

TEST REPORT

FCC LTE B66(4) Test for SM-S931U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2410-FC016

DATE OF ISSUE
October 29, 2024

Tested by
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TEST REPORT

REPORT NO.

HCT-RF-2410-FC016

DATE OF ISSUE

October 29, 2024

Additional Model

SM-S931U1

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-S931U

Date of Test

August 21, 2024 ~ October 28, 2024

FCC ID

A3LSMS931U

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing

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

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

Test Standard Used

FCC Rule Part: § 27

Test Results

PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	October 29, 2024	Initial Release

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).

CONTENTS

1. GENERAL INFORMATION	5
1.1. MAXIMUM OUTPUT POWER.....	6
2. INTRODUCTION	8
2.1. DESCRIPTION OF EUT	8
2.2. MEASURING INSTRUMENT CALIBRATION	8
2.3. TEST FACILITY	8
3. DESCRIPTION OF TESTS	9
3.1 TEST PROCEDURE.....	9
3.2 RADIATED POWER	10
3.3 RADIATED SPURIOUS EMISSIONS	11
3.4 PEAK- TO- AVERAGE RATIO.....	12
3.5 OCCUPIED BANDWIDTH.	14
3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.....	15
3.7 BAND EDGE.....	16
3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	18
3.9 WORST CASE(RADIATED TEST).....	19
3.10 WORST CASE(CONDUCTED TEST)	20
4. LIST OF TEST EQUIPMENT	21
5. MEASUREMENT UNCERTAINTY	22
6. SUMMARY OF TEST RESULTS	23
7. SAMPLE CALCULATION	24
8. TEST DATA(Main 1 ANT)	26
8.1 EQUIVALENT ISOTROPIC RADIATED POWER	26
8.2 RADIATED SPURIOUS EMISSIONS	29
8.3 PEAK-TO-AVERAGE RATIO	30
8.4 OCCUPIED BANDWIDTH	31
8.5 CONDUCTED SPURIOUS EMISSIONS.....	32
8.6 BAND EDGE.....	32
8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	33
9. TEST DATA(Sub 2 ANT).....	51
9.1 EQUIVALENT ISOTROPIC RADIATED POWER	51
9.2 RADIATED SPURIOUS EMISSIONS	54
9.3 PEAK-TO-AVERAGE RATIO	55
9.4 OCCUPIED BANDWIDTH	56
9.5 CONDUCTED SPURIOUS EMISSIONS.....	57
9.6 BAND EDGE.....	57
9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	58
10. TEST PLOTS(Main 1 ANT)	76
11. TEST PLOTS(Sub 2 ANT).....	197
12. ANNEX A_ TEST SETUP PHOTO	318

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:	A3LSMS931U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27
EUT Type:	Mobile phone
Model(s):	SM-S931U
Additional Model(s)	SM-S931U1
Tx Frequency:	1710.7 MHz – 1779.3 MHz (LTE – Band 66/4 (1.4 MHz)) 1711.5 MHz – 1778.5 MHz (LTE – Band 66/4 (3 MHz)) 1712.5 MHz – 1777.5 MHz (LTE – Band 66/4 (5 MHz)) 1715.0 MHz – 1775.0 MHz (LTE – Band 66/4 (10 MHz)) 1717.5 MHz – 1772.5 MHz (LTE – Band 66/4 (15 MHz)) 1720.0 MHz – 1770.0 MHz (LTE – Band 66/4 (20 MHz))
Date(s) of Tests:	August 21, 2024 ~ October 28, 2024
Serial number:	Radiated : R3CXA0930NH Conducted : R3CX70H9H0B

1.1. MAXIMUM OUTPUT POWER

Main 1 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.262	24.18
		1M10W7D	16QAM	0.221	23.44
		1M10W7D	64QAM	0.173	22.38
		1M09W7D	256QAM	0.085	19.30
LTE – Band66/4 (3)	1711.5 – 1778.5	2M71G7D	QPSK	0.258	24.11
		2M72W7D	16QAM	0.214	23.31
		2M71W7D	64QAM	0.169	22.29
		2M72W7D	256QAM	0.083	19.19
LTE – Band66/4 (5)	1712.5 – 1777.5	4M52G7D	QPSK	0.265	24.24
		4M50W7D	16QAM	0.221	23.44
		4M51W7D	64QAM	0.173	22.37
		4M52W7D	256QAM	0.083	19.18
LTE – Band66/4 (10)	1715.0 – 1775.0	9M00G7D	QPSK	0.264	24.21
		8M98W7D	16QAM	0.217	23.36
		8M99W7D	64QAM	0.171	22.34
		8M97W7D	256QAM	0.084	19.24
LTE – Band66/4 (15)	1717.5 – 1772.5	13M5G7D	QPSK	0.272	24.34
		13M5W7D	16QAM	0.222	23.46
		13M5W7D	64QAM	0.176	22.45
		13M5W7D	256QAM	0.086	19.33
LTE – Band66/4 (20)	1720.0 – 1770.0	18M0G7D	QPSK	0.277	24.43
		18M0W7D	16QAM	0.222	23.46
		18M0W7D	64QAM	0.173	22.39
		18M0W7D	256QAM	0.084	19.24

Sub 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66/4 (1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.279	24.45
		1M10W7D	16QAM	0.241	23.82
		1M10W7D	64QAM	0.185	22.67
		1M10W7D	256QAM	0.091	19.58
LTE – Band66/4 (3)	1711.5 – 1778.5	2M71G7D	QPSK	0.279	24.45
		2M72W7D	16QAM	0.240	23.80
		2M71W7D	64QAM	0.189	22.77
		2M71W7D	256QAM	0.089	19.50
LTE – Band66/4 (5)	1712.5 – 1777.5	4M54G7D	QPSK	0.277	24.43
		4M55W7D	16QAM	0.237	23.75
		4M53W7D	64QAM	0.181	22.57
		4M52W7D	256QAM	0.088	19.43
LTE – Band66/4 (10)	1715.0 – 1775.0	9M01G7D	QPSK	0.272	24.34
		9M00W7D	16QAM	0.225	23.52
		9M02W7D	64QAM	0.172	22.36
		8M99W7D	256QAM	0.086	19.36
LTE – Band66/4 (15)	1717.5 – 1772.5	13M5G7D	QPSK	0.279	24.45
		13M5W7D	16QAM	0.231	23.64
		13M5W7D	64QAM	0.180	22.56
		13M5W7D	256QAM	0.086	19.37
LTE – Band66/4 (20)	1720.0 – 1770.0	18M0G7D	QPSK	0.281	24.48
		18M0W7D	16QAM	0.231	23.64
		18M0W7D	64QAM	0.179	22.54
		17M9W7D	256QAM	0.088	19.44

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub 6, mmWave. It also supports IEEE 802.11 a/b/g/n/ac/ax/be (20/40/80/160/320 MHz), Bluetooth(iPA, ePA), BT LE(iPA, ePA), NFC, WPT, WIFI 6E.

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
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

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 in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

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 according to ANSI/TIA-603-E-2016.

Test Settings

1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $> 2 \times$ 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;

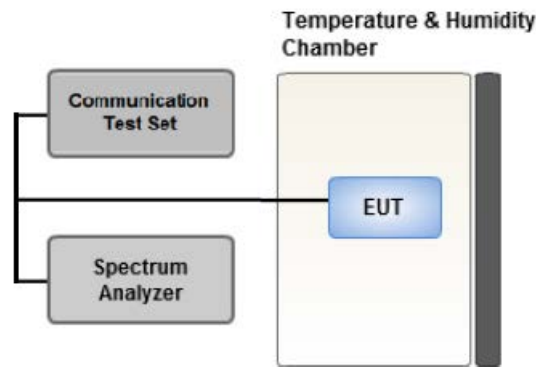
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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)

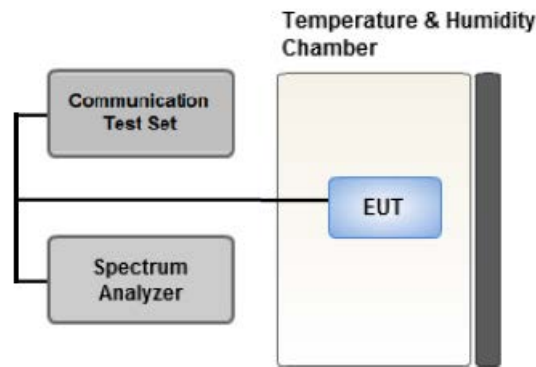
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

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.

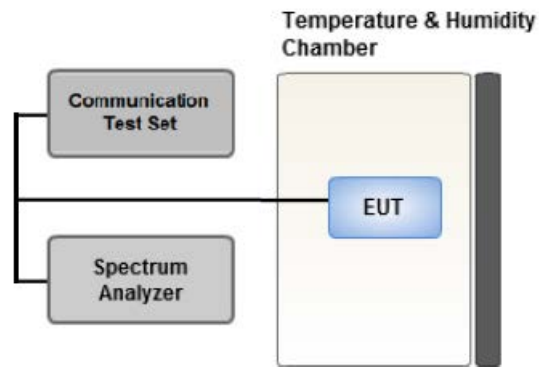
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

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

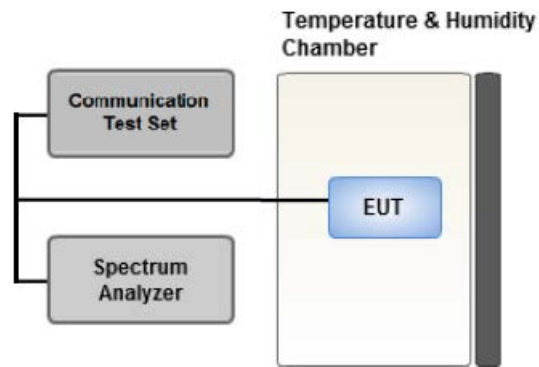
Test Overview

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 = RMS
4. Trace Mode = trace average
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 $\geq 2 \times \text{Span}/\text{RBW}$
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

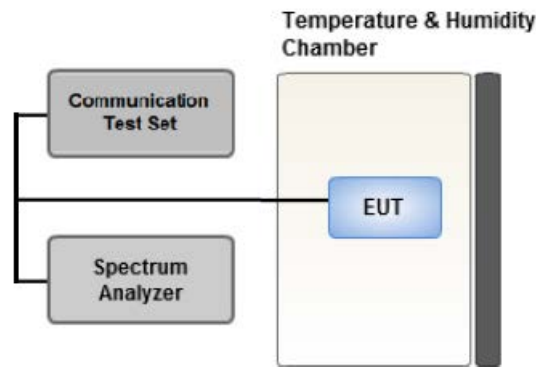
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block 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.
- 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.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported. (Worst case : 20 MHz)
- 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.
- LTE Band 66 (1710 – 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz) and they have the same Tune-up power. Therefore, test data provided in this report covers Band 4 as well as Band 66.
- SM-S931U & additional models were tested and the worst case results are reported.
(Worst case : SM-S931U)

[Main 1 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 2 ANT Worst case]

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

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
- LTE Band 66 (1710 – 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz) and they have the same Tune-up power. Therefore, test data provided in this report covers Band 4 as well as Band 66.
- SM-S931U & additional models were tested and the worst case results are reported.
(Worst case : SM-S931U)

[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	08/21/2025	Annual
RF Switching System	Switch box(3.3 G HPF+LNA)	HCT CO., LTD.,	F1L2	08/21/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F1L4	08/21/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F1L7	08/21/2025	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	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	02/19/2025	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	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	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	11/17/2024	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	12/11/2024	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
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 ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (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)	5.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, $k=2$)

6. SUMMARY OF TEST RESULTS

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, § 27.53(h)	< 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	§ 27.50(d)(5)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 2.1055, § 27.54	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	§ 27.50(d)(4)	< 1 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 27.53(h)	< 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 1 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
1710.7	LTE B66/B4 1.4 MHz	QPSK	-17.17	16.20	10.04	2.06	H	< 1.00	0.262	24.18	1	0
		16-QAM	-17.91	15.46	10.04	2.06	H		0.221	23.44		
		64-QAM	-18.97	14.40	10.04	2.06	H		0.173	22.38		
		256-QAM	-22.05	11.32	10.04	2.06	H		0.085	19.30		
1745.0		QPSK	-17.87	15.59	10.18	2.07	H		0.234	23.70	1	0
		16-QAM	-18.67	14.79	10.18	2.07	H		0.195	22.90		
		64-QAM	-19.69	13.77	10.18	2.07	H		0.154	21.88		
		256-QAM	-22.78	10.68	10.18	2.07	H		0.076	18.79		
1779.3		QPSK	-19.21	14.61	10.26	2.09	H		0.190	22.78	1	0
		16-QAM	-19.84	13.98	10.26	2.09	H		0.164	22.15		
		64-QAM	-20.91	12.91	10.26	2.09	H		0.128	21.08		
		256-QAM	-24.06	9.76	10.26	2.09	H		0.062	17.93		

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
1711.5	LTE B66/B4 3 MHz	QPSK	-17.24	16.13	10.04	2.06	H	< 1.00	0.258	24.11	1	0
		16-QAM	-18.04	15.33	10.04	2.06	H		0.214	23.31		
		64-QAM	-19.06	14.31	10.04	2.06	H		0.169	22.29		
		256-QAM	-22.16	11.21	10.04	2.06	H		0.083	19.19		
1745.0		QPSK	-17.88	15.58	10.18	2.07	H		0.234	23.69	1	0
		16-QAM	-18.65	14.81	10.18	2.07	H		0.196	22.92		
		64-QAM	-19.77	13.69	10.18	2.07	H		0.151	21.80		
		256-QAM	-22.83	10.63	10.18	2.07	H		0.075	18.74		
1778.5		QPSK	-19.11	14.71	10.26	2.09	H		0.194	22.88	1	0
		16-QAM	-19.84	13.98	10.26	2.09	H		0.164	22.15		
		64-QAM	-20.94	12.88	10.26	2.09	H		0.127	21.05		
		256-QAM	-24.05	9.77	10.26	2.09	H		0.062	17.94		

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
1712.5	LTE B66/B4 5 MHz	QPSK	-17.15	16.24	10.06	2.06	H	<1.00	0.265	24.24	1	0
		16-QAM	-17.95	15.44	10.06	2.06	H		0.221	23.44		
		64-QAM	-19.02	14.37	10.06	2.06	H		0.173	22.37		
		256-QAM	-22.21	11.18	10.06	2.06	H		0.083	19.18		
1745.0		QPSK	-17.80	15.66	10.18	2.07	H		0.238	23.77	1	0
		16-QAM	-18.56	14.90	10.18	2.07	H		0.200	23.01		
		64-QAM	-19.66	13.80	10.18	2.07	H		0.155	21.91		
		256-QAM	-22.82	10.64	10.18	2.07	H		0.075	18.75		
1777.5		QPSK	-19.02	14.80	10.26	2.09	H		0.198	22.97	1	0
		16-QAM	-19.73	14.09	10.26	2.09	H		0.168	22.26		
		64-QAM	-20.84	12.98	10.26	2.09	H		0.130	21.15		
		256-QAM	-23.96	9.86	10.26	2.09	H		0.064	18.03		

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
1715.0	LTE B66/B4 10 MHz	QPSK	-17.18	16.21	10.06	2.06	H	< 1.00	0.264	24.21	1	0
		16-QAM	-18.03	15.36	10.06	2.06	H		0.217	23.36		
		64-QAM	-19.05	14.34	10.06	2.06	H		0.171	22.34		
		256-QAM	-22.15	11.24	10.06	2.06	H		0.084	19.24		
1745.0		QPSK	-17.66	15.80	10.18	2.07	H		0.246	23.91	1	0
		16-QAM	-18.45	15.01	10.18	2.07	H		0.205	23.12		
		64-QAM	-19.53	13.93	10.18	2.07	H		0.160	22.04		
		256-QAM	-22.62	10.84	10.18	2.07	H		0.079	18.95		
1775.0		QPSK	-18.78	14.98	10.25	2.09	H		0.206	23.14	1	0
		16-QAM	-19.62	14.14	10.25	2.09	H		0.170	22.30		
		64-QAM	-20.65	13.11	10.25	2.09	H		0.134	21.27		
		256-QAM	-23.69	10.07	10.25	2.09	H		0.067	18.23		

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
1717.5	LTE B66/B4 15 MHz	QPSK	-17.10	16.32	10.08	2.06	H	<1.00	0.272	24.34	1	0
		16-QAM	-17.98	15.44	10.08	2.06	H		0.222	23.46		
		64-QAM	-18.99	14.43	10.08	2.06	H		0.176	22.45		
		256-QAM	-22.11	11.31	10.08	2.06	H		0.086	19.33		
1745.0		QPSK	-17.45	16.01	10.18	2.07	H		0.258	24.12	1	0
		16-QAM	-18.28	15.18	10.18	2.07	H		0.213	23.29		
		64-QAM	-19.41	14.05	10.18	2.07	H		0.164	22.16		
		256-QAM	-22.53	10.93	10.18	2.07	H		0.080	19.04		
1772.5		QPSK	-18.48	15.28	10.25	2.09	H		0.221	23.44	1	0
		16-QAM	-19.34	14.42	10.25	2.09	H		0.181	22.58		
		64-QAM	-20.48	13.28	10.25	2.09	H		0.139	21.44		
		256-QAM	-23.48	10.28	10.25	2.09	H		0.070	18.44		

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
1720.0	LTE B66/B4 20 MHz	QPSK	-17.01	16.41	10.08	2.06	H	< 1.00	0.277	24.43	1	0
		16-QAM	-17.98	15.44	10.08	2.06	H		0.222	23.46		
		64-QAM	-19.05	14.37	10.08	2.06	H		0.173	22.39		
		256-QAM	-22.20	11.22	10.08	2.06	H		0.084	19.24		
1745.0		QPSK	-17.42	16.04	10.18	2.07	H		0.260	24.15	1	0
		16-QAM	-18.31	15.15	10.18	2.07	H		0.212	23.26		
		64-QAM	-19.36	14.10	10.18	2.07	H		0.166	22.21		
		256-QAM	-22.52	10.94	10.18	2.07	H		0.080	19.05		
1770.0		QPSK	-18.30	15.40	10.24	2.09	H		0.226	23.55	1	0
		16-QAM	-19.21	14.49	10.24	2.09	H		0.184	22.64		
		64-QAM	-20.28	13.42	10.24	2.09	H		0.144	21.57		
		256-QAM	-23.36	10.34	10.24	2.09	H		0.071	18.49		

8.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY:	<u>1720.0 MHz</u>
▣ MEASURED OUTPUT POWER:	<u>24.43 dBm = 0.277 W</u>
▣ MODE:	<u>LTE B66/B4</u>
▣ MODULATION SIGNAL:	<u>20 MHz QPSK</u>
▣ DISTANCE:	<u>3 meters</u>
▣ LIMIT: $43 + 10 \log_{10}(W) =$	<u>35.06 dBc</u>

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	dBc	RB	
									Size	Offset
132072 (1720.0)	3 440.00	-48.58	12.52	-62.59	3.04	V	-53.11	77.54	1	0
	5 160.00	-51.54	12.34	-57.38	3.76	V	-48.80	73.23		
	6 880.00	-52.23	11.94	-52.29	4.44	H	-44.79	69.22		
132322 (1745.0)	3 490.00	-45.68	12.42	-59.27	3.04	V	-49.89	74.32	1	0
	5 235.00	-51.03	12.71	-58.25	3.78	H	-49.32	73.75		
	6 980.00	-49.77	11.52	-48.16	4.48	V	-41.12	65.55		
132572 (1770.0)	3 540.00	-47.66	12.40	-60.61	3.06	V	-51.27	75.70	1	0
	5 310.00	-50.98	13.00	-57.61	3.82	V	-48.43	72.86		
	7 080.00	-50.79	10.98	-47.92	4.49	V	-41.43	65.86		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
66/4	1.4 MHz	1745.0	QPSK	6	0	4.64
			16-QAM			5.76
			64-QAM			6.38
			256-QAM			6.82
	3 MHz		QPSK	15		4.60
			16-QAM			5.82
			64-QAM			6.40
			256-QAM			6.77
	5 MHz		QPSK	25		4.67
			16-QAM			5.65
			64-QAM			6.34
			256-QAM			6.74
	10 MHz		QPSK	50		4.67
			16-QAM			5.63
			64-QAM			6.28
			256-QAM			6.72
	15 MHz		QPSK	75		4.67
			16-QAM			5.72
			64-QAM			6.34
			256-QAM			6.73
	20 MHz		QPSK	100		4.69
			16-QAM			5.65
			64-QAM			6.28
			256-QAM			6.70

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)
66/4	1.4 MHz	1745.0	QPSK	6	0	1.0973
			16-QAM			1.0976
			64-QAM			1.0977
			256-QAM			1.0941
	3 MHz		QPSK	15		2.7122
			16-QAM			2.7166
			64-QAM			2.7073
			256-QAM			2.7182
	5 MHz		QPSK	25		4.5227
			16-QAM			4.5022
			64-QAM			4.5142
			256-QAM			4.5184
	10 MHz		QPSK	50		8.9964
			16-QAM			8.9833
			64-QAM			8.9928
			256-QAM			8.9701
	15 MHz		QPSK	75		13.467
			16-QAM			13.483
			64-QAM			13.473
			256-QAM			13.497
	20 MHz		QPSK	100		17.973
			16-QAM			18.003
			64-QAM			17.968
			256-QAM			17.992

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)
66/4	1.4	1710.7	3.6900	27.976	-66.496	-38.520	-13.00
		1745.0	3.7000	27.976	-67.173	-39.197	
		1779.3	2.5694	27.976	-67.249	-39.273	
	3	1711.5	3.1770	27.976	-67.304	-39.328	
		1745.0	3.6845	27.976	-67.183	-39.207	
		1778.5	3.6930	27.976	-67.355	-39.379	
	5	1712.5	3.6875	27.976	-66.913	-38.937	
		1745.0	3.7079	27.976	-67.175	-39.199	
		1777.5	3.7129	27.976	-67.272	-39.296	
	10	1715.0	3.6910	27.976	-67.494	-39.518	
		1745.0	3.6980	27.976	-67.112	-39.136	
		1775.0	3.7029	27.976	-67.026	-39.050	
	15	1717.5	3.7064	27.976	-66.953	-38.977	
		1745.0	3.7084	27.976	-66.742	-38.766	
		1772.5	3.1795	27.976	-67.327	-39.351	
	20	1720.0	3.6925	27.976	-67.000	-39.024	
		1745.0	3.6930	27.976	-66.981	-39.005	
		1770.0	3.6815	27.976	-67.298	-39.322	

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

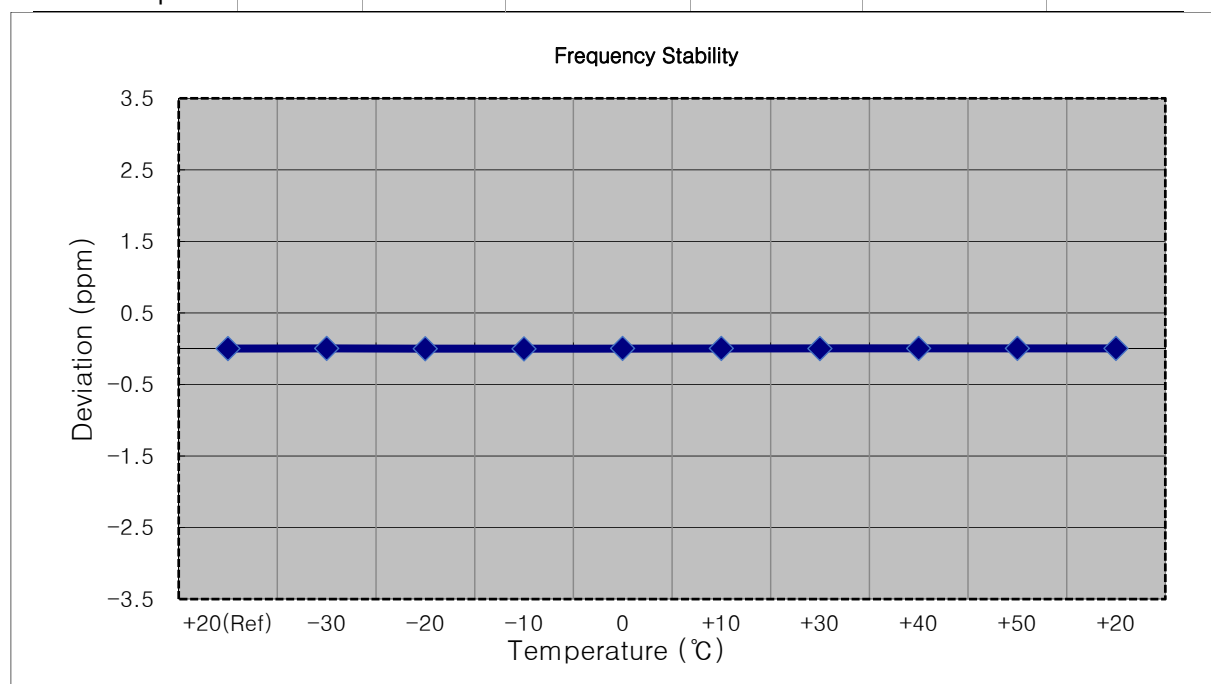
8.6 BAND EDGE

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

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

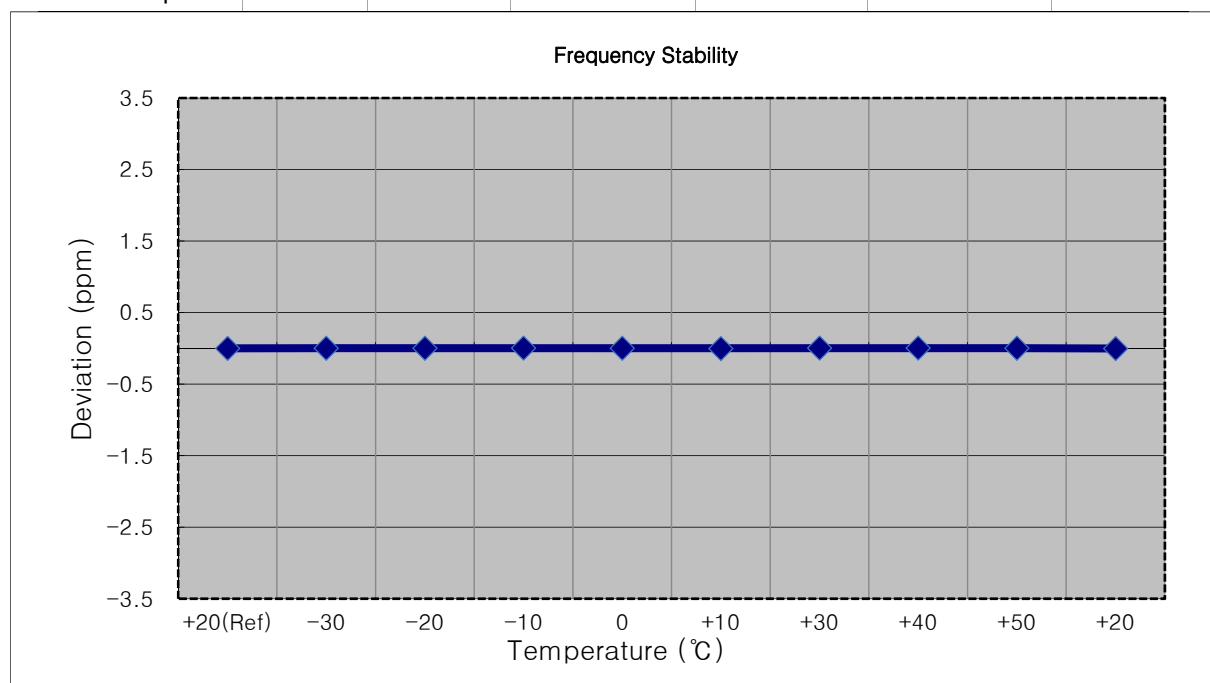
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1710,700,000 Hz</u>
CHANNEL:	<u>131979 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1710 700 005	0.0	0.000 000	0.000
100 %		-30	1710 700 011	5.2	0.000 000	0.003
100 %		-20	1710 700 002	-3.3	0.000 000	-0.002
100 %		-10	1710 700 001	-4.1	0.000 000	-0.002
100 %		0	1710 700 012	6.6	0.000 000	0.004
100 %		+10	1710 700 011	5.1	0.000 000	0.003
100 %		+30	1710 700 008	2.4	0.000 000	0.001
100 %		+40	1710 700 010	5.0	0.000 000	0.003
100 %		+50	1710 700 011	5.2	0.000 000	0.003
Batt. Endpoint	3.300	+20	1710 700 011	5.9	0.000 000	0.003



