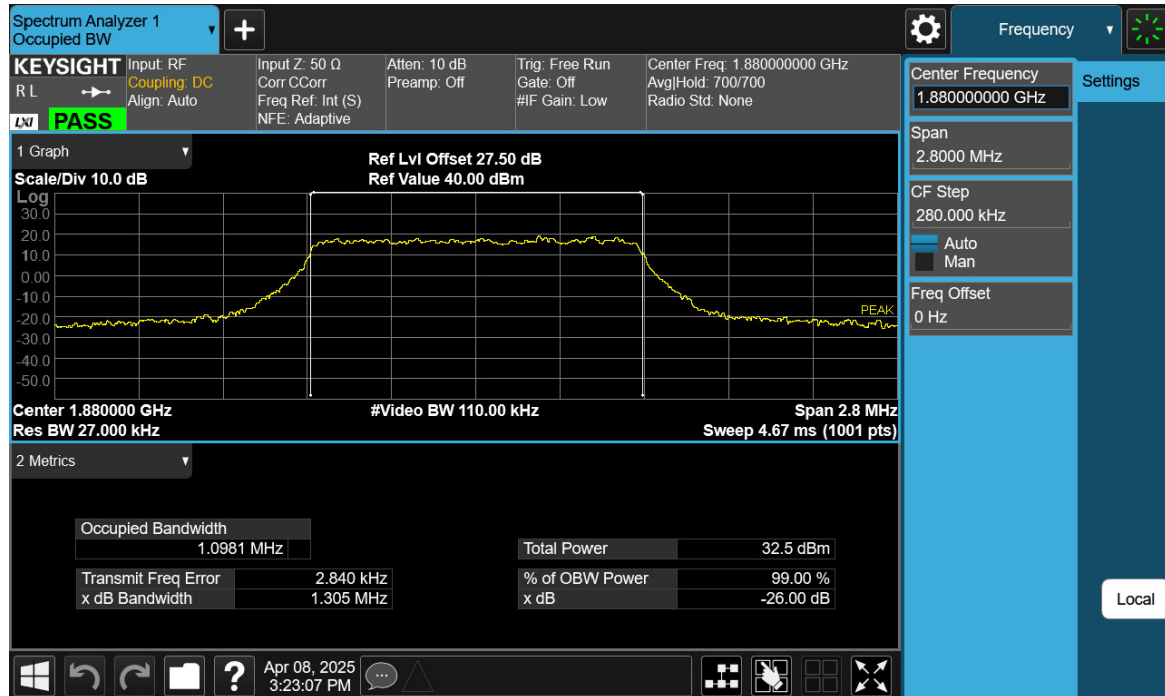
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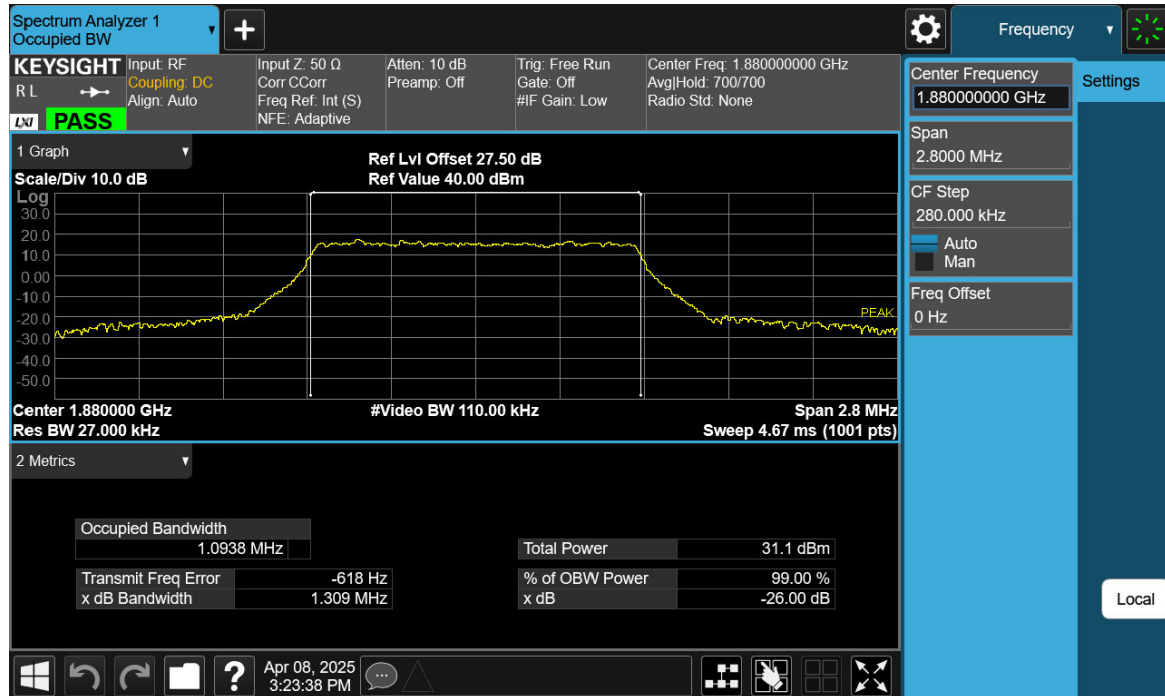
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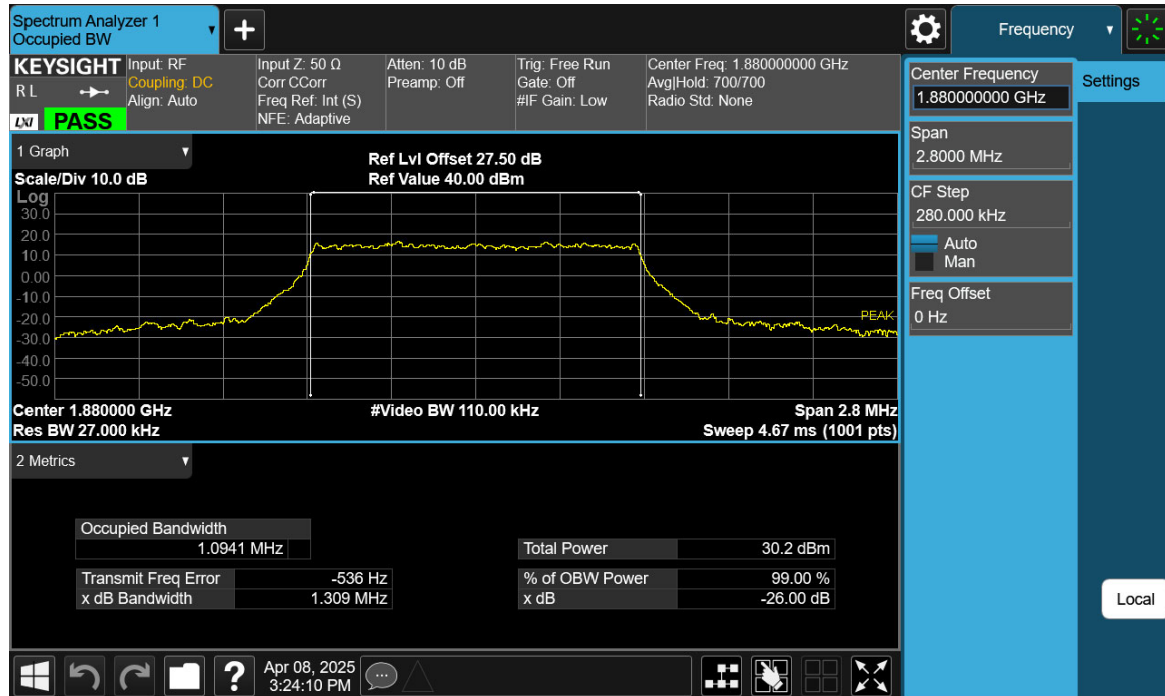