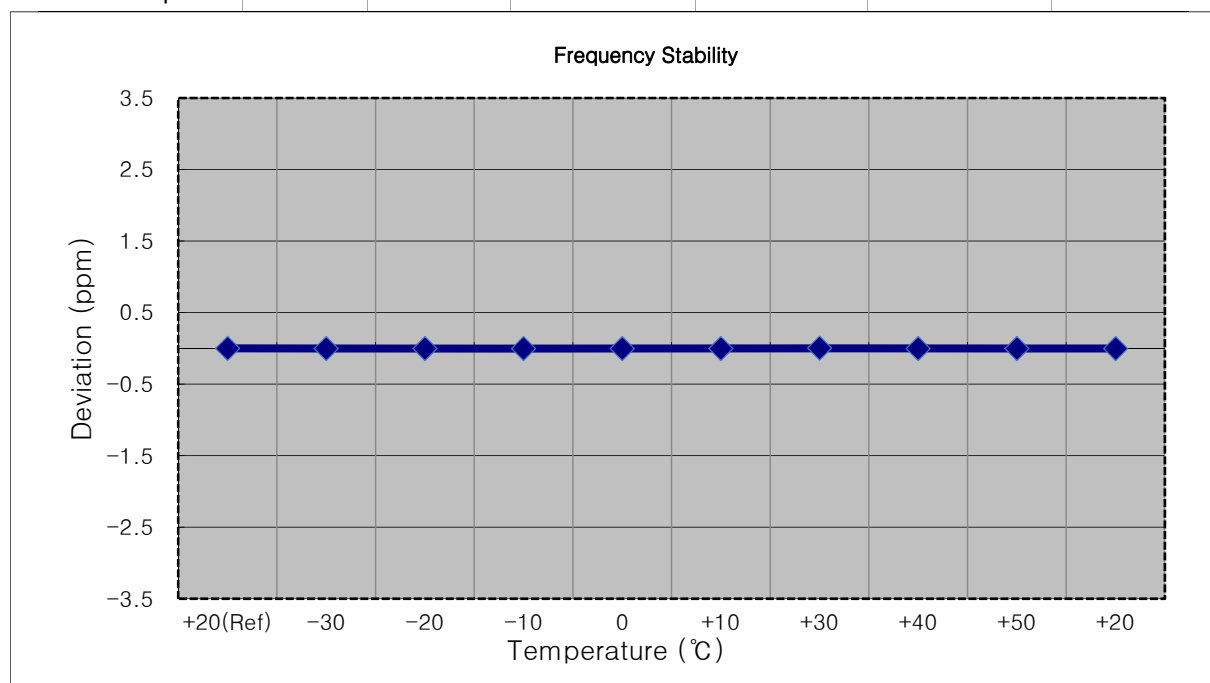
MODE: LTE 66/4
 OPERATING FREQUENCY: 1711,500,000 Hz
 CHANNEL: 131987 (3 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1711 500 008	0.0	0.000 000	0.000
100 %		-30	1711 500 012	4.2	0.000 000	0.002
100 %		-20	1711 500 012	4.7	0.000 000	0.003
100 %		-10	1711 500 014	5.9	0.000 000	0.003
100 %		0	1711 500 011	3.6	0.000 000	0.002
100 %		+10	1711 500 004	-3.7	0.000 000	-0.002
100 %		+30	1711 500 014	6.5	0.000 000	0.004
100 %		+40	1711 500 014	6.3	0.000 000	0.004
100 %		+50	1711 500 012	4.6	0.000 000	0.003
Batt. Endpoint	3.300	+20	1711 500 004	-3.9	0.000 000	-0.002



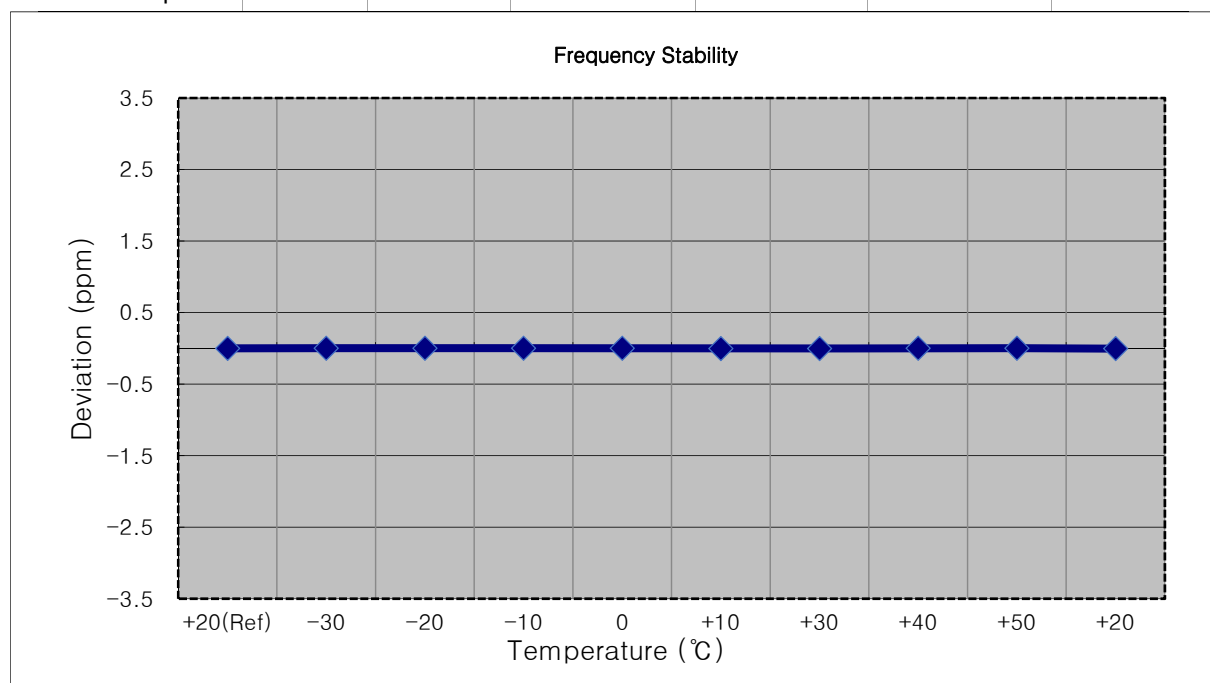
■ MODE: LTE 66/4
 ■ OPERATING FREQUENCY: 1712,500,000 Hz
 ■ CHANNEL: 131997 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1712 499 995	0.0	0.000 000	0.000
100 %		-30	1712 499 989	-5.9	0.000 000	-0.003
100 %		-20	1712 499 990	-5.7	0.000 000	-0.003
100 %		-10	1712 499 992	-3.7	0.000 000	-0.002
100 %		0	1712 499 989	-6.1	0.000 000	-0.004
100 %		+10	1712 499 991	-4.6	0.000 000	-0.003
100 %		+30	1712 500 001	5.5	0.000 000	0.003
100 %		+40	1712 499 992	-3.1	0.000 000	-0.002
100 %		+50	1712 499 990	-4.8	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1712 499 992	-3.5	0.000 000	-0.002



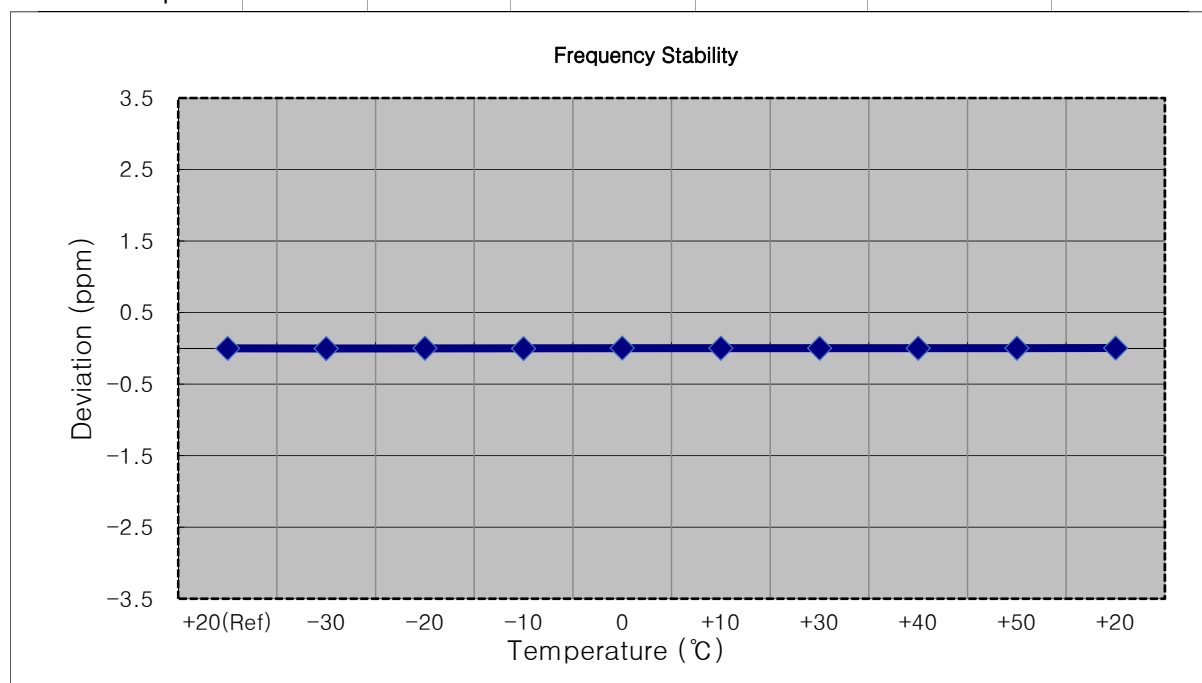
MODE: LTE 66/4
 OPERATING FREQUENCY: 1715,000,000 Hz
 CHANNEL: 132022 (10 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1714 999 997	0.0	0.000 000	0.000
100 %		-30	1714 999 998	1.7	0.000 000	0.001
100 %		-20	1715 000 001	4.2	0.000 000	0.002
100 %		-10	1715 000 001	4.0	0.000 000	0.002
100 %		0	1715 000 001	4.1	0.000 000	0.002
100 %		+10	1714 999 993	-4.1	0.000 000	-0.002
100 %		+30	1714 999 993	-4.0	0.000 000	-0.002
100 %		+40	1715 000 000	2.9	0.000 000	0.002
100 %		+50	1715 000 000	3.7	0.000 000	0.002
Batt. Endpoint	3.300	+20	1714 999 991	-5.3	0.000 000	-0.003



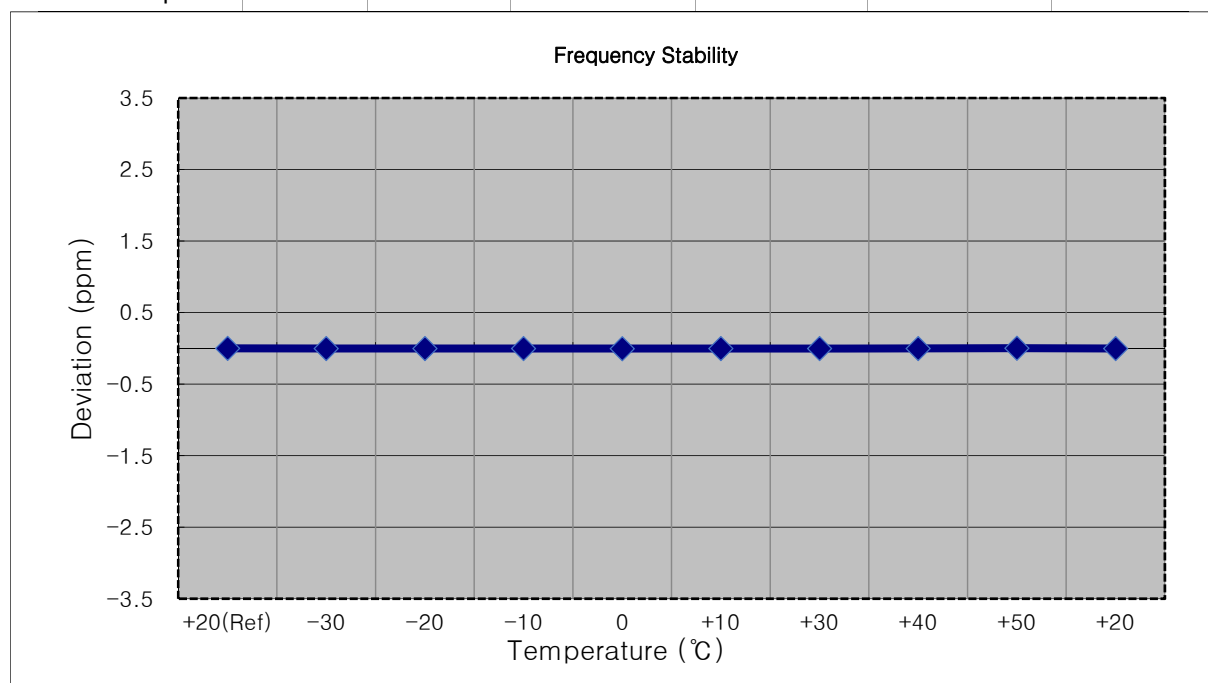
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1717,500,000 Hz</u>
CHANNEL:	<u>132047 (15 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1717 499 996	0.0	0.000 000	0.000
100 %		-30	1717 499 993	-2.7	0.000 000	-0.002
100 %		-20	1717 500 000	4.0	0.000 000	0.002
100 %		-10	1717 499 992	-3.6	0.000 000	-0.002
100 %		0	1717 500 002	6.0	0.000 000	0.003
100 %		+10	1717 499 998	2.2	0.000 000	0.001
100 %		+30	1717 500 001	5.0	0.000 000	0.003
100 %		+40	1717 499 999	3.1	0.000 000	0.002
100 %		+50	1717 500 000	4.7	0.000 000	0.003
Batt. Endpoint	3.300	+20	1717 500 001	5.5	0.000 000	0.003



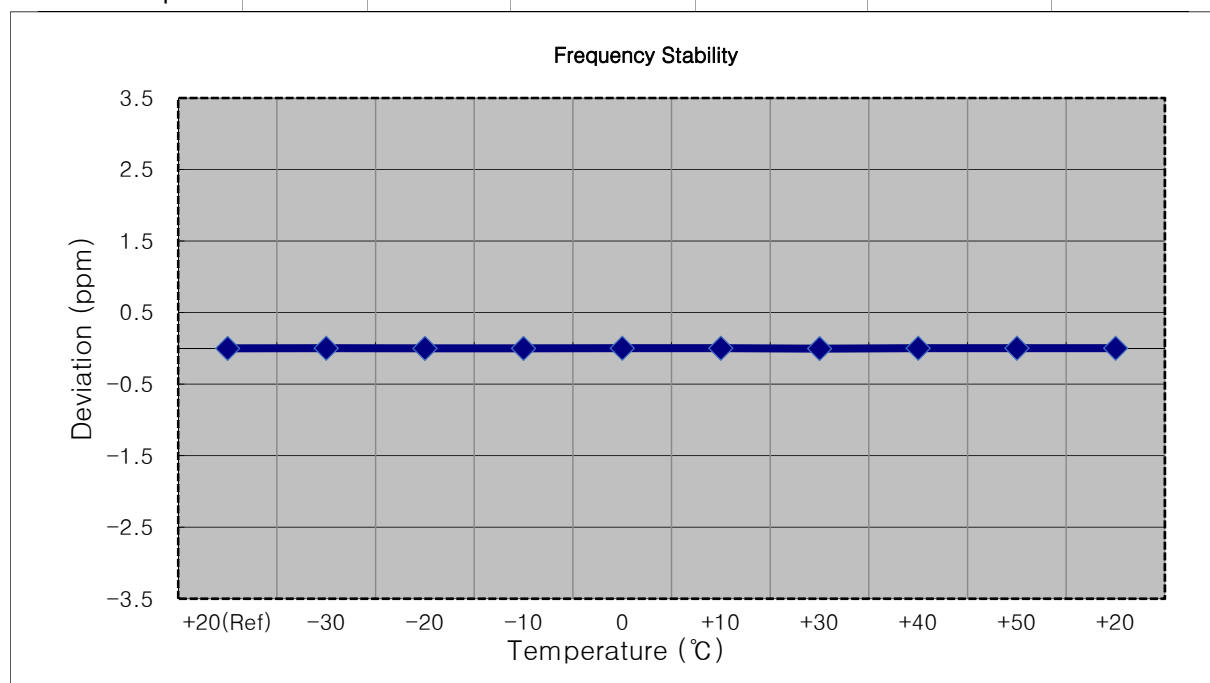
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1720,000,000 Hz</u>
CHANNEL:	<u>132072 (20 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1719 999 997	0.0	0.000 000	0.000
100 %		-30	1719 999 992	-4.1	0.000 000	-0.002
100 %		-20	1719 999 992	-4.3	0.000 000	-0.003
100 %		-10	1719 999 992	-4.7	0.000 000	-0.003
100 %		0	1719 999 989	-7.4	0.000 000	-0.004
100 %		+10	1719 999 993	-3.4	0.000 000	-0.002
100 %		+30	1719 999 991	-5.1	0.000 000	-0.003
100 %		+40	1719 999 992	-5.0	0.000 000	-0.003
100 %		+50	1720 000 001	4.6	0.000 000	0.003
Batt. Endpoint	3.300	+20	1719 999 993	-3.8	0.000 000	-0.002



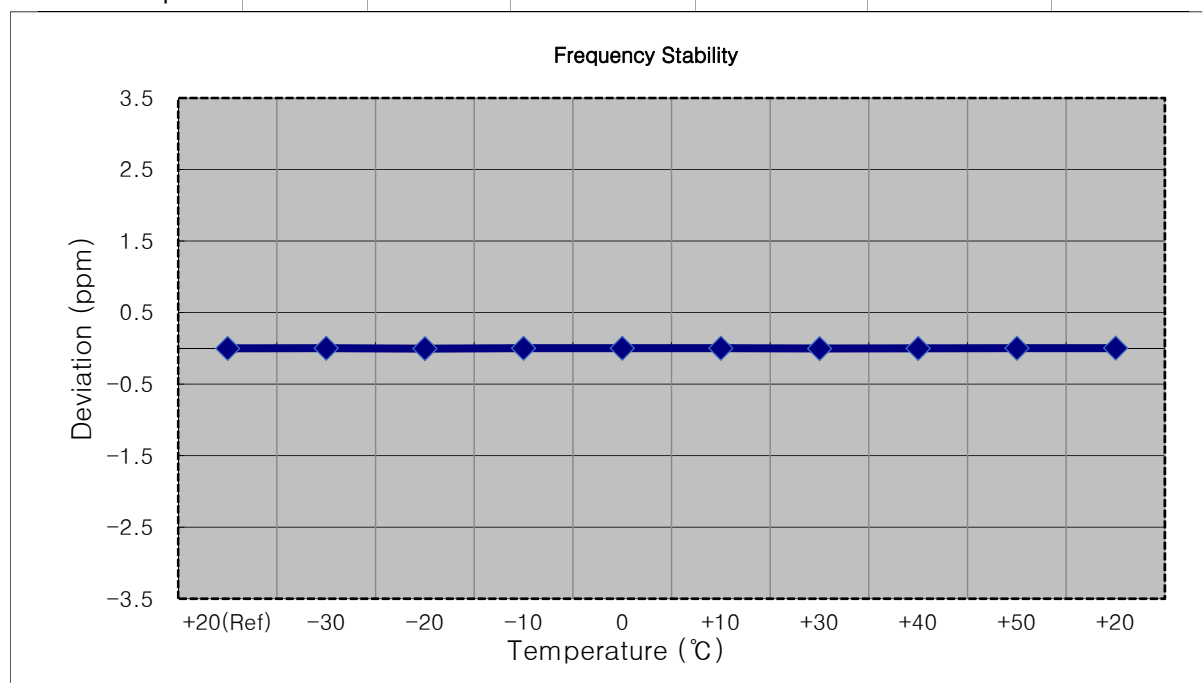
MODE: LTE 66/4
 OPERATING FREQUENCY: 1745,000,000 Hz
 CHANNEL: 132322 (1.4 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1745 000 000	2.4	0.000 000	0.001
100 %		-20	1744 999 995	-2.3	0.000 000	-0.001
100 %		-10	1744 999 995	-2.1	0.000 000	-0.001
100 %		0	1745 000 000	3.0	0.000 000	0.002
100 %		+10	1745 000 000	2.5	0.000 000	0.001
100 %		+30	1744 999 993	-4.8	0.000 000	-0.003
100 %		+40	1745 000 000	2.9	0.000 000	0.002
100 %		+50	1745 000 000	2.3	0.000 000	0.001
Batt. Endpoint	3.300	+20	1745 000 002	4.2	0.000 000	0.002



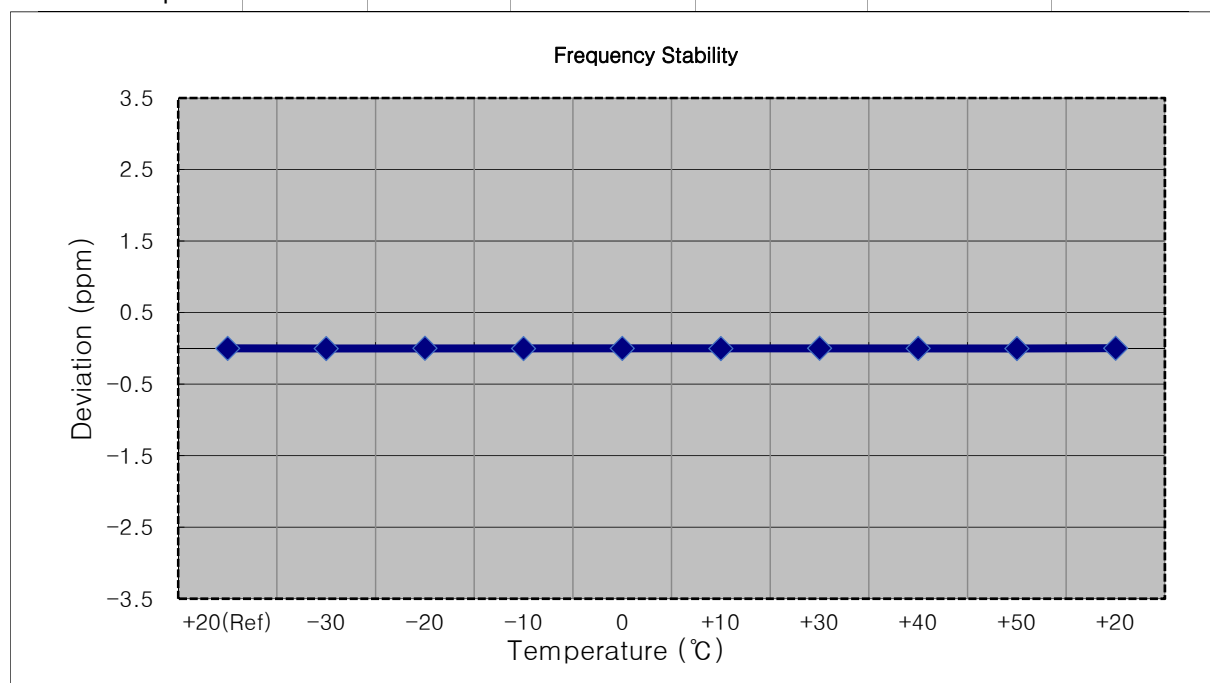
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1745,000,000 Hz</u>
CHANNEL:	<u>132322 (3 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1745 000 001	3.9	0.000 000	0.002
100 %		-20	1744 999 991	-6.0	0.000 000	-0.003
100 %		-10	1745 000 000	3.7	0.000 000	0.002
100 %		0	1744 999 999	2.7	0.000 000	0.002
100 %		+10	1745 000 001	4.0	0.000 000	0.002
100 %		+30	1744 999 993	-4.0	0.000 000	-0.002
100 %		+40	1744 999 994	-2.5	0.000 000	-0.001
100 %		+50	1745 000 000	3.7	0.000 000	0.002
Batt. Endpoint	3.300	+20	1745 000 002	5.6	0.000 000	0.003



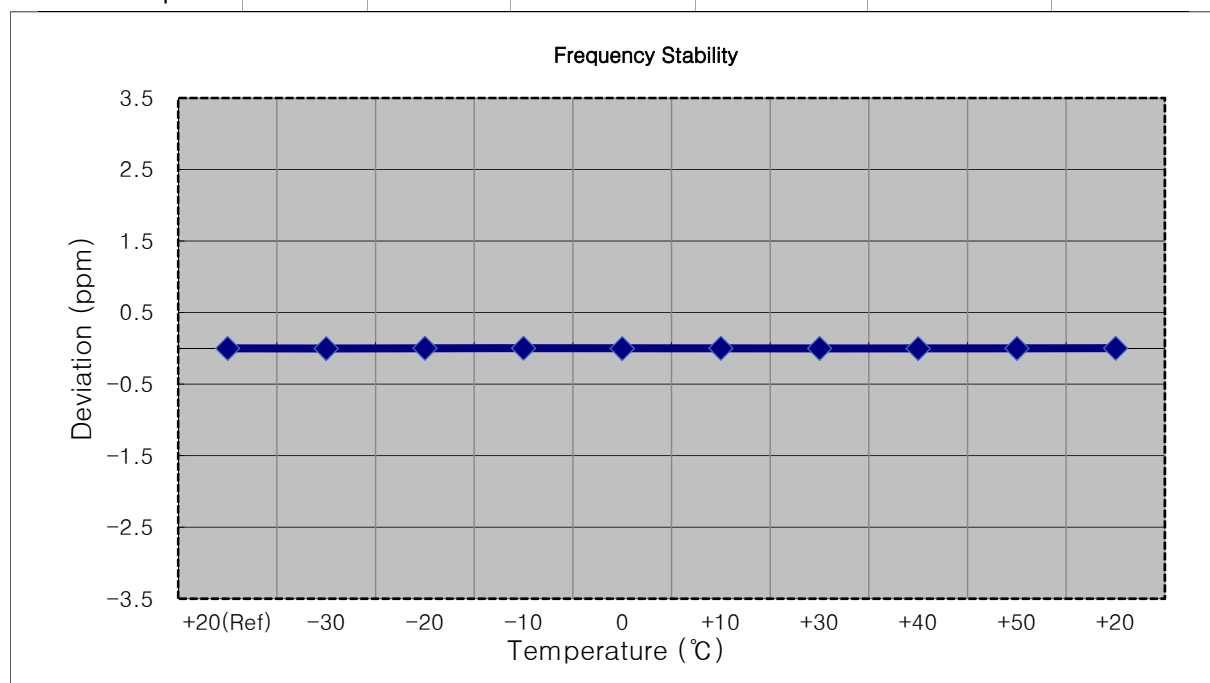
MODE: LTE 66/4
 OPERATING FREQUENCY: 1745,000,000 Hz
 CHANNEL: 132322 (5 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1744 999 992	-5.0	0.000 000	-0.003
100 %		-20	1744 999 999	2.4	0.000 000	0.001
100 %		-10	1744 999 993	-3.8	0.000 000	-0.002
100 %		0	1744 999 994	-2.2	0.000 000	-0.001
100 %		+10	1744 999 990	-6.4	0.000 000	-0.004
100 %		+30	1744 999 999	2.2	0.000 000	0.001
100 %		+40	1744 999 995	-1.7	0.000 000	-0.001
100 %		+50	1744 999 994	-3.0	0.000 000	-0.002
Batt. Endpoint	3.300	+20	1745 000 001	4.3	0.000 000	0.002



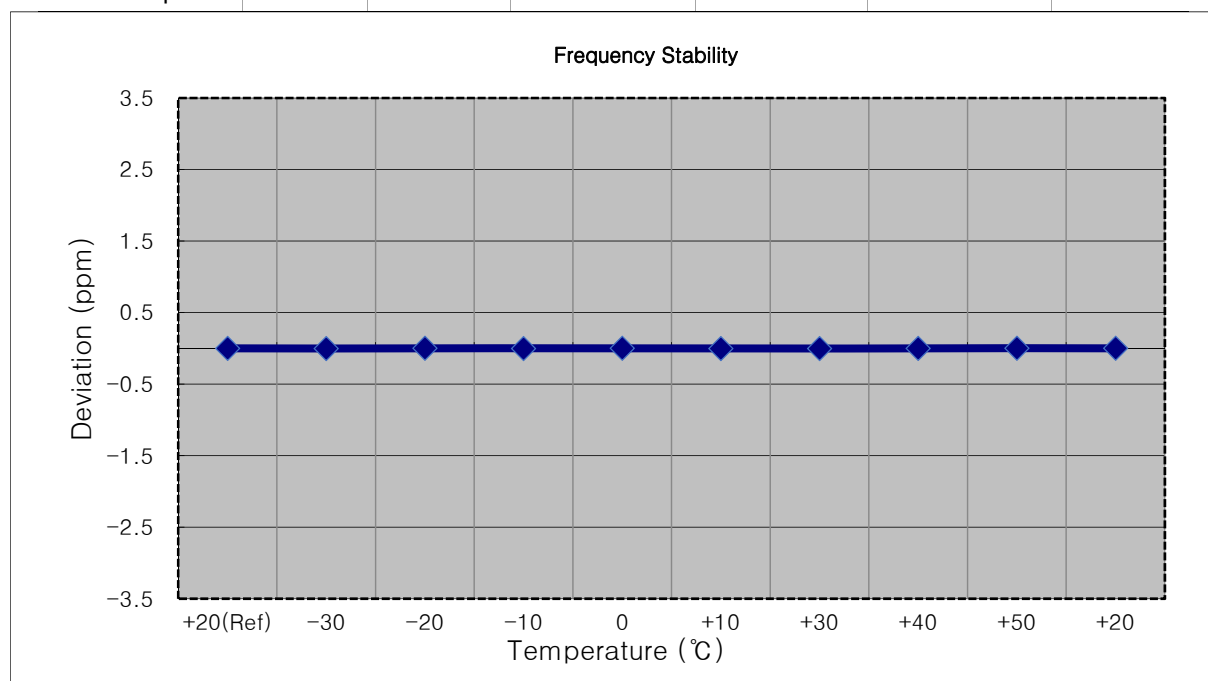
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1744 999 994	-3.3	0.000 000	-0.002
100 %		-20	1744 999 999	2.4	0.000 000	0.001
100 %		-10	1744 999 999	2.4	0.000 000	0.001
100 %		0	1744 999 993	-4.3	0.000 000	-0.002
100 %		+10	1745 000 001	4.4	0.000 000	0.003
100 %		+30	1744 999 995	-2.3	0.000 000	-0.001
100 %		+40	1744 999 993	-3.8	0.000 000	-0.002
100 %		+50	1744 999 994	-2.6	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1745 000 001	3.6	0.000 000	0.002



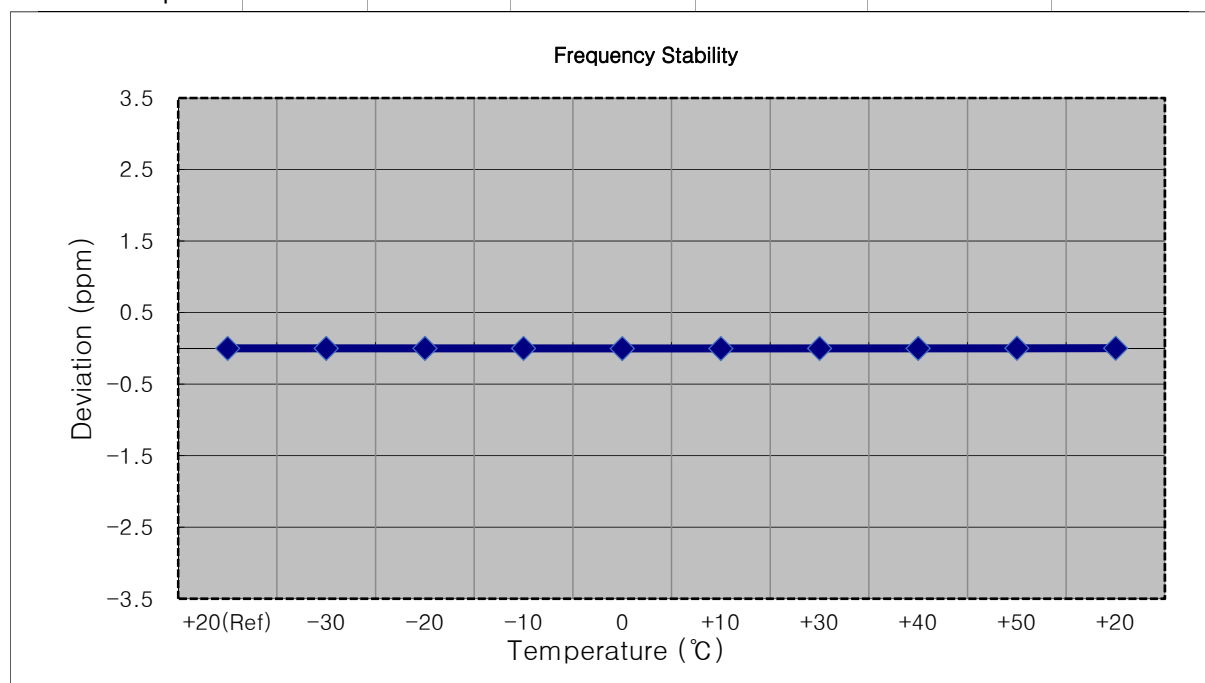
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 997	0.0	0.000 000	0.000
100 %		-30	1744 999 993	-4.1	0.000 000	-0.002
100 %		-20	1745 000 000	2.6	0.000 000	0.001
100 %		-10	1744 999 994	-2.7	0.000 000	-0.002
100 %		0	1745 000 000	2.6	0.000 000	0.001
100 %		+10	1744 999 994	-3.3	0.000 000	-0.002
100 %		+30	1744 999 992	-4.6	0.000 000	-0.003
100 %		+40	1744 999 994	-2.6	0.000 000	-0.001
100 %		+50	1745 000 000	2.6	0.000 000	0.001
Batt. Endpoint	3.300	+20	1745 000 000	2.8	0.000 000	0.002



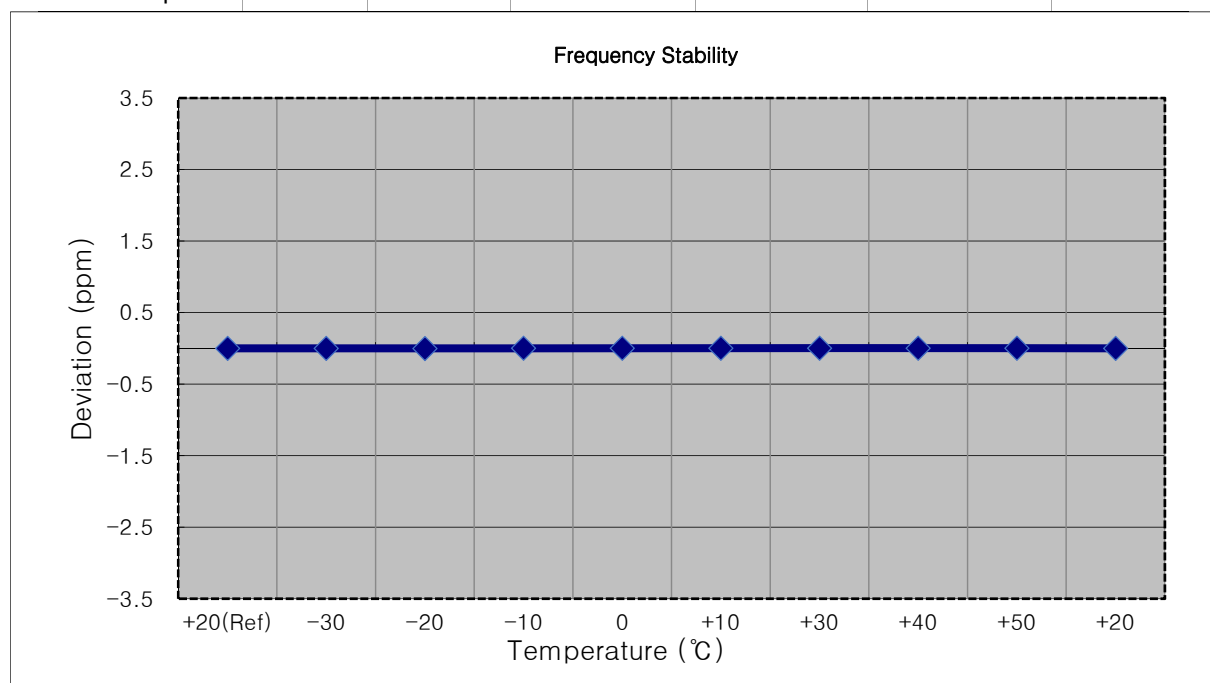
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 998	0.0	0.000 000	0.000
100 %		-30	1744 999 996	-1.3	0.000 000	-0.001
100 %		-20	1744 999 995	-2.6	0.000 000	-0.001
100 %		-10	1744 999 996	-1.6	0.000 000	-0.001
100 %		0	1744 999 994	-3.4	0.000 000	-0.002
100 %		+10	1744 999 994	-3.4	0.000 000	-0.002
100 %		+30	1744 999 995	-2.6	0.000 000	-0.001
100 %		+40	1744 999 996	-1.8	0.000 000	-0.001
100 %		+50	1745 000 000	2.4	0.000 000	0.001
Batt. Endpoint	3.300	+20	1745 000 000	2.0	0.000 000	0.001



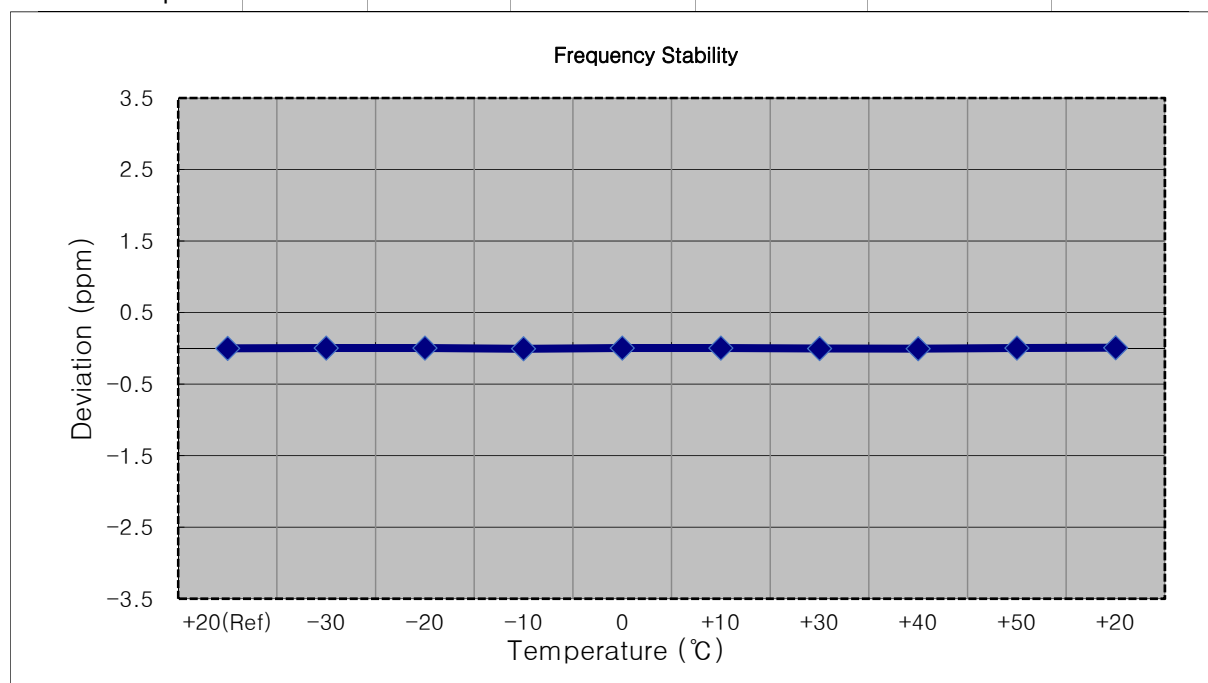
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1779,300,000 Hz
- ▣ CHANNEL: 132665 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1779 299 997	0.0	0.000 000	0.000
100 %		-30	1779 299 995	-2.6	0.000 000	-0.001
100 %		-20	1779 299 991	-6.4	0.000 000	-0.004
100 %		-10	1779 300 001	4.2	0.000 000	0.002
100 %		0	1779 300 000	3.3	0.000 000	0.002
100 %		+10	1779 300 000	2.9	0.000 000	0.002
100 %		+30	1779 300 001	3.8	0.000 000	0.002
100 %		+40	1779 300 000	3.0	0.000 000	0.002
100 %		+50	1779 300 001	4.2	0.000 000	0.002
Batt. Endpoint	3.300	+20	1779 299 996	-1.1	0.000 000	-0.001



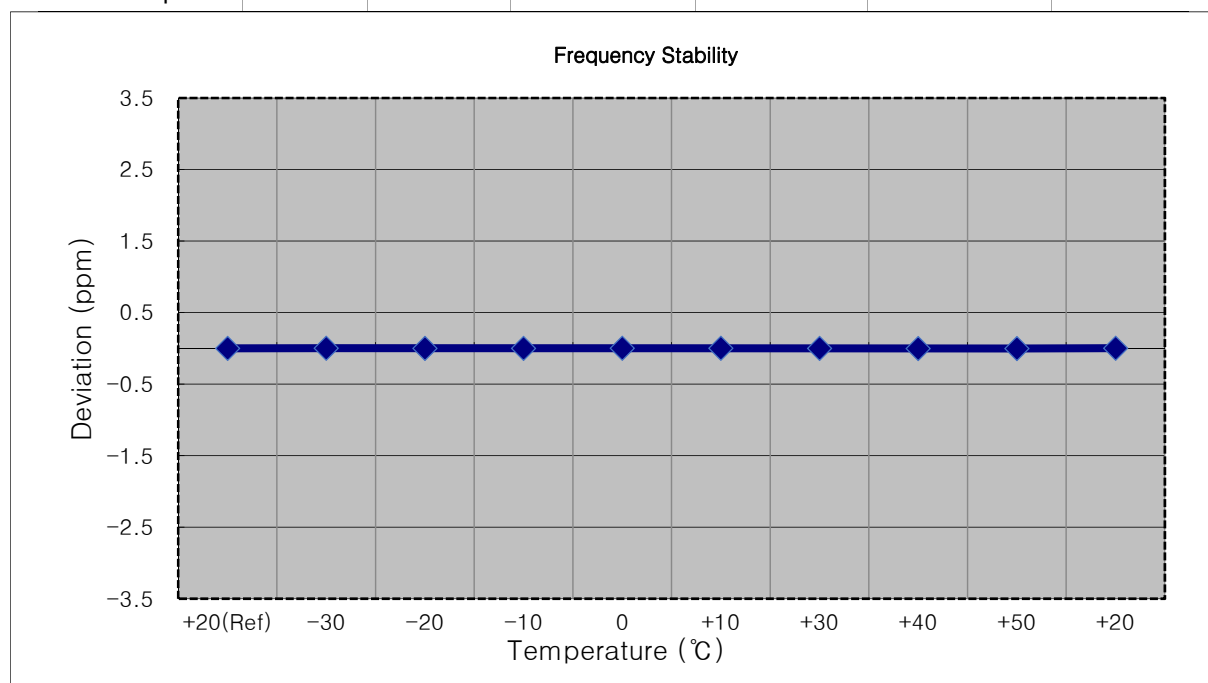
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1778,500,000 Hz
- ▣ CHANNEL: 132657 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1778 499 992	0.0	0.000 000	0.000
100 %		-30	1778 500 000	8.1	0.000 000	0.005
100 %		-20	1778 500 001	9.0	0.000 001	0.005
100 %		-10	1778 499 983	-8.9	-0.000 001	-0.005
100 %		0	1778 500 000	7.4	0.000 000	0.004
100 %		+10	1778 499 999	7.1	0.000 000	0.004
100 %		+30	1778 499 987	-5.4	0.000 000	-0.003
100 %		+40	1778 499 985	-6.8	0.000 000	-0.004
100 %		+50	1778 499 999	7.0	0.000 000	0.004
Batt. Endpoint	3.300	+20	1778 500 008	16.1	0.000 001	0.009



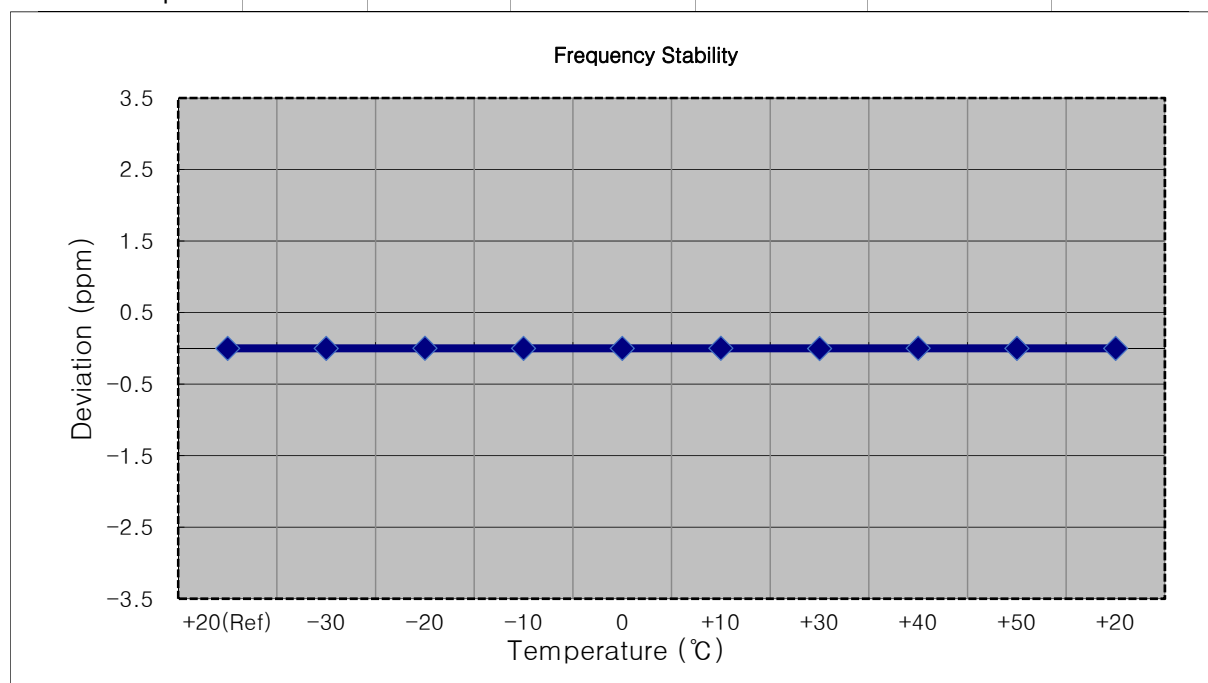
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1777,500,000 Hz
- ▣ CHANNEL: 132647 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1777 499 998	0.0	0.000 000	0.000
100 %		-30	1777 500 002	3.7	0.000 000	0.002
100 %		-20	1777 499 997	-1.1	0.000 000	-0.001
100 %		-10	1777 499 996	-2.3	0.000 000	-0.001
100 %		0	1777 500 000	1.9	0.000 000	0.001
100 %		+10	1777 500 000	2.4	0.000 000	0.001
100 %		+30	1777 499 996	-1.6	0.000 000	-0.001
100 %		+40	1777 499 995	-2.9	0.000 000	-0.002
100 %		+50	1777 499 995	-2.7	0.000 000	-0.002
Batt. Endpoint	3.300	+20	1777 500 001	2.6	0.000 000	0.001