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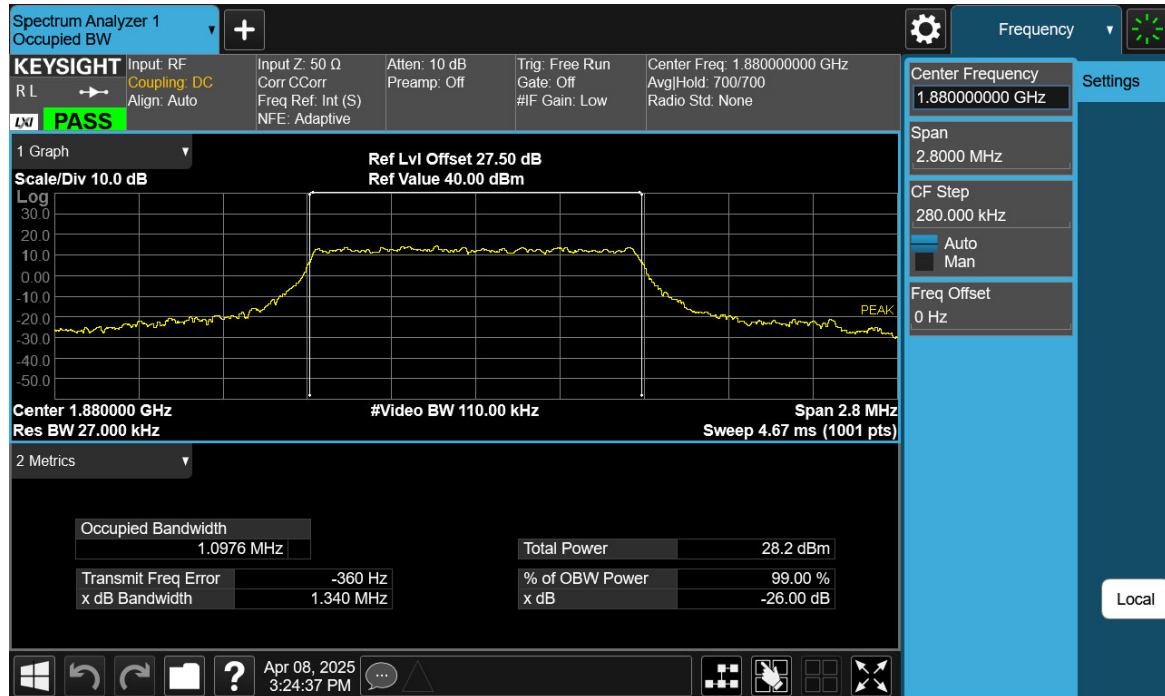
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LTE B2_1.4M_OBW_Mid_64QAM_FullRB



LTE B2_1.4M_OBW_Mid_256QAM_FullRB



LTE B2_3 M_OBW_Mid_QPSK_FullRB