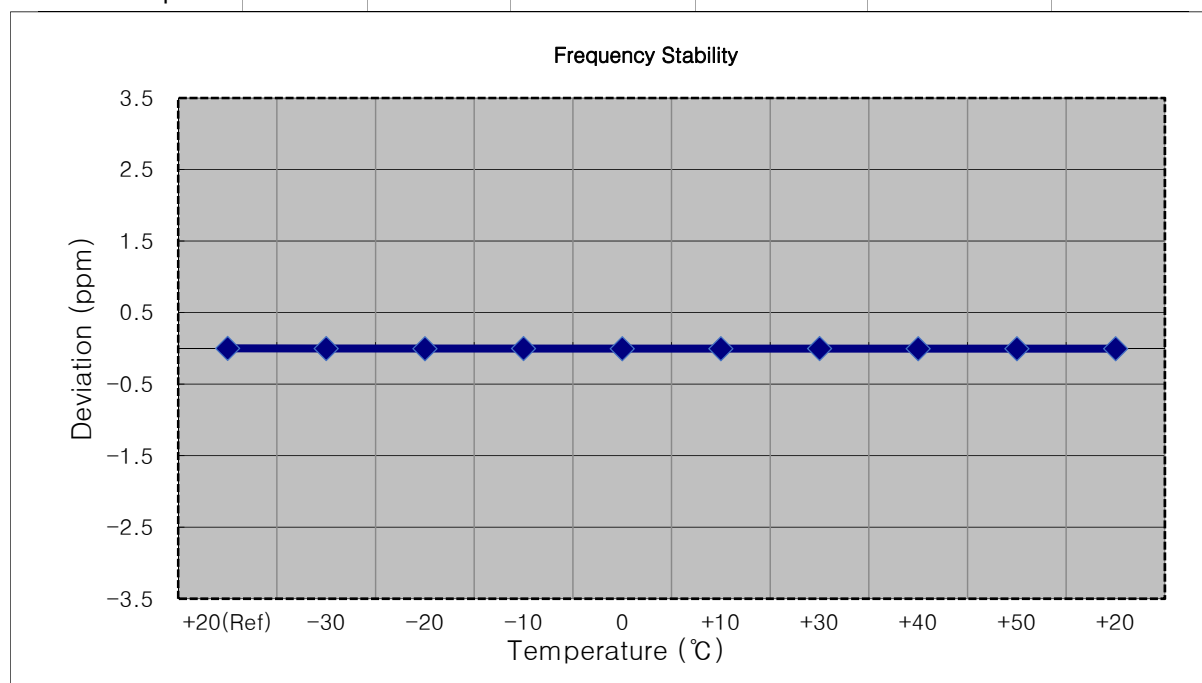
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1775,000,000 Hz
- ▣ CHANNEL: 132622 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1774 999 998	0.0	0.000 000	0.000
100 %		-30	1774 999 996	-2.0	0.000 000	-0.001
100 %		-20	1775 000 000	1.9	0.000 000	0.001
100 %		-10	1774 999 996	-2.1	0.000 000	-0.001
100 %		0	1774 999 997	-1.5	0.000 000	-0.001
100 %		+10	1775 000 001	2.8	0.000 000	0.002
100 %		+30	1774 999 995	-3.2	0.000 000	-0.002
100 %		+40	1775 000 001	2.7	0.000 000	0.002
100 %		+50	1774 999 996	-2.6	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1774 999 996	-2.2	0.000 000	-0.001



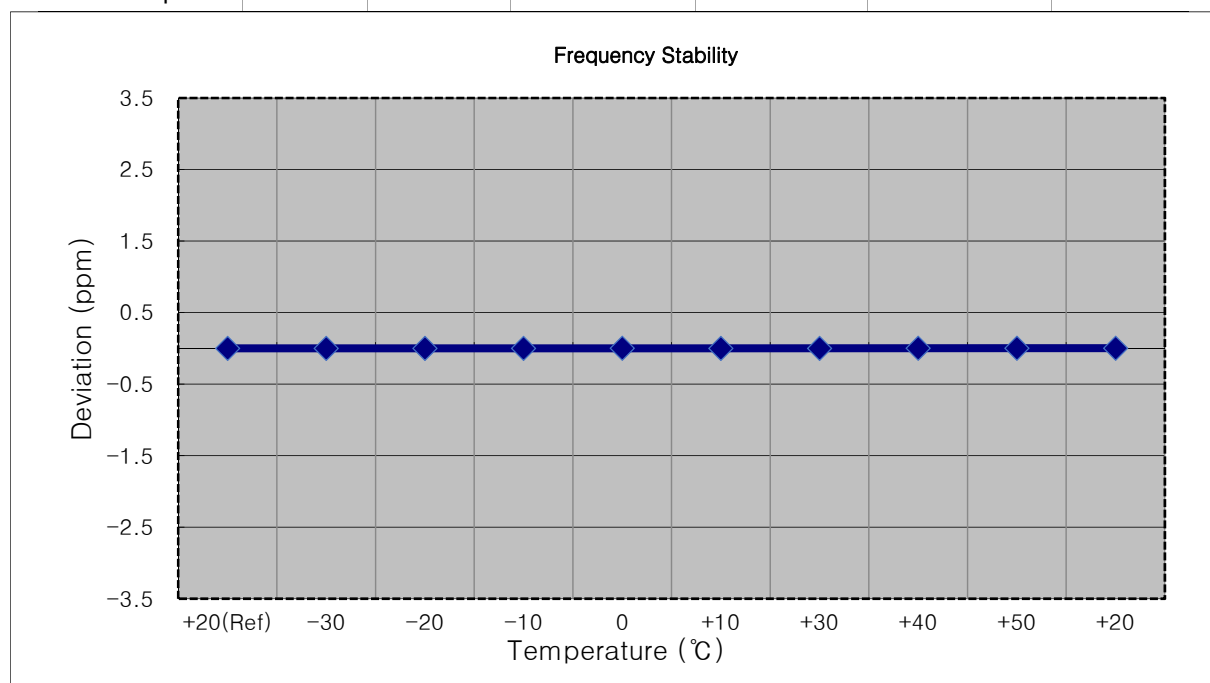
MODE: LTE 66/4
 OPERATING FREQUENCY: 1772,500,000 Hz
 CHANNEL: 132597 (15 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1772 499 993	0.0	0.000 000	0.000
100 %		-30	1772 499 987	-5.7	0.000 000	-0.003
100 %		-20	1772 499 984	-8.3	0.000 000	-0.005
100 %		-10	1772 499 986	-6.6	0.000 000	-0.004
100 %		0	1772 499 984	-8.3	0.000 000	-0.005
100 %		+10	1772 499 984	-8.4	0.000 000	-0.005
100 %		+30	1772 499 987	-5.4	0.000 000	-0.003
100 %		+40	1772 499 986	-6.9	0.000 000	-0.004
100 %		+50	1772 499 985	-7.1	0.000 000	-0.004
Batt. Endpoint	3.300	+20	1772 499 985	-8.0	0.000 000	-0.005



- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1770,000,000 Hz
- ▣ CHANNEL: 132572 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1769 999 997	0.0	0.000 000	0.000
100 %		-30	1769 999 995	-2.0	0.000 000	-0.001
100 %		-20	1769 999 996	-1.2	0.000 000	-0.001
100 %		-10	1769 999 995	-2.1	0.000 000	-0.001
100 %		0	1770 000 000	3.0	0.000 000	0.002
100 %		+10	1769 999 995	-2.0	0.000 000	-0.001
100 %		+30	1769 999 996	-1.3	0.000 000	-0.001
100 %		+40	1770 000 001	3.2	0.000 000	0.002
100 %		+50	1769 999 999	1.8	0.000 000	0.001
Batt. Endpoint	3.300	+20	1770 000 000	2.2	0.000 000	0.001



9. TEST DATA(Sub 2 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
1710.7	LTE B66/B4 1.4 MHz	QPSK	-17.21	16.16	10.04	2.06	H	<1.00	0.259	24.14	1	3
		16-QAM	-17.90	15.47	10.04	2.06	H		0.221	23.45		
		64-QAM	-19.05	14.32	10.04	2.06	H		0.170	22.30		
		256-QAM	-22.10	11.27	10.04	2.06	H		0.084	19.25		
1745.0		QPSK	-17.12	16.34	10.18	2.07	H		0.279	24.45	1	5
		16-QAM	-17.75	15.71	10.18	2.07	H		0.241	23.82		
		64-QAM	-18.90	14.56	10.18	2.07	H		0.185	22.67		
		256-QAM	-21.99	11.47	10.18	2.07	H		0.091	19.58		
1779.3		QPSK	-17.98	15.84	10.26	2.09	H		0.252	24.01	1	3
		16-QAM	-18.24	15.58	10.26	2.09	H		0.237	23.75		
		64-QAM	-19.58	14.24	10.26	2.09	H		0.174	22.41		
		256-QAM	-22.68	11.14	10.26	2.09	H		0.085	19.31		

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
1711.5	LTE B66/B4 3 MHz	QPSK	-16.90	16.47	10.04	2.06	H	< 1.00	0.279	24.45	1	8
		16-QAM	-17.55	15.82	10.04	2.06	H		0.240	23.80		
		64-QAM	-18.58	14.79	10.04	2.06	H		0.189	22.77		
		256-QAM	-21.85	11.52	10.04	2.06	H		0.089	19.50		
1745.0		QPSK	-17.35	16.11	10.18	2.07	H		0.264	24.22	1	8
		16-QAM	-18.07	15.39	10.18	2.07	H		0.224	23.50		
		64-QAM	-19.19	14.27	10.18	2.07	H		0.173	22.38		
		256-QAM	-22.26	11.20	10.18	2.07	H		0.085	19.31		
1778.5		QPSK	-18.36	15.46	10.26	2.09	H		0.231	23.63	1	0
		16-QAM	-19.11	14.71	10.26	2.09	H		0.194	22.88		
		64-QAM	-20.21	13.61	10.26	2.09	H		0.151	21.78		
		256-QAM	-23.39	10.43	10.26	2.09	H		0.072	18.60		

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
1712.5	LTE B66/B4 5 MHz	QPSK	-16.96	16.43	10.06	2.06	H	<1.00	0.277	24.43	1	13
		16-QAM	-17.64	15.75	10.06	2.06	H		0.237	23.75		
		64-QAM	-18.82	14.57	10.06	2.06	H		0.181	22.57		
		256-QAM	-21.96	11.43	10.06	2.06	H		0.088	19.43		
1745.0		QPSK	-17.29	16.17	10.18	2.07	H		0.268	24.28	1	0
		16-QAM	-18.07	15.39	10.18	2.07	H		0.224	23.50		
		64-QAM	-19.16	14.30	10.18	2.07	H		0.174	22.41		
		256-QAM	-22.29	11.17	10.18	2.07	H		0.085	19.28		
1777.5		QPSK	-18.38	15.44	10.26	2.09	H		0.230	23.61	1	0
		16-QAM	-19.12	14.70	10.26	2.09	H		0.194	22.87		
		64-QAM	-20.18	13.64	10.26	2.09	H		0.152	21.81		
		256-QAM	-23.27	10.55	10.26	2.09	H		0.074	18.72		

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
1715.0	LTE B66/B4 10 MHz	QPSK	-17.05	16.34	10.06	2.06	H	< 1.00	0.272	24.34	1	0
		16-QAM	-17.87	15.52	10.06	2.06	H		0.225	23.52		
		64-QAM	-19.03	14.36	10.06	2.06	H		0.172	22.36		
		256-QAM	-22.03	11.36	10.06	2.06	H		0.086	19.36		
1745.0		QPSK	-17.31	16.15	10.18	2.07	H		0.267	24.26	1	0
		16-QAM	-18.10	15.36	10.18	2.07	H		0.222	23.47		
		64-QAM	-19.22	14.24	10.18	2.07	H		0.172	22.35		
		256-QAM	-22.28	11.18	10.18	2.07	H		0.085	19.29		
1775.0		QPSK	-18.11	15.65	10.25	2.09	H		0.240	23.81	1	0
		16-QAM	-18.94	14.82	10.25	2.09	H		0.199	22.98		
		64-QAM	-20.02	13.74	10.25	2.09	H		0.155	21.90		
		256-QAM	-23.05	10.71	10.25	2.09	H		0.077	18.87		

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
1717.5	LTE B66/B4 15 MHz	QPSK	-17.01	16.41	10.08	2.06	H	<1.00	0.277	24.43	1	0
		16-QAM	-17.80	15.62	10.08	2.06	H		0.231	23.64		
		64-QAM	-18.88	14.54	10.08	2.06	H		0.180	22.56		
		256-QAM	-22.07	11.35	10.08	2.06	H		0.086	19.37		
1745.0		QPSK	-17.12	16.34	10.18	2.07	H		0.279	24.45	1	0
		16-QAM	-17.99	15.47	10.18	2.07	H		0.228	23.58		
		64-QAM	-19.07	14.39	10.18	2.07	H		0.178	22.50		
		256-QAM	-22.23	11.23	10.18	2.07	H		0.086	19.34		
1772.5		QPSK	-18.00	15.76	10.25	2.09	H		0.247	23.92	1	0
		16-QAM	-18.95	14.81	10.25	2.09	H		0.198	22.97		
		64-QAM	-20.10	13.66	10.25	2.09	H		0.152	21.82		
		256-QAM	-22.98	10.78	10.25	2.09	H		0.078	18.94		

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
1720.0	LTE B66/B4 20 MHz	QPSK	-16.96	16.46	10.08	2.06	H	< 1.00	0.281	24.48	1	0
		16-QAM	-17.80	15.62	10.08	2.06	H		0.231	23.64		
		64-QAM	-18.90	14.52	10.08	2.06	H		0.179	22.54		
		256-QAM	-22.00	11.42	10.08	2.06	H		0.088	19.44		
1745.0		QPSK	-17.22	16.24	10.18	2.07	H		0.272	24.35	1	50
		16-QAM	-18.02	15.44	10.18	2.07	H		0.226	23.55		
		64-QAM	-19.18	14.28	10.18	2.07	H		0.173	22.39		
		256-QAM	-22.39	11.07	10.18	2.07	H		0.083	19.18		
1770.0		QPSK	-17.95	15.75	10.24	2.09	H		0.245	23.90	1	50
		16-QAM	-18.90	14.80	10.24	2.09	H		0.197	22.95		
		64-QAM	-20.05	13.65	10.24	2.09	H		0.151	21.80		
		256-QAM	-22.96	10.74	10.24	2.09	H		0.077	18.89		

9.2 RADIATED SPURIOUS EMISSIONS

▣ OPERATING FREQUENCY:	<u>1720.0 MHz</u>
▣ MEASURED OUTPUT POWER:	<u>24.48 dBm = 0.281 W</u>
▣ MODE:	<u>LTE B66/B4</u>
▣ MODULATION SIGNAL:	<u>20 MHz QPSK</u>
▣ DISTANCE:	<u>3 meters</u>
▣ LIMIT:	<u>-13 dBm</u>

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	RB	
								Size	Offset
132072 (1720.0)	3 440.00	-47.60	12.52	-61.61	3.04	H	-52.13	1	0
	5 160.00	-50.40	12.34	-56.24	3.76	H	-47.66		
	6 880.00	-50.76	11.94	-50.82	4.44	V	-43.32		
132322 (1745.0)	3 490.00	-47.72	12.42	-61.31	3.04	H	-51.93	1	50
	5 235.00	-46.97	12.71	-54.19	3.78	H	-45.26		
	6 980.00	-48.79	11.52	-47.18	4.48	H	-40.14		
132572 (1770.0)	3 540.00	-48.65	12.40	-61.60	3.06	V	-52.26	1	50
	5 310.00	-50.04	13.00	-56.67	3.82	H	-47.49		
	7 080.00	-50.56	10.98	-47.69	4.49	H	-41.20		

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
66/4	1.4 MHz	1745.0	QPSK	6	0	4.28
			16-QAM			5.28
			64-QAM			5.84
			256-QAM			6.46
	3 MHz		QPSK	15		4.31
			16-QAM			5.43
			64-QAM			5.98
			256-QAM			6.46
	5 MHz		QPSK	25		4.39
			16-QAM			5.28
			64-QAM			5.91
			256-QAM			6.42
	10 MHz		QPSK	50		4.41
			16-QAM			5.30
			64-QAM			5.88
			256-QAM			6.41
	15 MHz		QPSK	75		4.39
			16-QAM			5.34
			64-QAM			5.91
			256-QAM			6.40
	20 MHz		QPSK	100		4.39
			16-QAM			5.28
			64-QAM			5.87
			256-QAM			6.37

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)
66/4	1.4 MHz	1745.0	QPSK	6	0	1.1010
			16-QAM			1.0994
			64-QAM			1.0982
			256-QAM			1.0997
	3 MHz		QPSK	15		2.7128
			16-QAM			2.7234
			64-QAM			2.7116
			256-QAM			2.7055
	5 MHz		QPSK	25		4.5361
			16-QAM			4.5448
			64-QAM			4.5248
			256-QAM			4.5146
	10 MHz		QPSK	50		9.0092
			16-QAM			9.0015
			64-QAM			9.0189
			256-QAM			8.9888
	15 MHz		QPSK	75		13.494
			16-QAM			13.492
			64-QAM			13.497
			256-QAM			13.465
	20 MHz		QPSK	100		17.999
			16-QAM			17.995
			64-QAM			17.974
			256-QAM			17.919

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)
66/4	1.4	1710.7	3.7114	27.976	-67.218	-39.242	-13.00
		1745.0	3.6995	27.976	-67.382	-39.406	
		1779.3	3.7354	27.976	-67.166	-39.190	
	3	1711.5	3.6980	27.976	-67.286	-39.310	
		1745.0	3.6735	27.976	-67.262	-39.286	
		1778.5	3.6775	27.976	-67.178	-39.202	
	5	1712.5	3.6800	27.976	-67.144	-39.168	
		1745.0	3.7099	27.976	-67.271	-39.295	
		1777.5	3.7039	27.976	-67.326	-39.350	
	10	1715.0	3.6930	27.976	-67.103	-39.127	
		1745.0	3.7119	27.976	-67.250	-39.274	
		1775.0	3.6905	27.976	-67.452	-39.476	
	15	1717.5	3.7109	27.976	-67.322	-39.346	
		1745.0	3.6880	27.976	-67.287	-39.311	
		1772.5	2.6601	27.976	-67.308	-39.332	
	20	1720.0	3.6880	27.976	-67.111	-39.135	
		1745.0	3.6735	27.976	-67.029	-39.053	
		1770.0	3.6760	27.976	-66.820	-38.844	

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

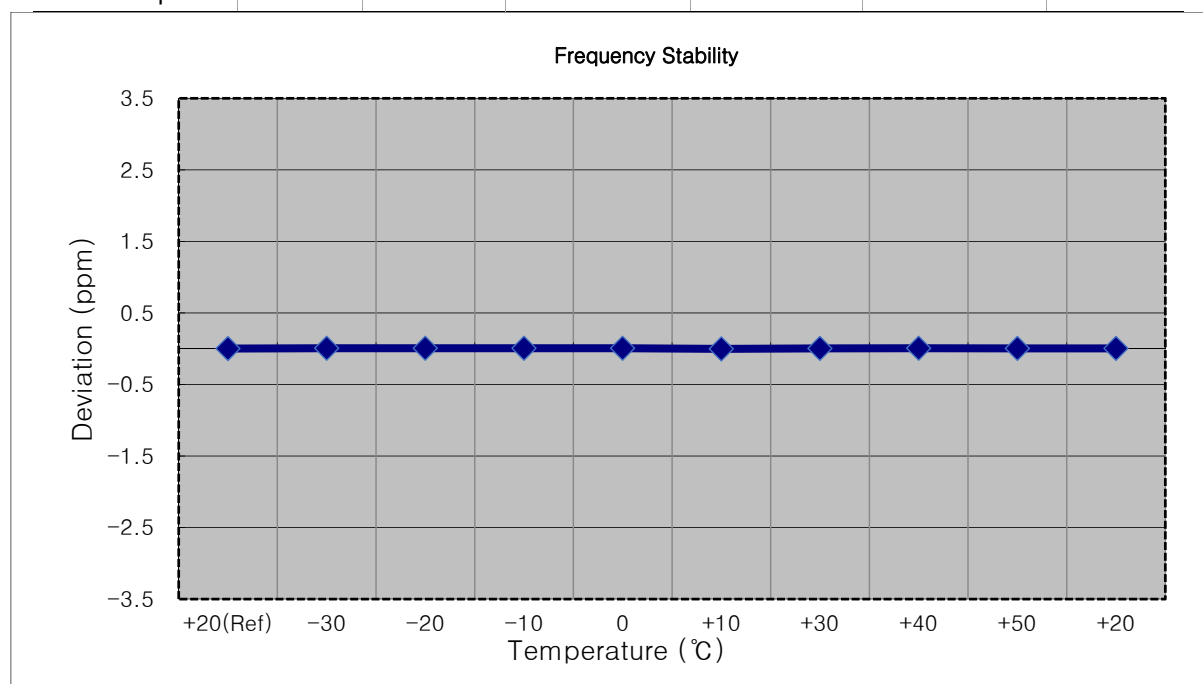
9.6 BAND EDGE

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

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

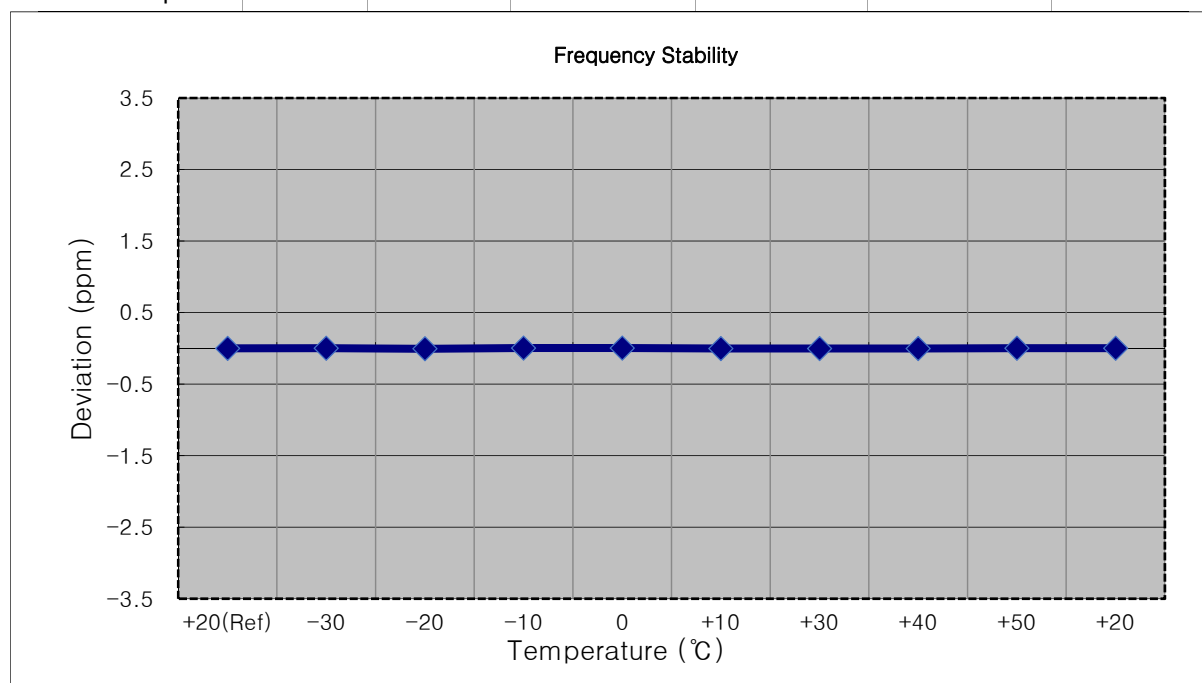
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1710,700,000 Hz</u>
CHANNEL:	<u>131979 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1710 700 007	0.0	0.000 000	0.000
100 %		-30	1710 700 015	8.3	0.000 000	0.005
100 %		-20	1710 700 017	10.6	0.000 001	0.006
100 %		-10	1710 700 015	8.9	0.000 001	0.005
100 %		0	1710 700 015	8.5	0.000 000	0.005
100 %		+10	1710 700 001	-5.2	0.000 000	-0.003
100 %		+30	1710 700 011	4.7	0.000 000	0.003
100 %		+40	1710 700 015	8.1	0.000 000	0.005
100 %		+50	1710 700 013	6.9	0.000 000	0.004
Batt. Endpoint	3.300	+20	1710 700 014	7.2	0.000 000	0.004



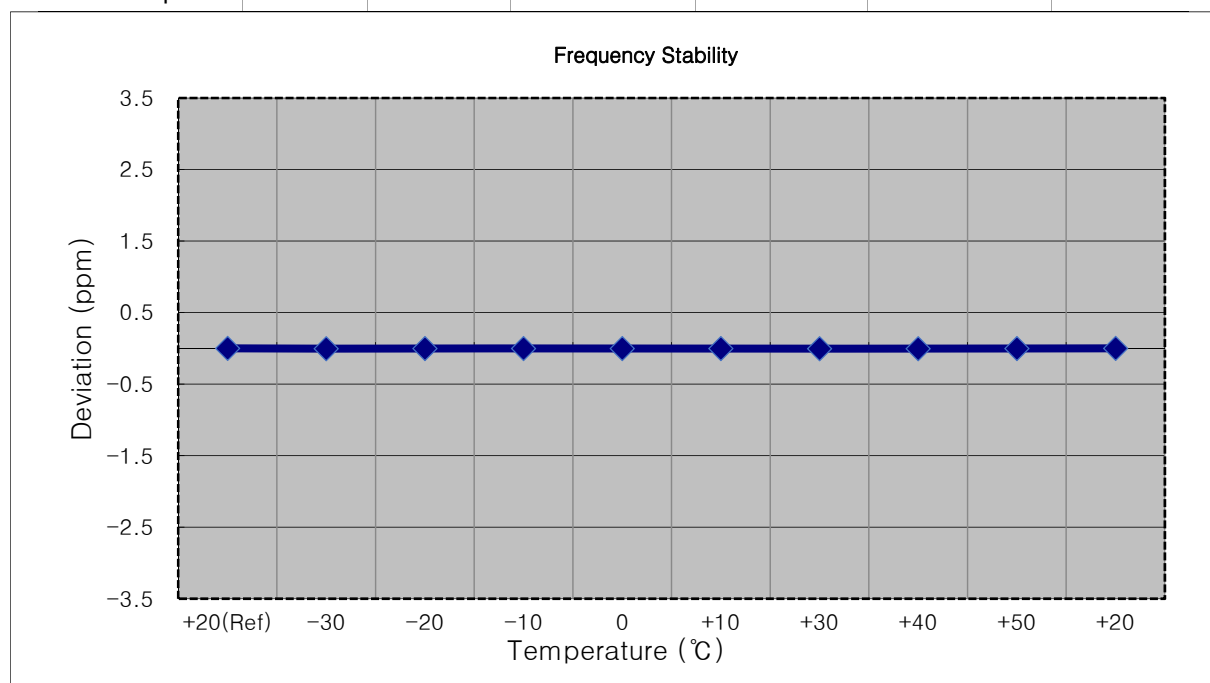
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1711,500,000 Hz</u>
CHANNEL:	<u>131987 (3 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1711 500 006	0.0	0.000 000	0.000
100 %		-30	1711 500 009	3.2	0.000 000	0.002
100 %		-20	1711 499 998	-8.5	0.000 000	-0.005
100 %		-10	1711 500 012	5.5	0.000 000	0.003
100 %		0	1711 500 013	7.0	0.000 000	0.004
100 %		+10	1711 500 002	-4.4	0.000 000	-0.003
100 %		+30	1711 500 002	-4.5	0.000 000	-0.003
100 %		+40	1711 500 000	-6.0	0.000 000	-0.004
100 %		+50	1711 500 011	4.5	0.000 000	0.003
Batt. Endpoint	3.300	+20	1711 500 011	4.4	0.000 000	0.003



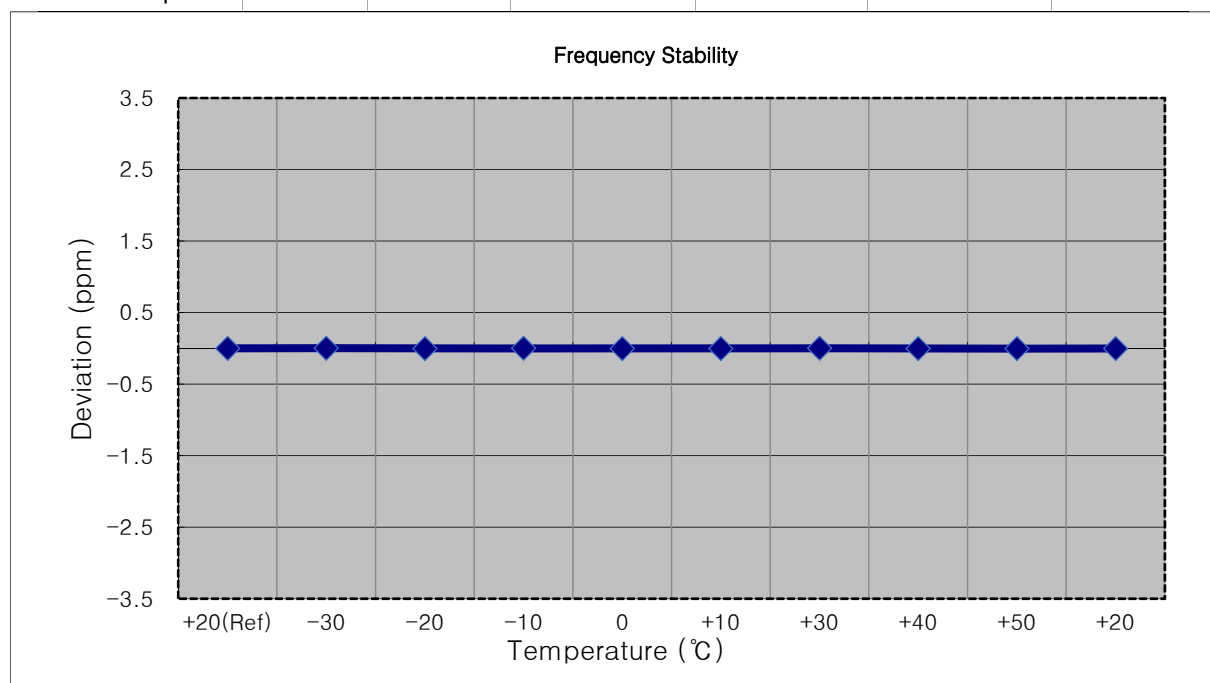
MODE: LTE 66/4
 OPERATING FREQUENCY: 1712,500,000 Hz
 CHANNEL: 131997 (5 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1712 499 995	0.0	0.000 000	0.000
100 %		-30	1712 499 988	-7.4	0.000 000	-0.004
100 %		-20	1712 499 990	-5.2	0.000 000	-0.003
100 %		-10	1712 499 990	-5.4	0.000 000	-0.003
100 %		0	1712 499 991	-4.1	0.000 000	-0.002
100 %		+10	1712 499 990	-5.0	0.000 000	-0.003
100 %		+30	1712 499 989	-6.6	0.000 000	-0.004
100 %		+40	1712 499 987	-7.9	0.000 000	-0.005
100 %		+50	1712 499 989	-6.1	0.000 000	-0.004
Batt. Endpoint	3.300	+20	1712 499 993	-1.8	0.000 000	-0.001



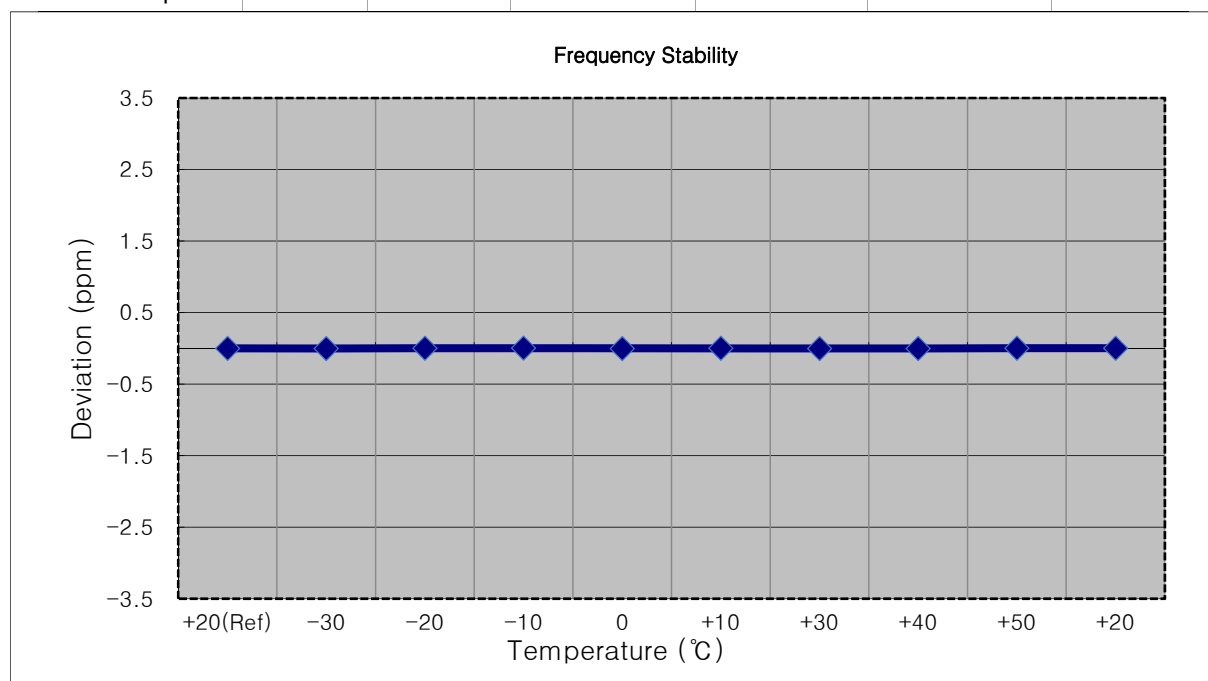
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1715,000,000 Hz
- ▣ CHANNEL: 132022 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1714 999 996	0.0	0.000 000	0.000
100 %		-30	1715 000 000	4.3	0.000 000	0.003
100 %		-20	1714 999 992	-3.8	0.000 000	-0.002
100 %		-10	1714 999 999	3.2	0.000 000	0.002
100 %		0	1714 999 993	-2.8	0.000 000	-0.002
100 %		+10	1714 999 993	-3.1	0.000 000	-0.002
100 %		+30	1714 999 998	2.7	0.000 000	0.002
100 %		+40	1714 999 992	-3.6	0.000 000	-0.002
100 %		+50	1714 999 991	-5.1	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1714 999 993	-3.1	0.000 000	-0.002



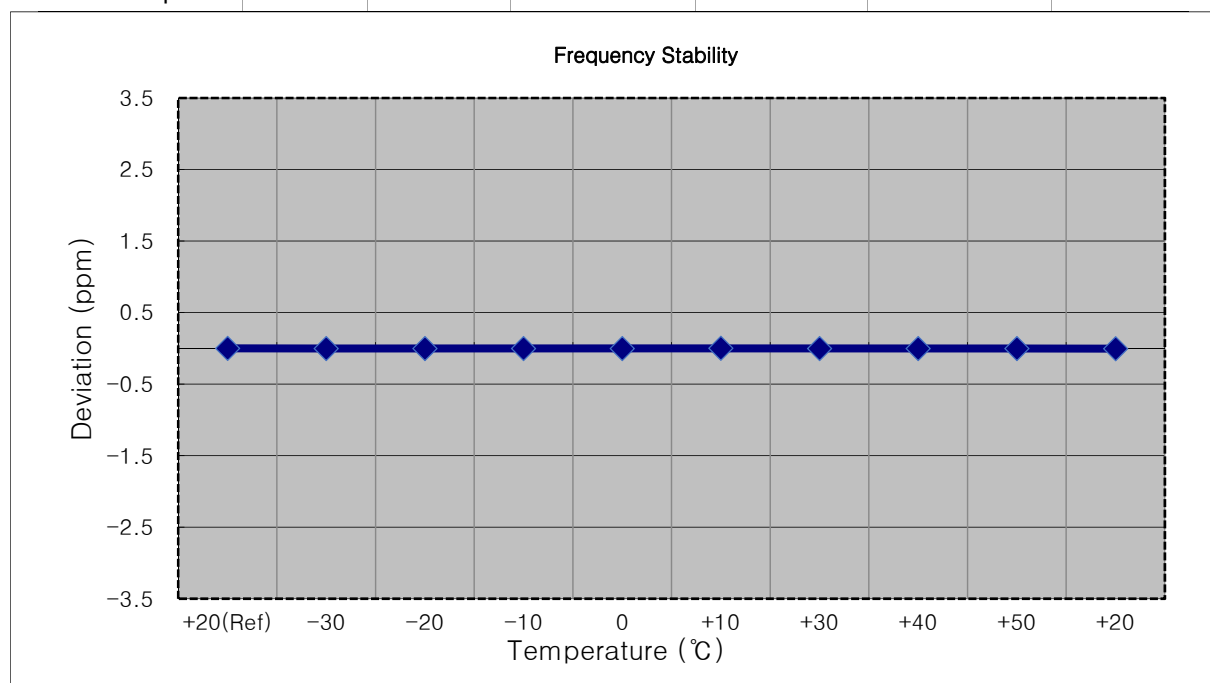
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1717,500,000 Hz
- ▣ CHANNEL: 132047 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1717 500 006	0.0	0.000 000	0.000
100 %		-30	1717 500 003	-2.8	0.000 000	-0.002
100 %		-20	1717 500 010	4.1	0.000 000	0.002
100 %		-10	1717 500 011	5.1	0.000 000	0.003
100 %		0	1717 500 002	-3.6	0.000 000	-0.002
100 %		+10	1717 500 008	2.6	0.000 000	0.002
100 %		+30	1717 500 002	-3.8	0.000 000	-0.002
100 %		+40	1717 500 002	-3.9	0.000 000	-0.002
100 %		+50	1717 500 007	1.8	0.000 000	0.001
Batt. Endpoint	3.300	+20	1717 500 009	3.7	0.000 000	0.002



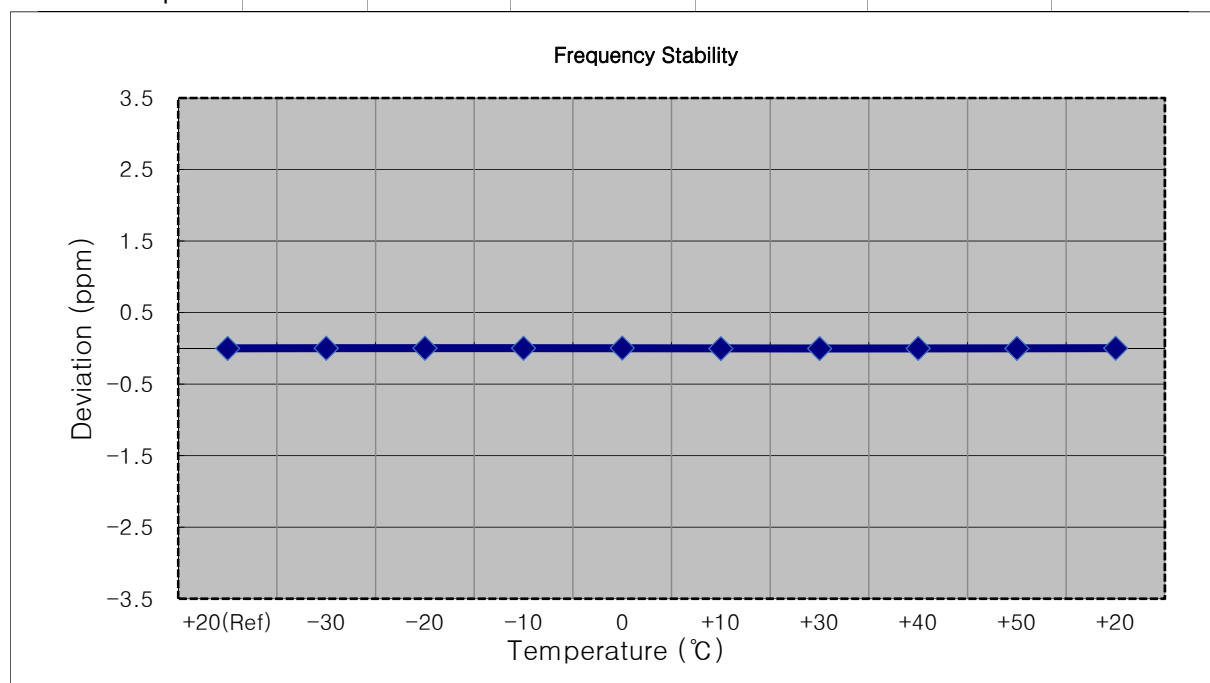
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1720,000,000 Hz
- ▣ CHANNEL: 132072 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1719 999 995	0.0	0.000 000	0.000
100 %		-30	1719 999 990	-5.4	0.000 000	-0.003
100 %		-20	1719 999 989	-5.6	0.000 000	-0.003
100 %		-10	1719 999 990	-4.8	0.000 000	-0.003
100 %		0	1719 999 991	-3.6	0.000 000	-0.002
100 %		+10	1720 000 000	4.6	0.000 000	0.003
100 %		+30	1719 999 991	-3.8	0.000 000	-0.002
100 %		+40	1719 999 990	-5.2	0.000 000	-0.003
100 %		+50	1719 999 990	-5.0	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1719 999 988	-7.0	0.000 000	-0.004



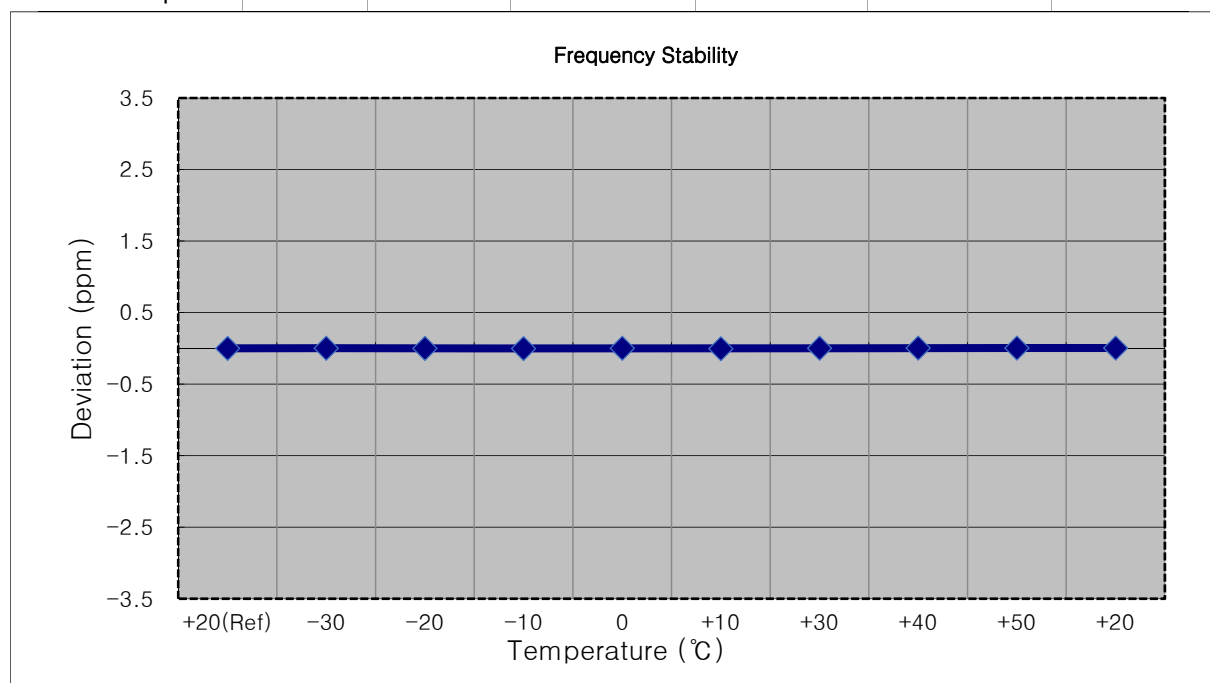
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 004	0.0	0.000 000	0.000
100 %		-30	1745 000 009	5.0	0.000 000	0.003
100 %		-20	1745 000 008	3.9	0.000 000	0.002
100 %		-10	1745 000 008	3.5	0.000 000	0.002
100 %		0	1745 000 010	5.5	0.000 000	0.003
100 %		+10	1745 000 000	-4.6	0.000 000	-0.003
100 %		+30	1745 000 000	-4.2	0.000 000	-0.002
100 %		+40	1745 000 002	-2.4	0.000 000	-0.001
100 %		+50	1745 000 002	-2.5	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1745 000 008	4.1	0.000 000	0.002



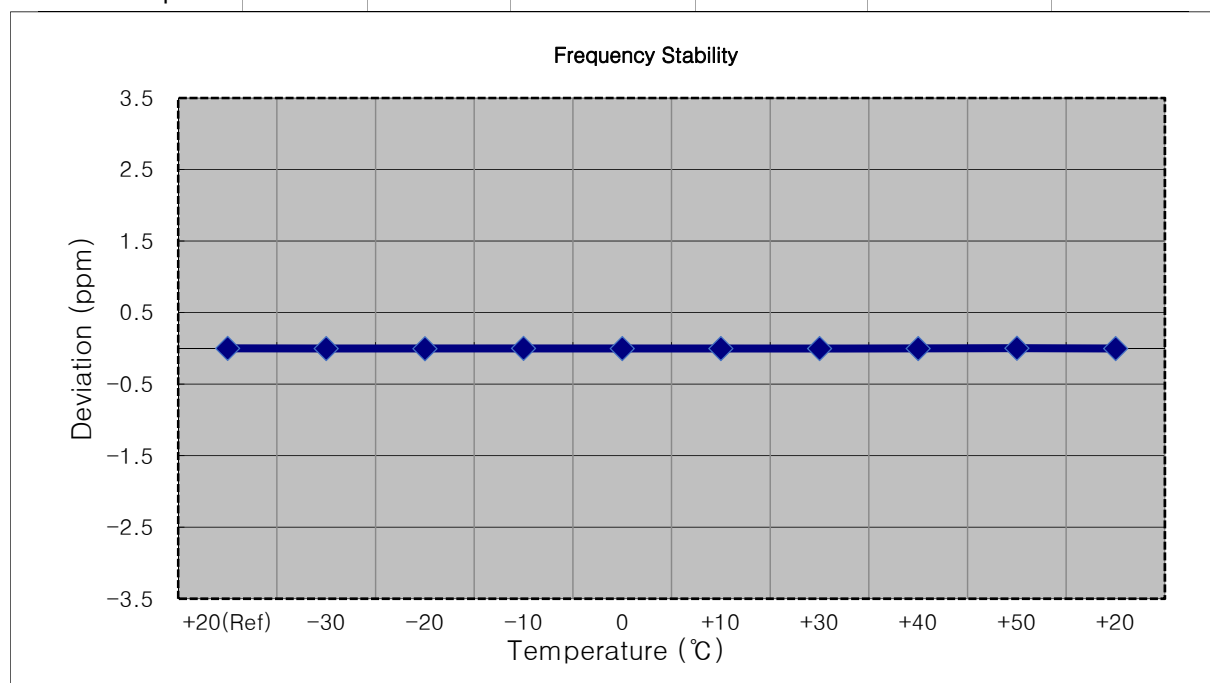
MODE: LTE 66/4
 OPERATING FREQUENCY: 1745,000,000 Hz
 CHANNEL: 132322 (3 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 004	0.0	0.000 000	0.000
100 %		-30	1745 000 007	2.1	0.000 000	0.001
100 %		-20	1745 000 002	-2.6	0.000 000	-0.001
100 %		-10	1745 000 001	-3.6	0.000 000	-0.002
100 %		0	1745 000 008	3.3	0.000 000	0.002
100 %		+10	1744 999 997	-7.6	0.000 000	-0.004
100 %		+30	1745 000 009	4.9	0.000 000	0.003
100 %		+40	1745 000 011	6.7	0.000 000	0.004
100 %		+50	1745 000 010	5.9	0.000 000	0.003
Batt. Endpoint	3.300	+20	1745 000 010	5.7	0.000 000	0.003



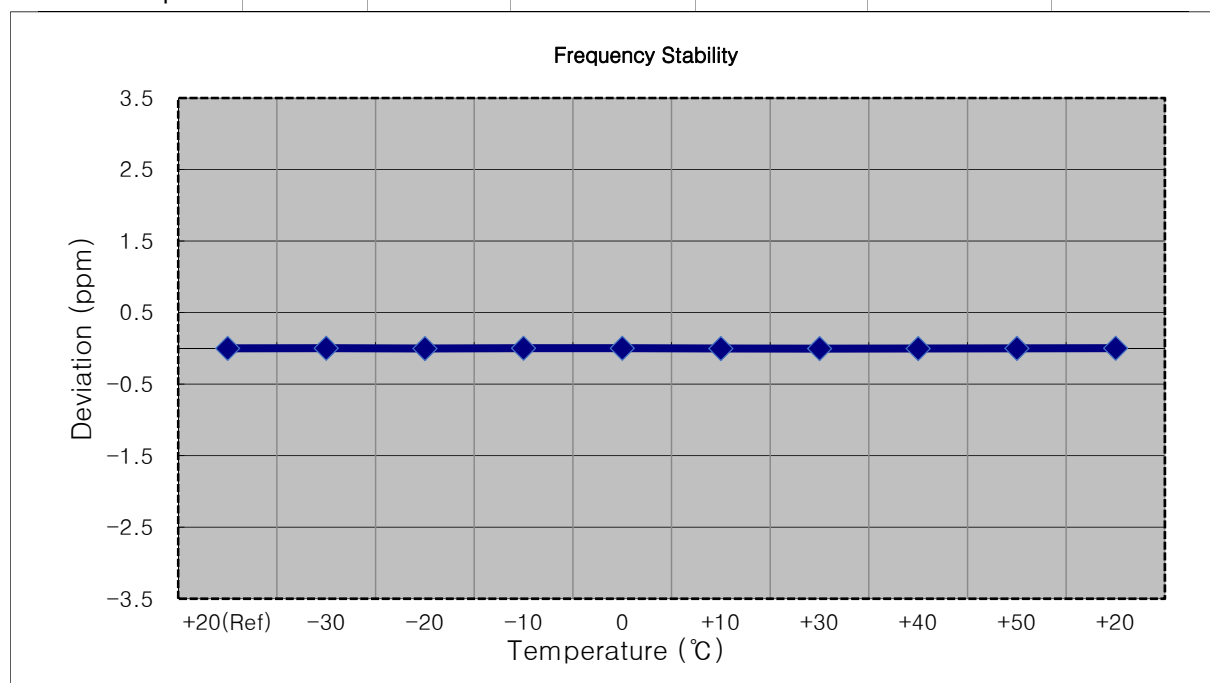
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 995	0.0	0.000 000	0.000
100 %		-30	1744 999 990	-5.2	0.000 000	-0.003
100 %		-20	1744 999 988	-6.8	0.000 000	-0.004
100 %		-10	1744 999 993	-2.0	0.000 000	-0.001
100 %		0	1744 999 990	-4.8	0.000 000	-0.003
100 %		+10	1744 999 991	-3.7	0.000 000	-0.002
100 %		+30	1744 999 991	-4.3	0.000 000	-0.002
100 %		+40	1744 999 990	-5.2	0.000 000	-0.003
100 %		+50	1744 999 998	3.1	0.000 000	0.002
Batt. Endpoint	3.300	+20	1744 999 990	-4.6	0.000 000	-0.003



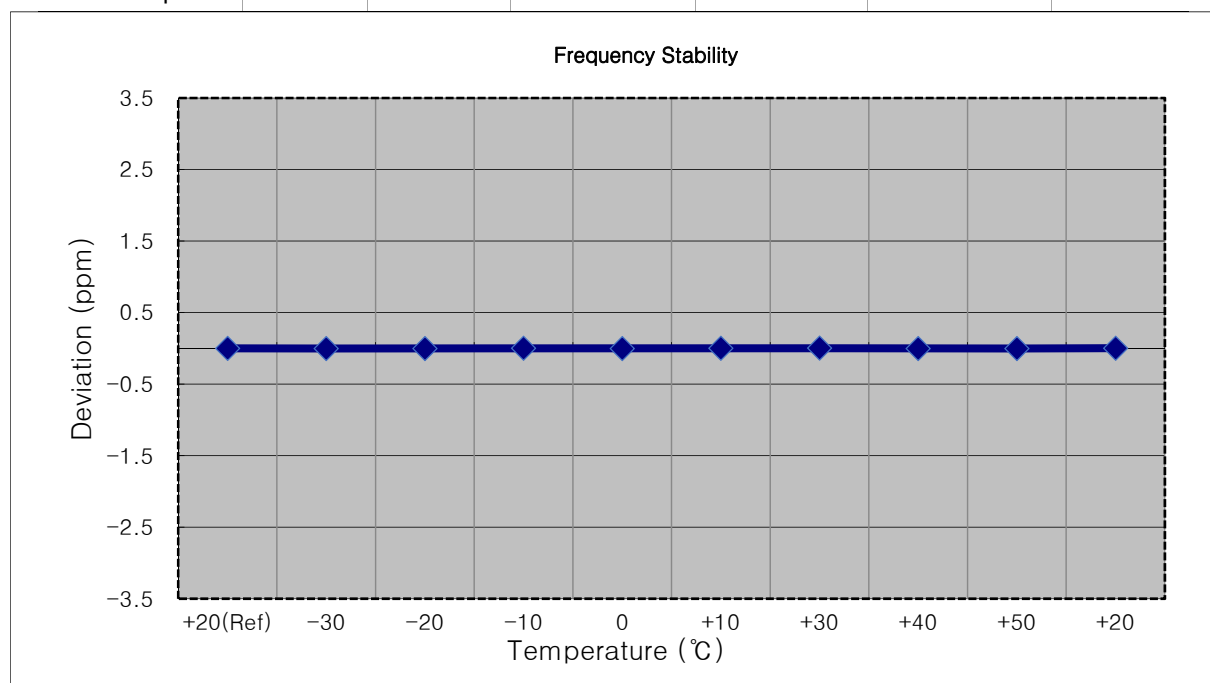
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 994	0.0	0.000 000	0.000
100 %		-30	1744 999 998	3.8	0.000 000	0.002
100 %		-20	1744 999 991	-3.7	0.000 000	-0.002
100 %		-10	1744 999 997	2.5	0.000 000	0.001
100 %		0	1744 999 998	3.2	0.000 000	0.002
100 %		+10	1744 999 991	-3.4	0.000 000	-0.002
100 %		+30	1744 999 989	-5.3	0.000 000	-0.003
100 %		+40	1744 999 991	-3.4	0.000 000	-0.002
100 %		+50	1744 999 992	-2.5	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1744 999 998	3.7	0.000 000	0.002



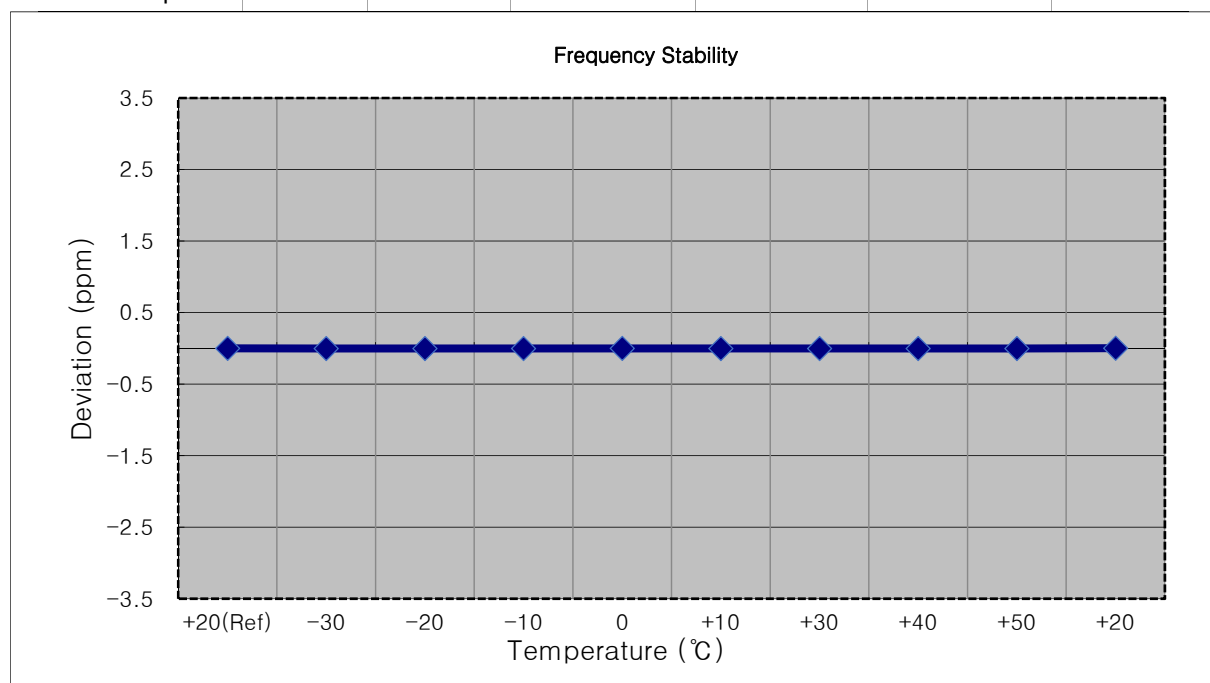
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 995	0.0	0.000 000	0.000
100 %		-30	1744 999 992	-3.4	0.000 000	-0.002
100 %		-20	1744 999 991	-4.1	0.000 000	-0.002
100 %		-10	1745 000 001	5.1	0.000 000	0.003
100 %		0	1744 999 991	-4.6	0.000 000	-0.003
100 %		+10	1744 999 998	2.9	0.000 000	0.002
100 %		+30	1745 000 001	5.4	0.000 000	0.003
100 %		+40	1744 999 991	-4.6	0.000 000	-0.003
100 %		+50	1744 999 993	-2.7	0.000 000	-0.002
Batt. Endpoint	3.300	+20	1744 999 999	3.6	0.000 000	0.002



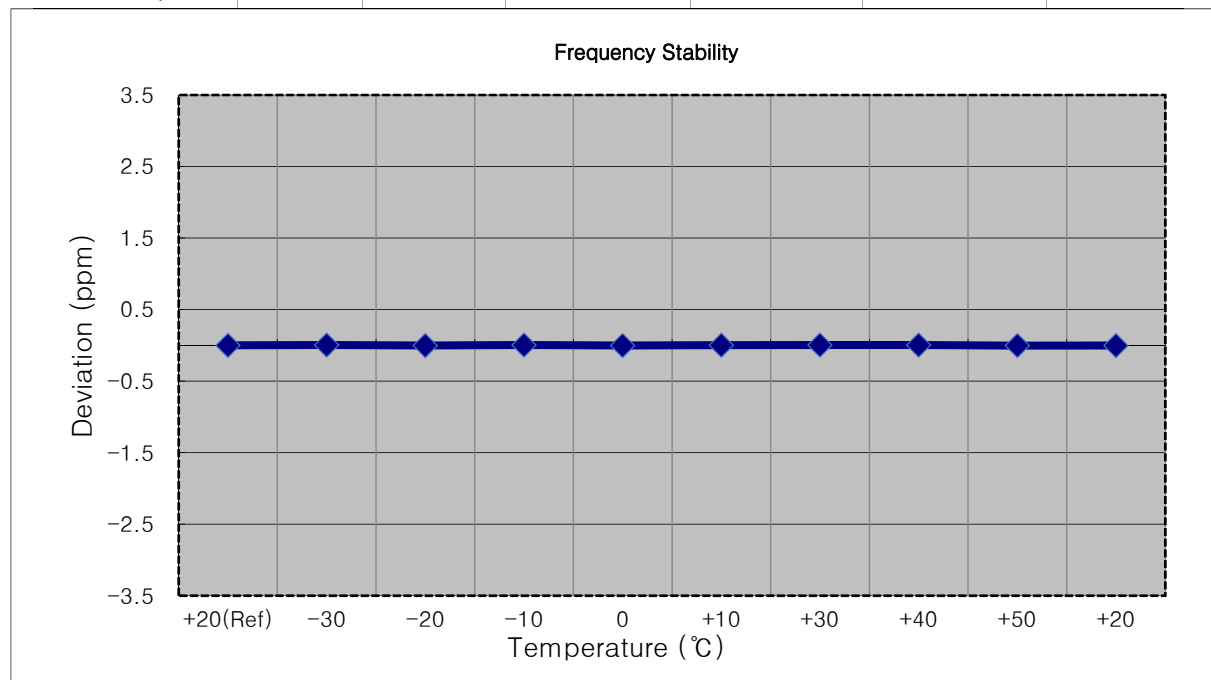
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1744 999 996	0.0	0.000 000	0.000
100 %		-30	1744 999 992	-4.4	0.000 000	-0.003
100 %		-20	1744 999 994	-2.8	0.000 000	-0.002
100 %		-10	1744 999 993	-3.7	0.000 000	-0.002
100 %		0	1744 999 994	-2.5	0.000 000	-0.001
100 %		+10	1744 999 993	-3.4	0.000 000	-0.002
100 %		+30	1744 999 993	-3.4	0.000 000	-0.002
100 %		+40	1744 999 992	-3.9	0.000 000	-0.002
100 %		+50	1744 999 994	-2.8	0.000 000	-0.002
Batt. Endpoint	3.300	+20	1745 000 000	3.4	0.000 000	0.002



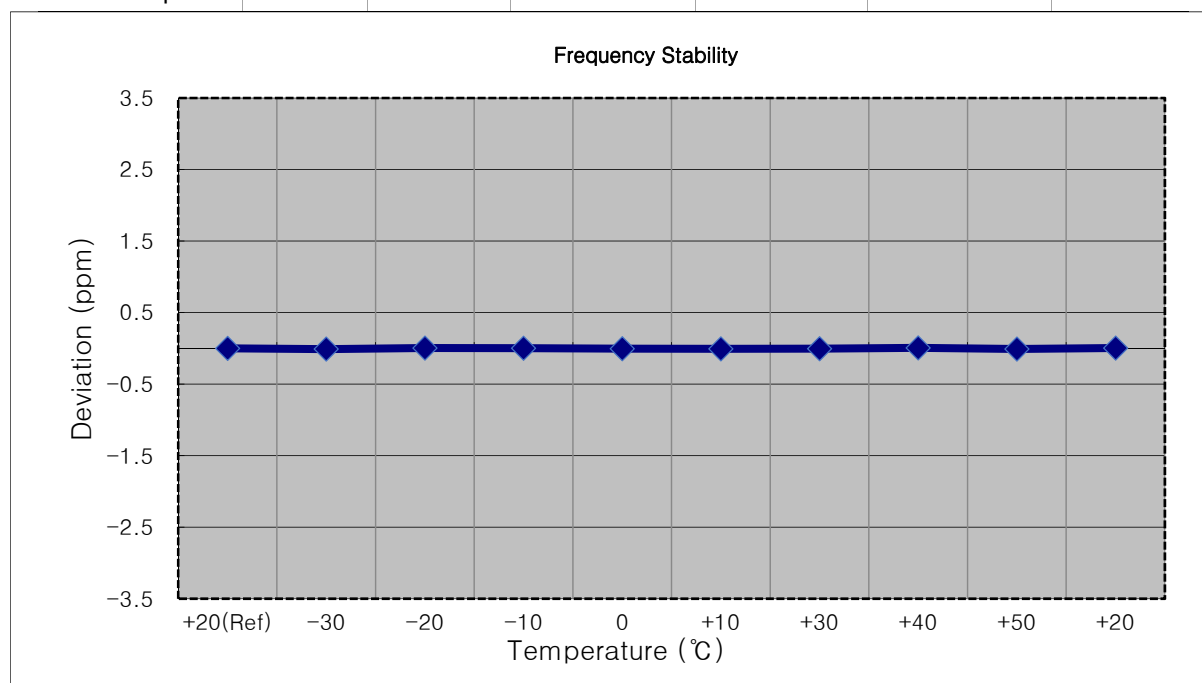
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1779,300,000 Hz
- ▣ CHANNEL: 132665 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1779 300 007	0.0	0.000 000	0.000
100 %		-30	1779 300 012	5.8	0.000 000	0.003
100 %		-20	1779 300 001	-5.6	0.000 000	-0.003
100 %		-10	1779 300 012	5.4	0.000 000	0.003
100 %		0	1779 300 002	-4.8	0.000 000	-0.003
100 %		+10	1779 300 011	4.4	0.000 000	0.002
100 %		+30	1779 300 012	5.4	0.000 000	0.003
100 %		+40	1779 300 015	8.6	0.000 000	0.005
100 %		+50	1779 300 000	-6.3	0.000 000	-0.004
Batt. Endpoint	3.300	+20	1779 300 003	-3.6	0.000 000	-0.002



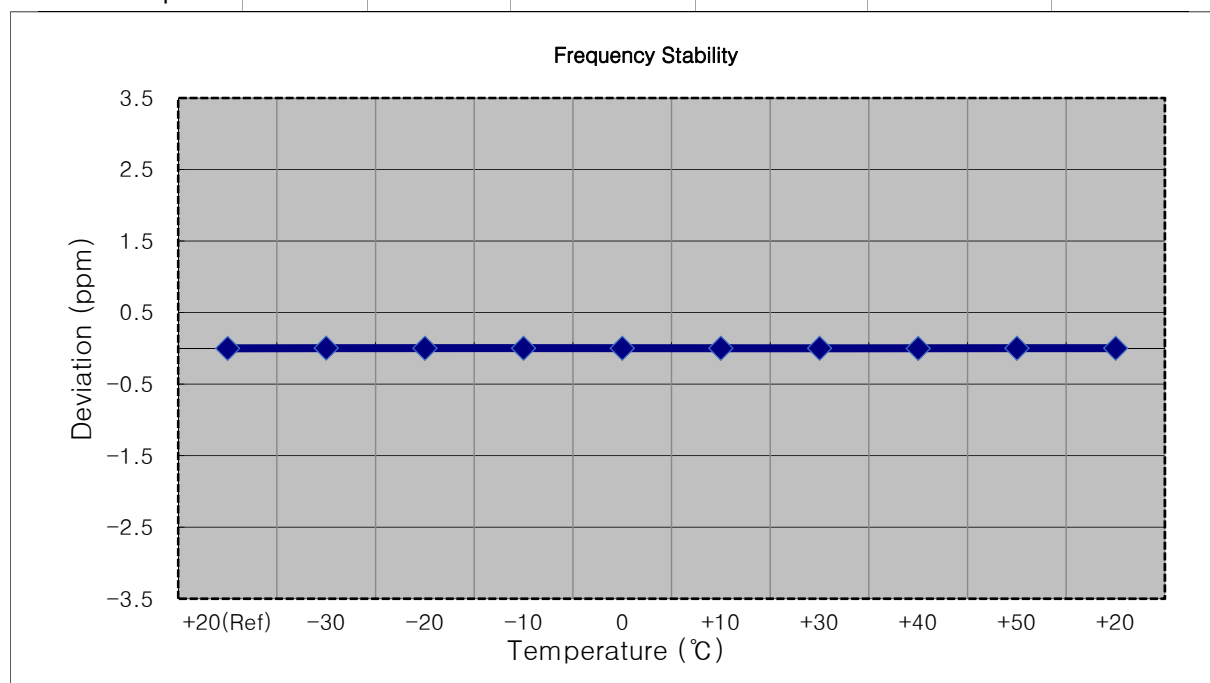
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1778,500,000 Hz</u>
CHANNEL:	<u>132657 (3 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1778 499 986	0.0	0.000 000	0.000
100 %		-30	1778 499 968	-18.0	-0.000 001	-0.010
100 %		-20	1778 499 993	7.3	0.000 000	0.004
100 %		-10	1778 499 990	4.8	0.000 000	0.003
100 %		0	1778 499 978	-7.2	0.000 000	-0.004
100 %		+10	1778 499 975	-11.0	-0.000 001	-0.006
100 %		+30	1778 499 975	-10.4	-0.000 001	-0.006
100 %		+40	1778 499 997	11.5	0.000 001	0.006
100 %		+50	1778 499 970	-15.2	-0.000 001	-0.009
Batt. Endpoint	3.300	+20	1778 499 991	5.6	0.000 000	0.003



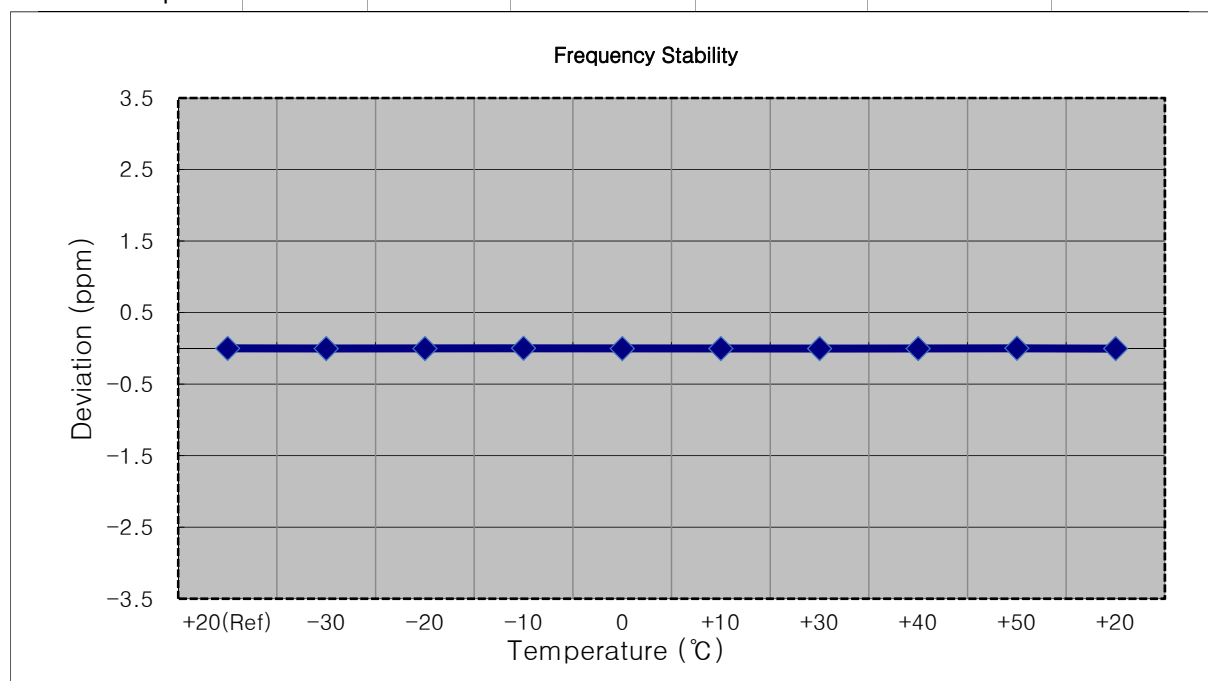
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1777,500,000 Hz
- ▣ CHANNEL: 132647 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1777 500 006	0.0	0.000 000	0.000
100 %		-30	1777 500 012	6.1	0.000 000	0.003
100 %		-20	1777 500 011	4.8	0.000 000	0.003
100 %		-10	1777 500 010	4.5	0.000 000	0.003
100 %		0	1777 500 008	2.4	0.000 000	0.001
100 %		+10	1777 500 011	5.1	0.000 000	0.003
100 %		+30	1777 500 008	2.6	0.000 000	0.001
100 %		+40	1777 500 003	-2.3	0.000 000	-0.001
100 %		+50	1777 500 008	2.6	0.000 000	0.001
Batt. Endpoint	3.300	+20	1777 500 009	3.5	0.000 000	0.002



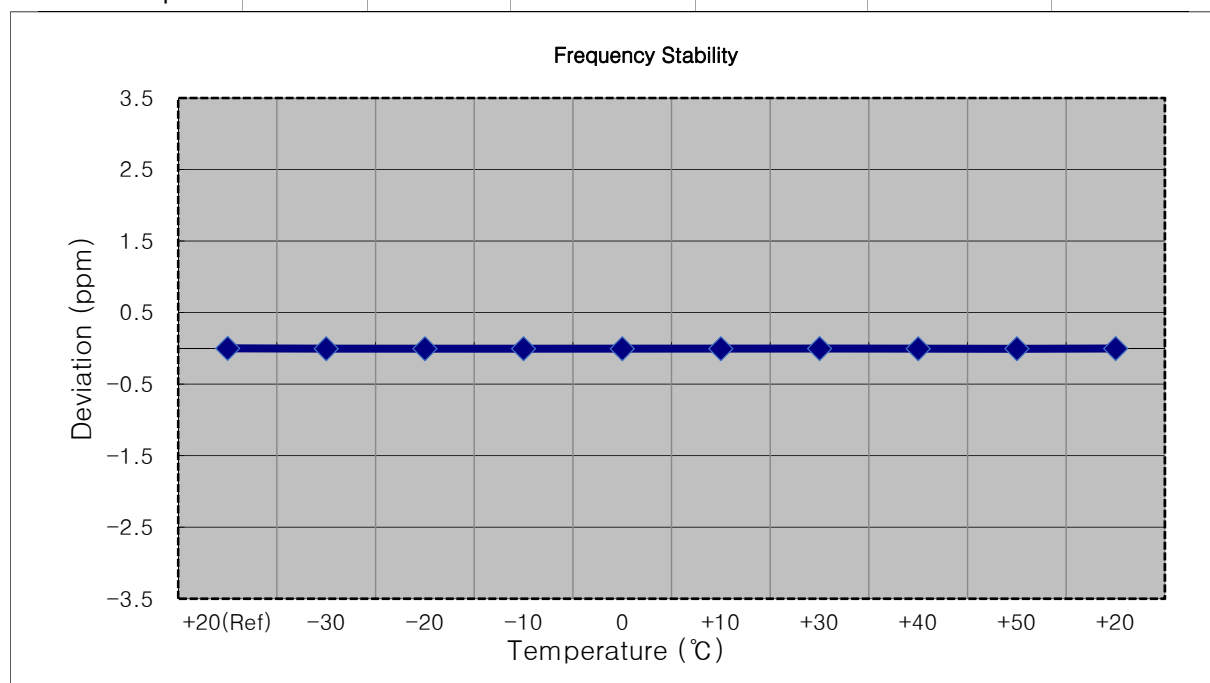
- ▣ MODE: LTE 66/4
- ▣ OPERATING FREQUENCY: 1775,000,000 Hz
- ▣ CHANNEL: 132622 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1774 999 997	0.0	0.000 000	0.000
100 %		-30	1774 999 993	-3.8	0.000 000	-0.002
100 %		-20	1774 999 993	-3.7	0.000 000	-0.002
100 %		-10	1774 999 999	2.3	0.000 000	0.001
100 %		0	1774 999 993	-3.3	0.000 000	-0.002
100 %		+10	1774 999 993	-4.0	0.000 000	-0.002
100 %		+30	1774 999 992	-4.7	0.000 000	-0.003
100 %		+40	1774 999 993	-4.0	0.000 000	-0.002
100 %		+50	1775 000 000	2.8	0.000 000	0.002
Batt. Endpoint	3.300	+20	1774 999 991	-5.5	0.000 000	-0.003



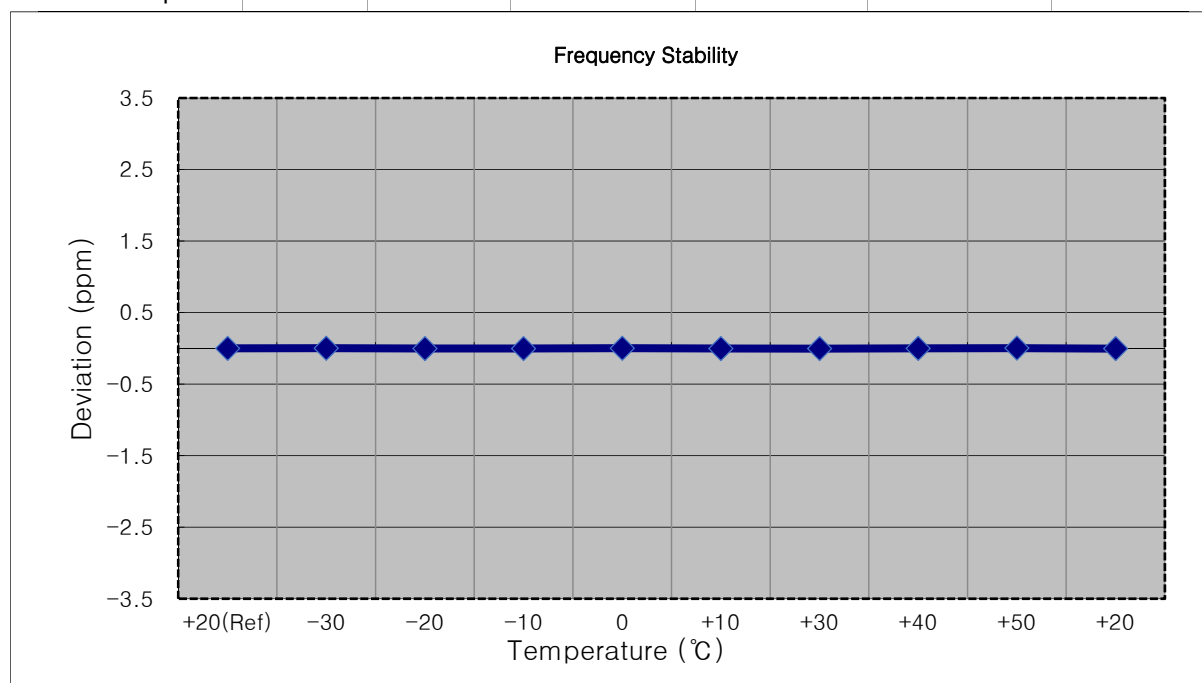
MODE: LTE 66/4
 OPERATING FREQUENCY: 1772,500,000 Hz
 CHANNEL: 132597 (15 MHz)
 REFERENCE VOLTAGE: 3.880 VDC
 DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1772 499 991	0.0	0.000 000	0.000
100 %		-30	1772 499 983	-7.7	0.000 000	-0.004
100 %		-20	1772 499 984	-7.0	0.000 000	-0.004
100 %		-10	1772 499 982	-8.7	0.000 000	-0.005
100 %		0	1772 499 982	-8.9	-0.000 001	-0.005
100 %		+10	1772 499 982	-8.7	0.000 000	-0.005
100 %		+30	1772 499 985	-5.8	0.000 000	-0.003
100 %		+40	1772 499 982	-8.5	0.000 000	-0.005
100 %		+50	1772 499 982	-9.0	-0.000 001	-0.005
Batt. Endpoint	3.300	+20	1772 499 984	-6.5	0.000 000	-0.004



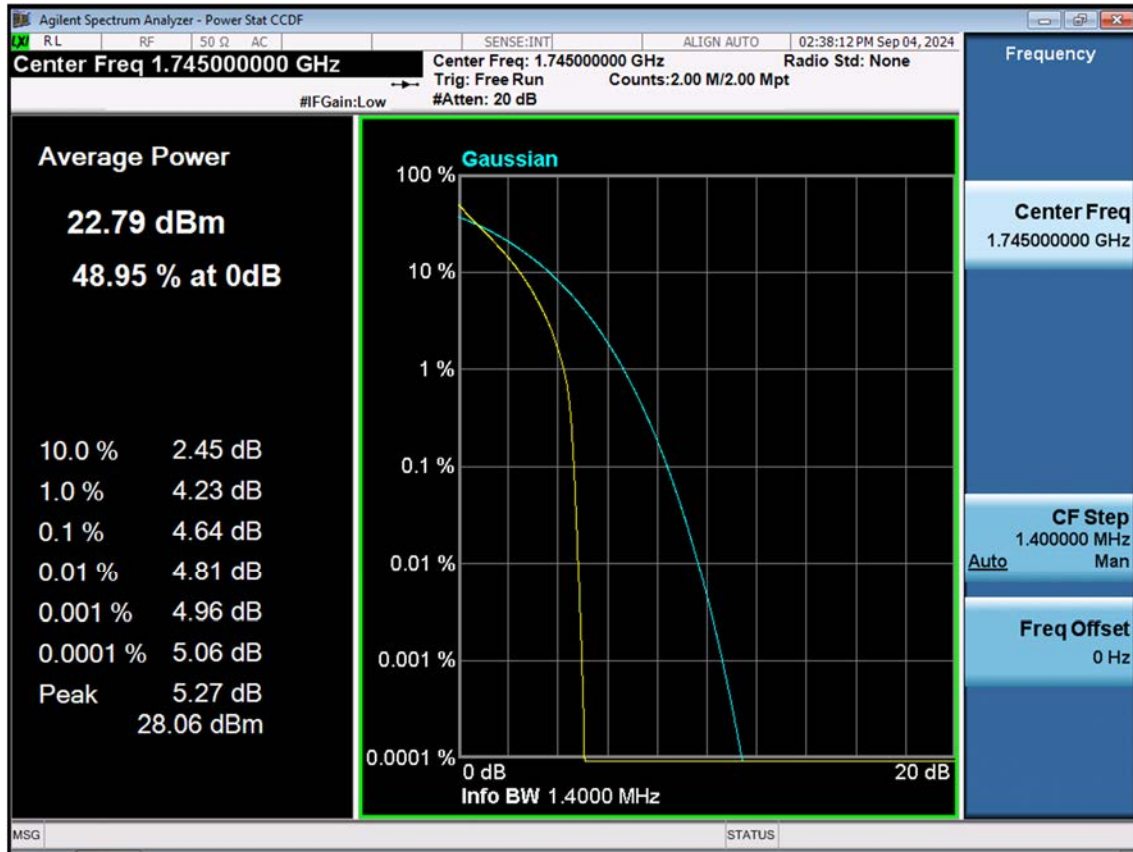
MODE:	<u>LTE 66/4</u>
OPERATING FREQUENCY:	<u>1770,000,000 Hz</u>
CHANNEL:	<u>132572 (20 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1769 999 997	0.0	0.000 000	0.000
100 %		-30	1770 000 001	4.2	0.000 000	0.002
100 %		-20	1769 999 994	-3.6	0.000 000	-0.002
100 %		-10	1769 999 993	-4.6	0.000 000	-0.003
100 %		0	1770 000 000	3.0	0.000 000	0.002
100 %		+10	1769 999 992	-4.9	0.000 000	-0.003
100 %		+30	1769 999 992	-5.5	0.000 000	-0.003
100 %		+40	1769 999 995	-2.2	0.000 000	-0.001
100 %		+50	1770 000 003	6.2	0.000 000	0.004
Batt. Endpoint	3.300	+20	1769 999 992	-5.5	0.000 000	-0.003

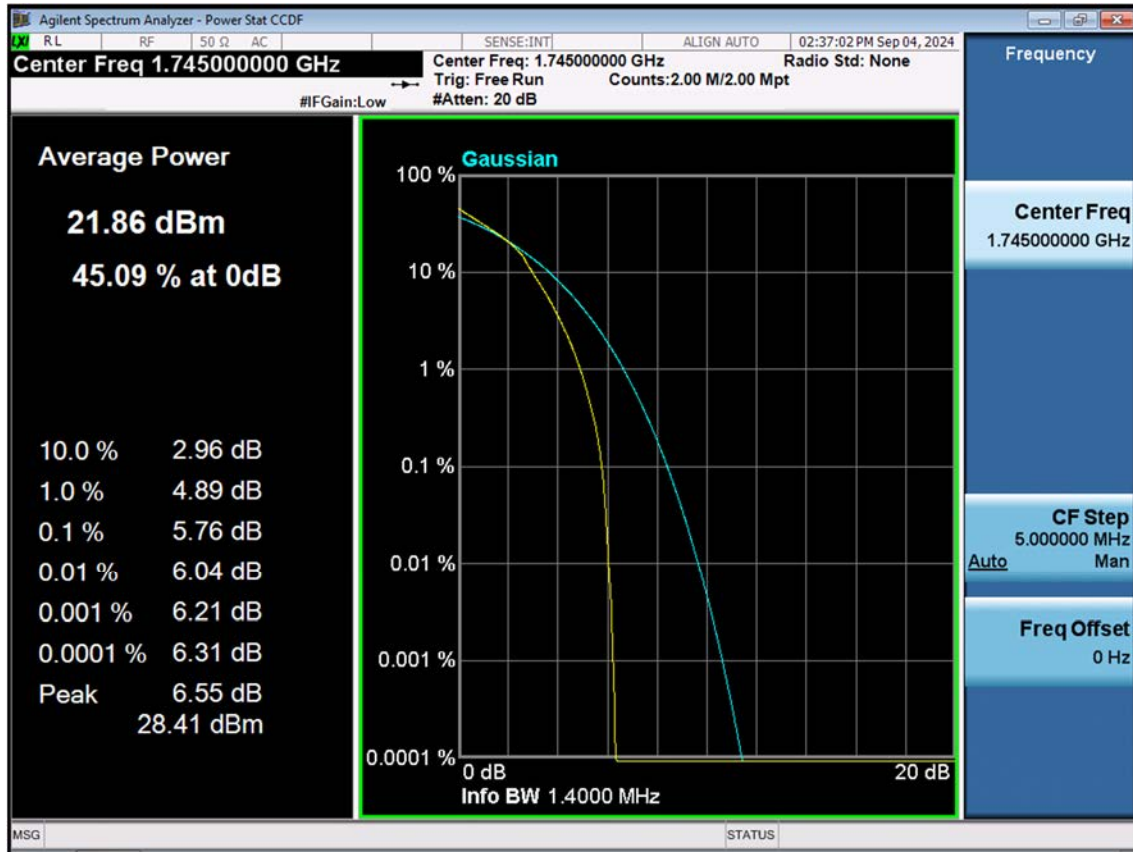


10. TEST PLOTS(Main 1 ANT)

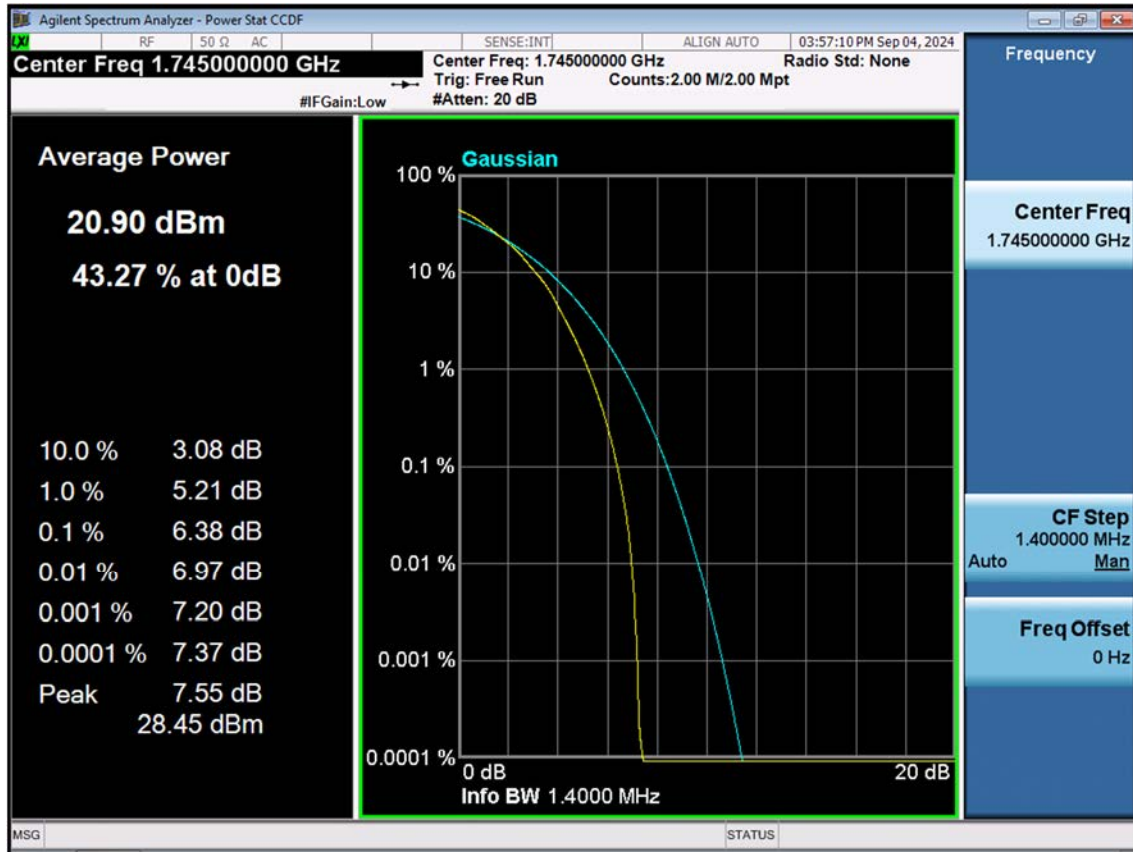
LTE B66_1.4M_PAR_Mid_QPSK_FullRB



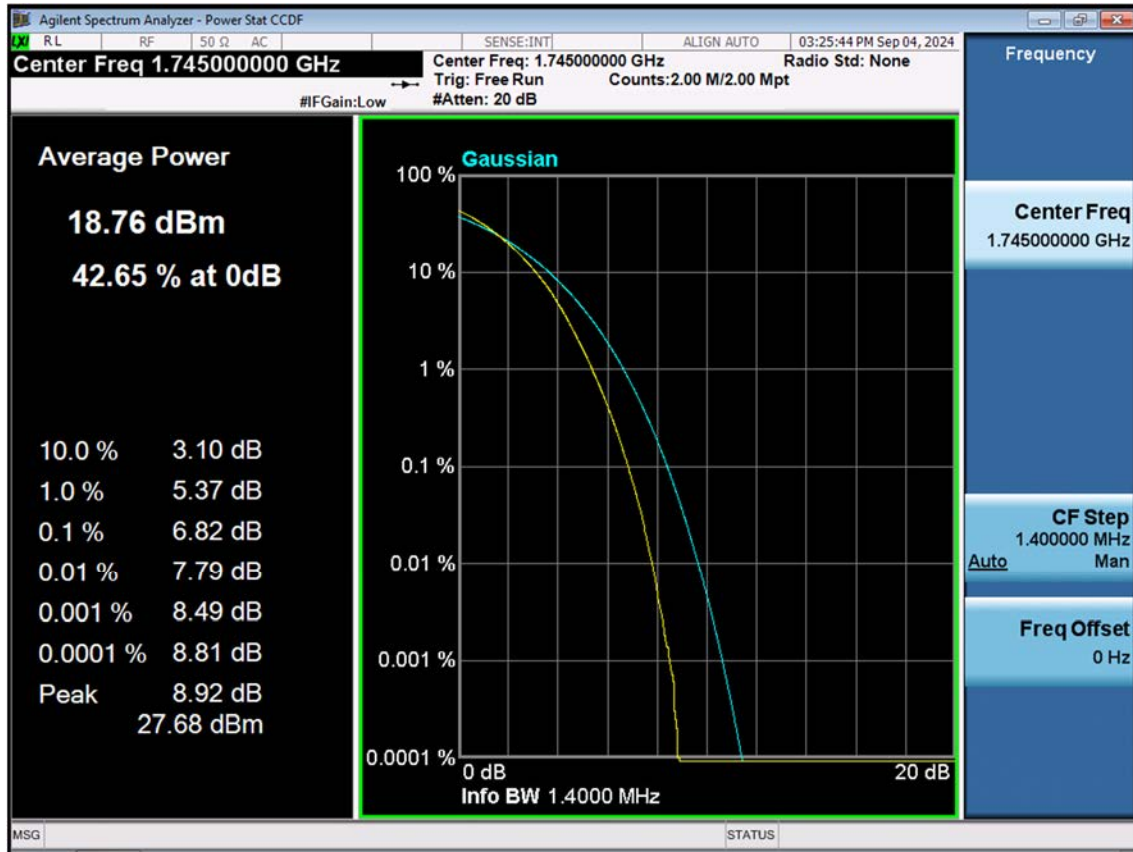
LTE B66_1.4M_PAR_Mid_16QAM_FullRB



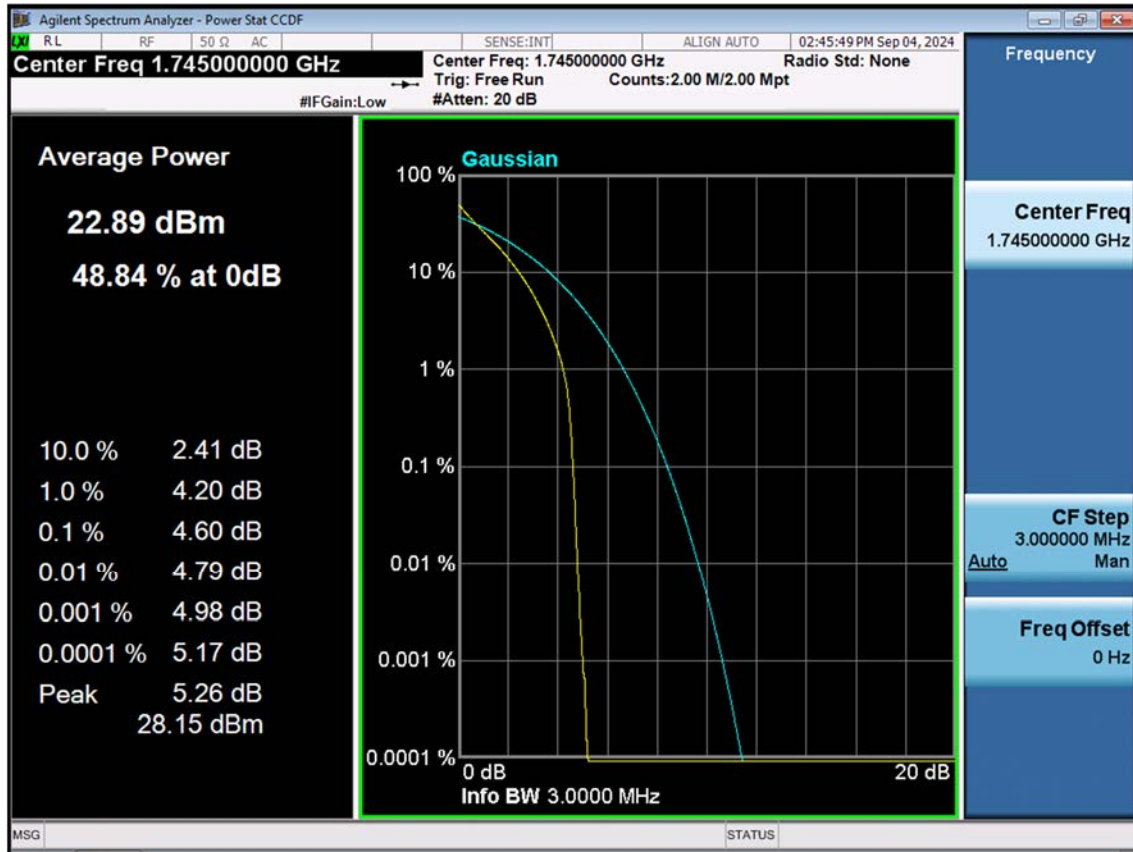
LTE B66_1.4M_PAR_Mid_64QAM_FullRB



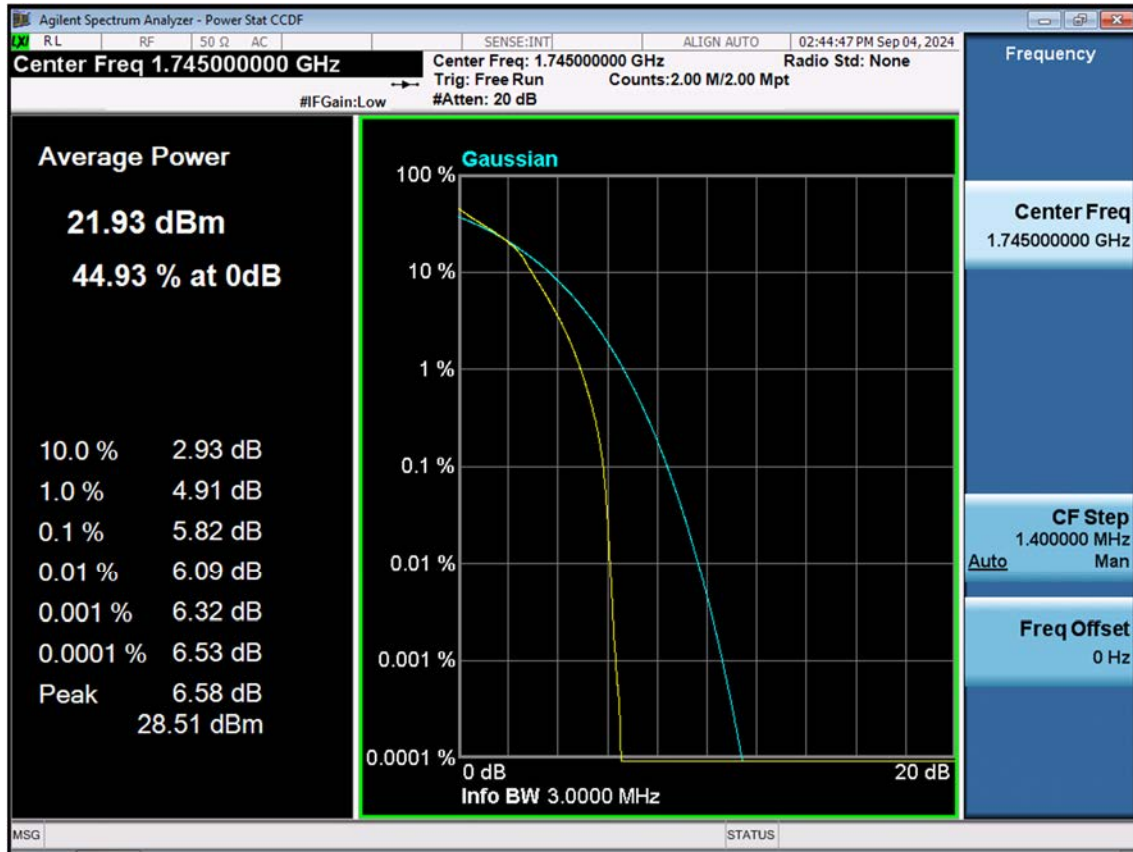
LTE B66_1.4M_PAR_Mid_256QAM_FullRB



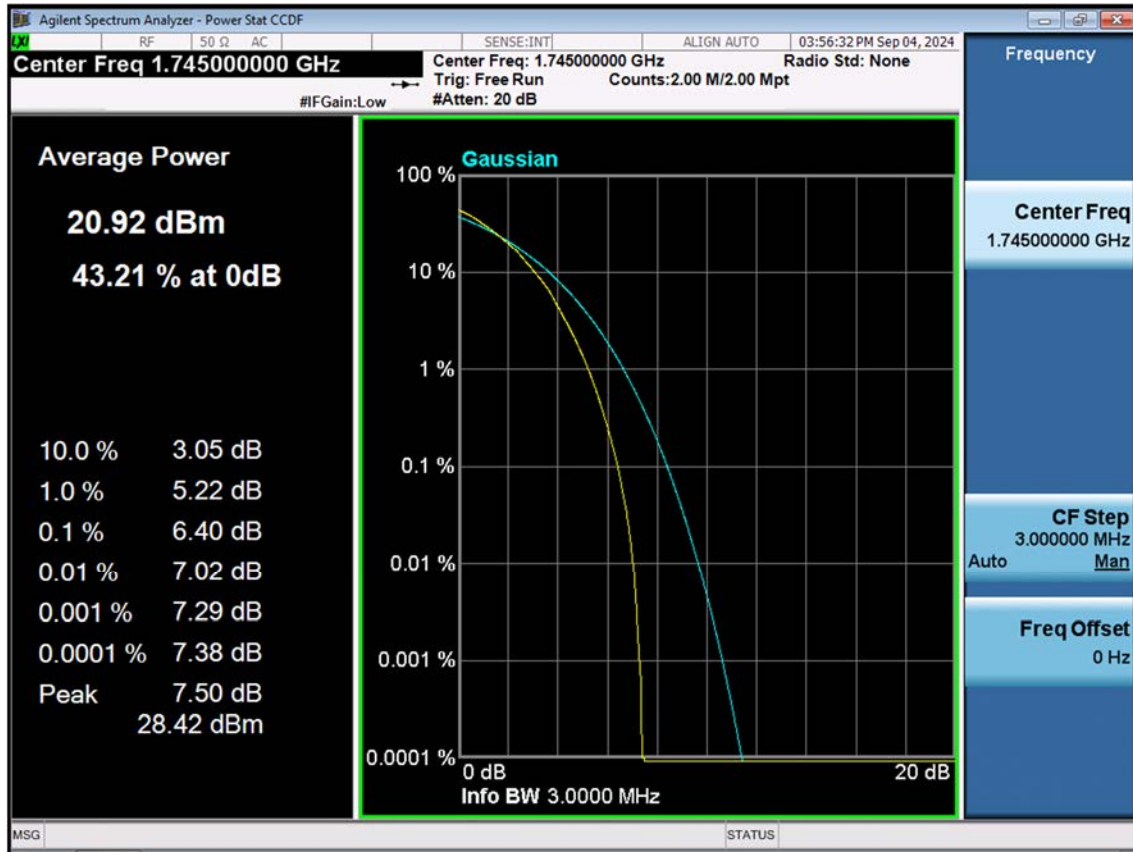
LTE B66_3 M_PAR_Mid_QPSK_FullRB



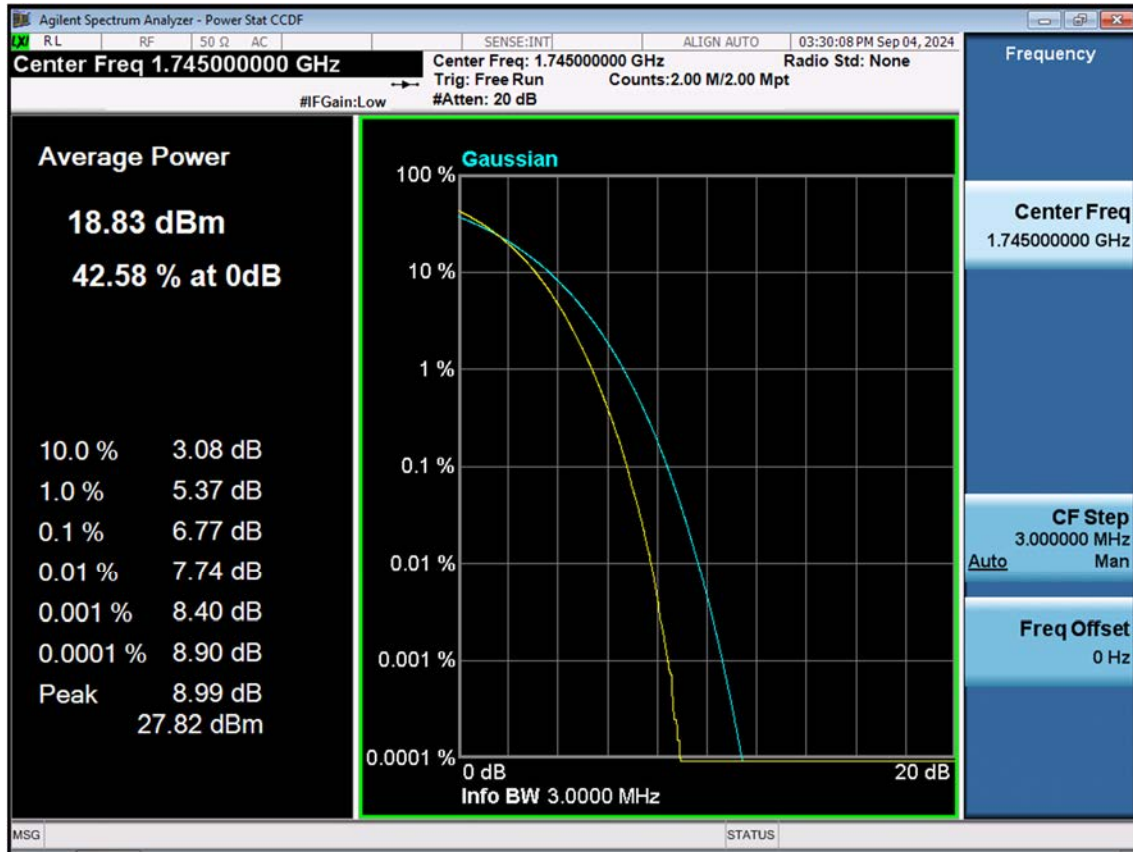
LTE B66_3 M_PAR_Mid_16QAM_FullRB



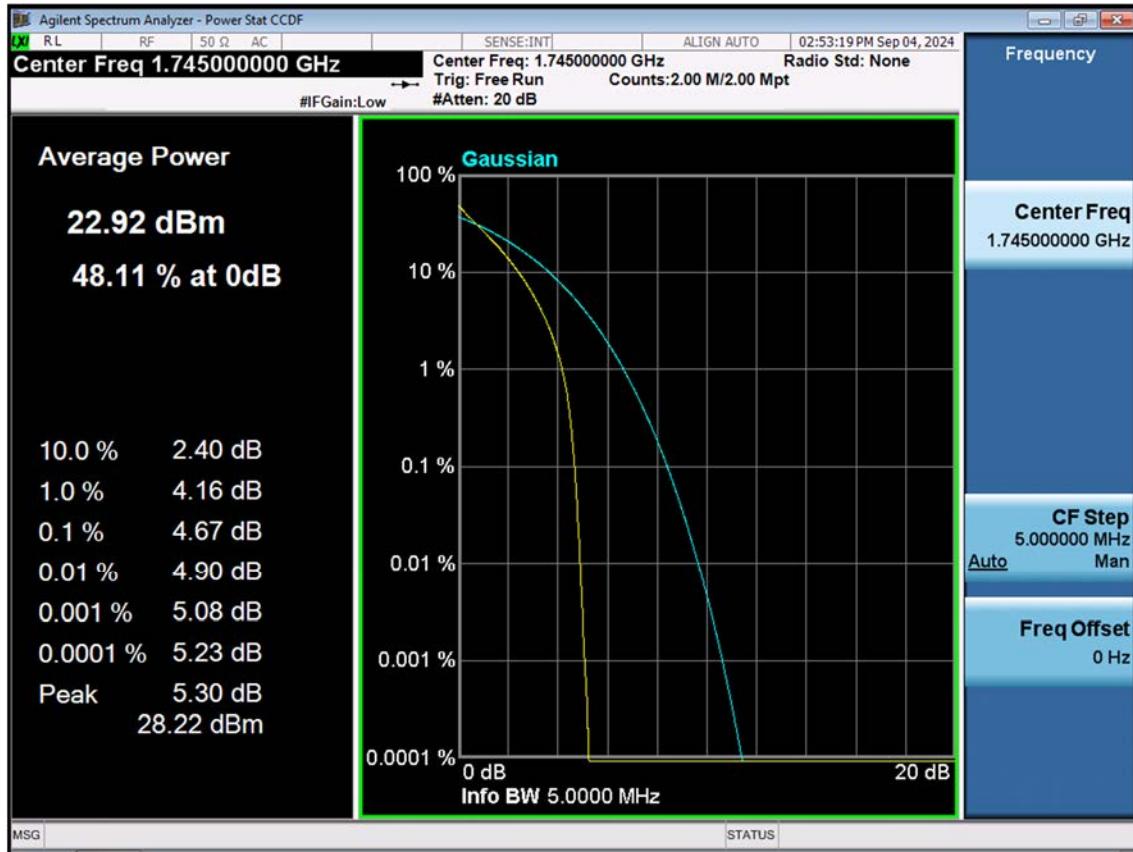
LTE B66_3 M_PAR_Mid_64QAM_FullRB



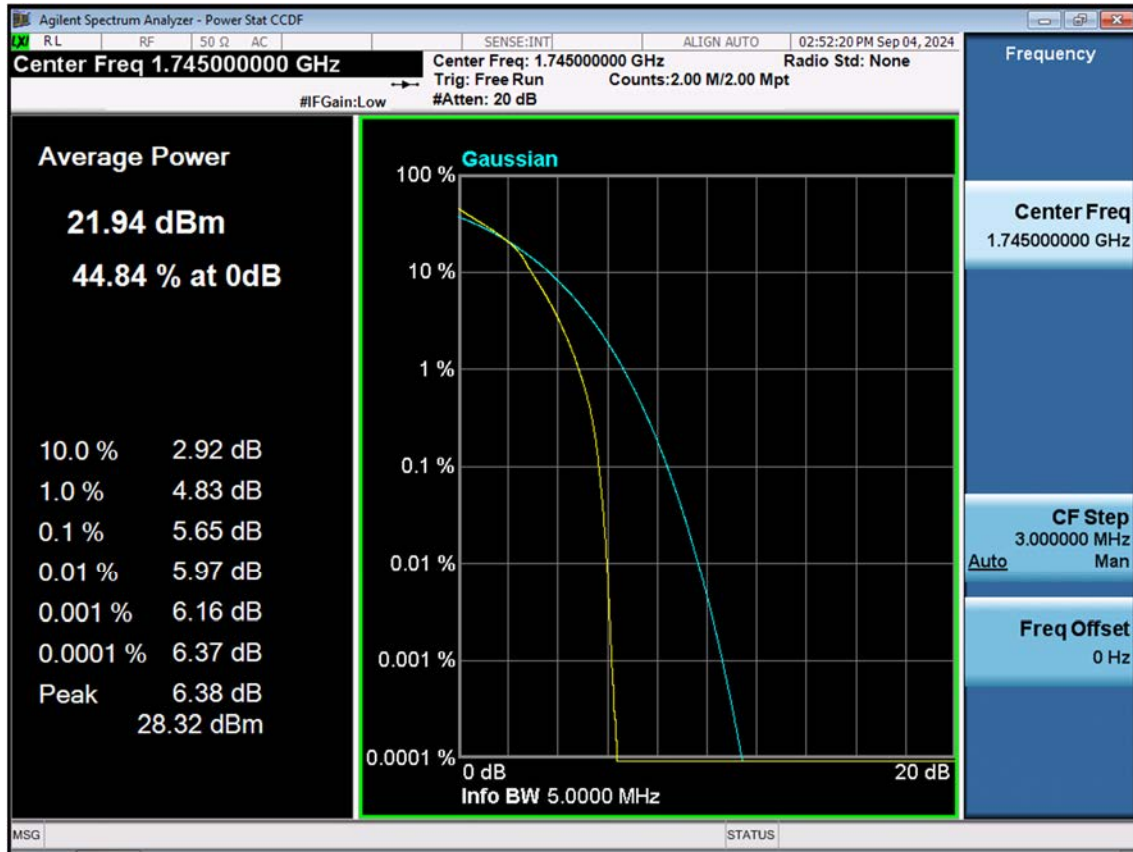
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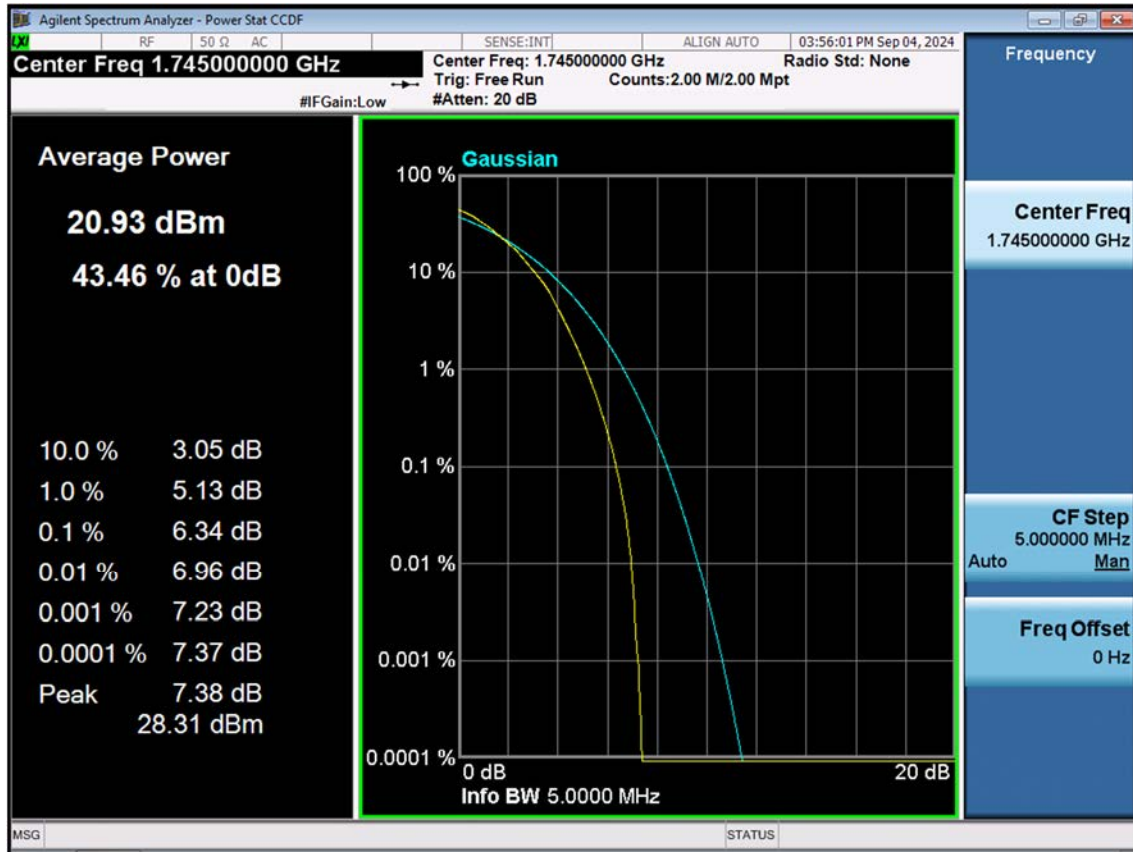
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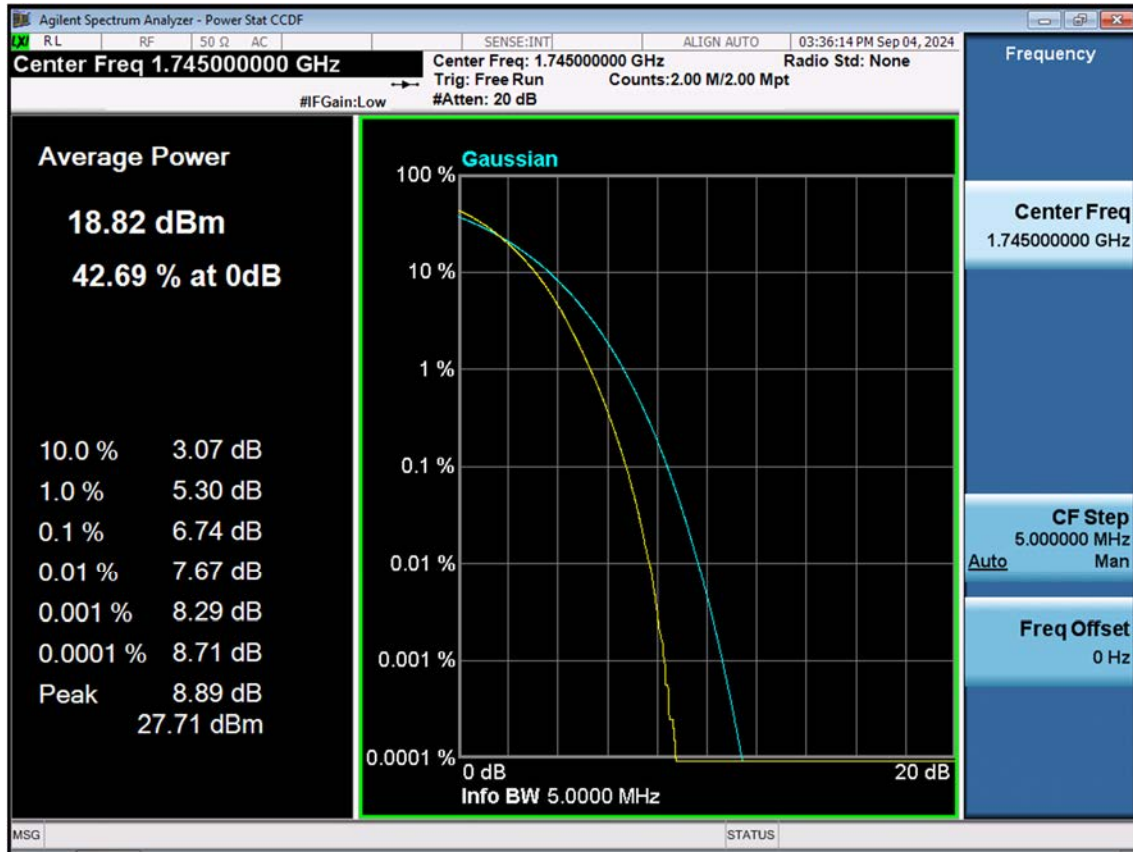
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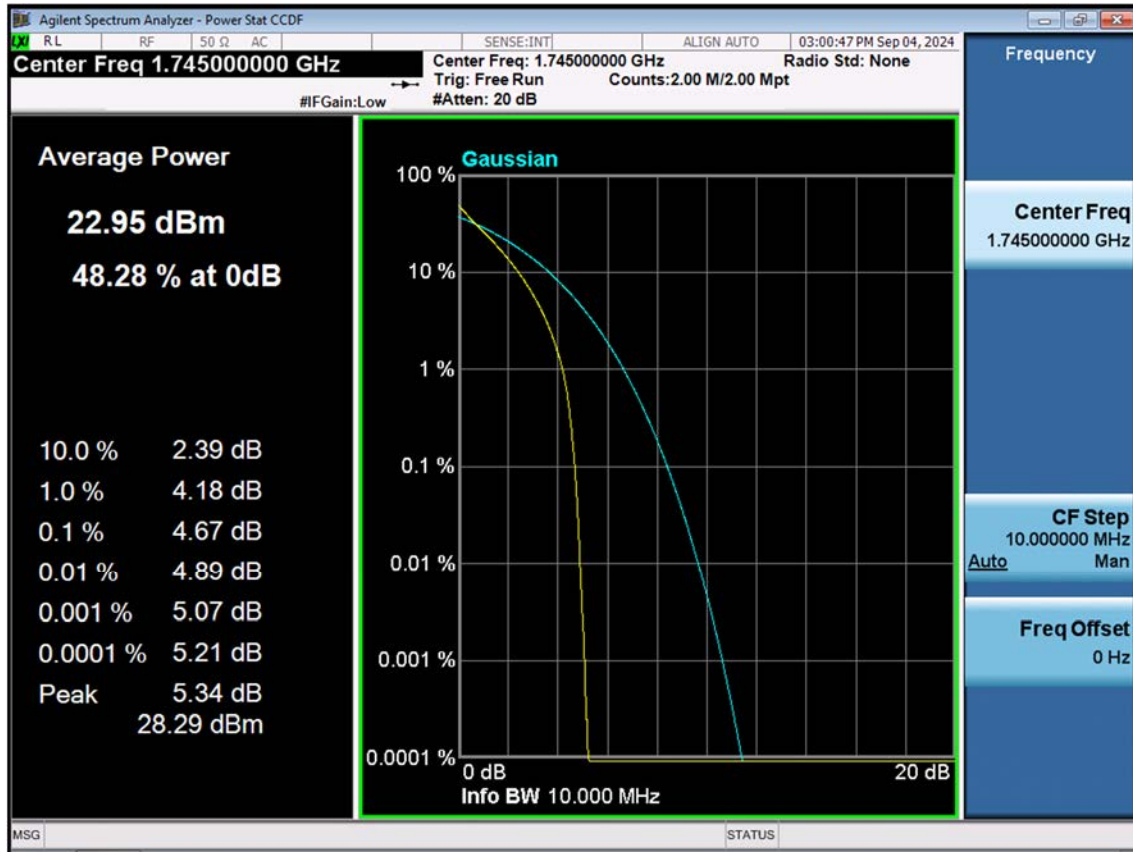
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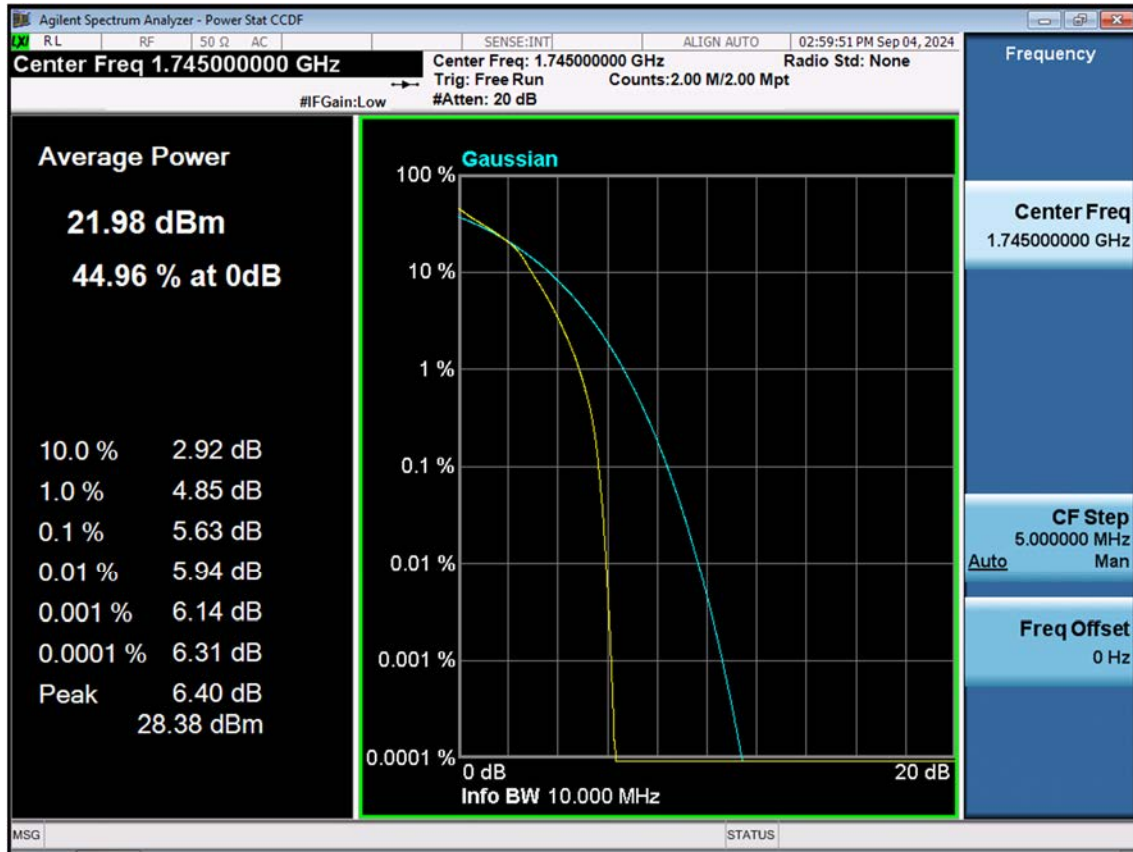
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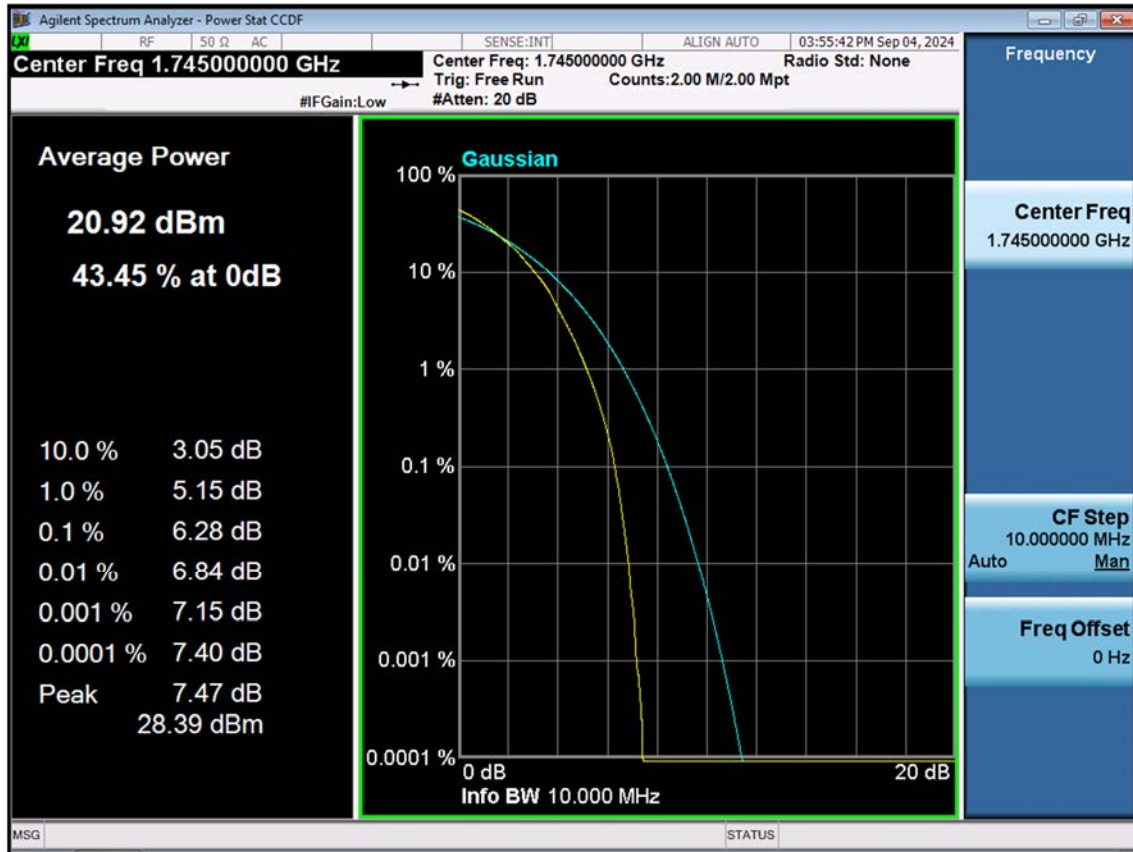
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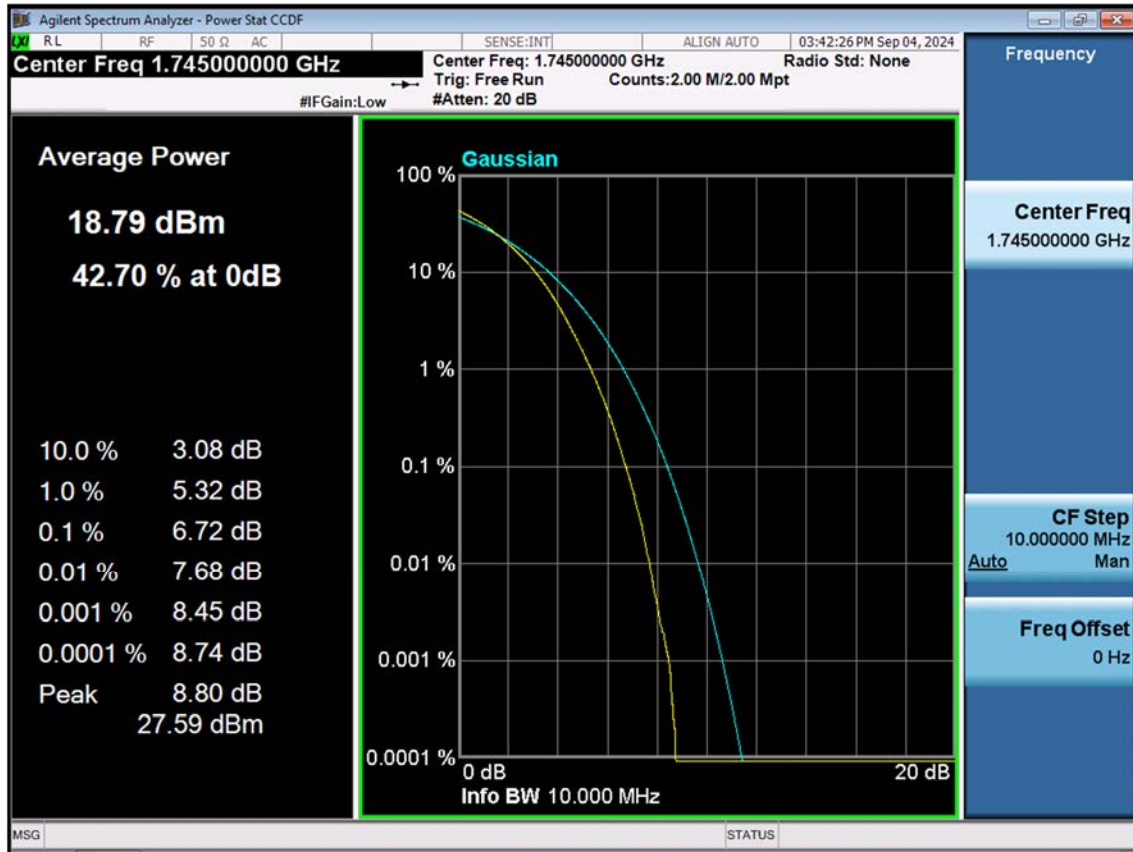
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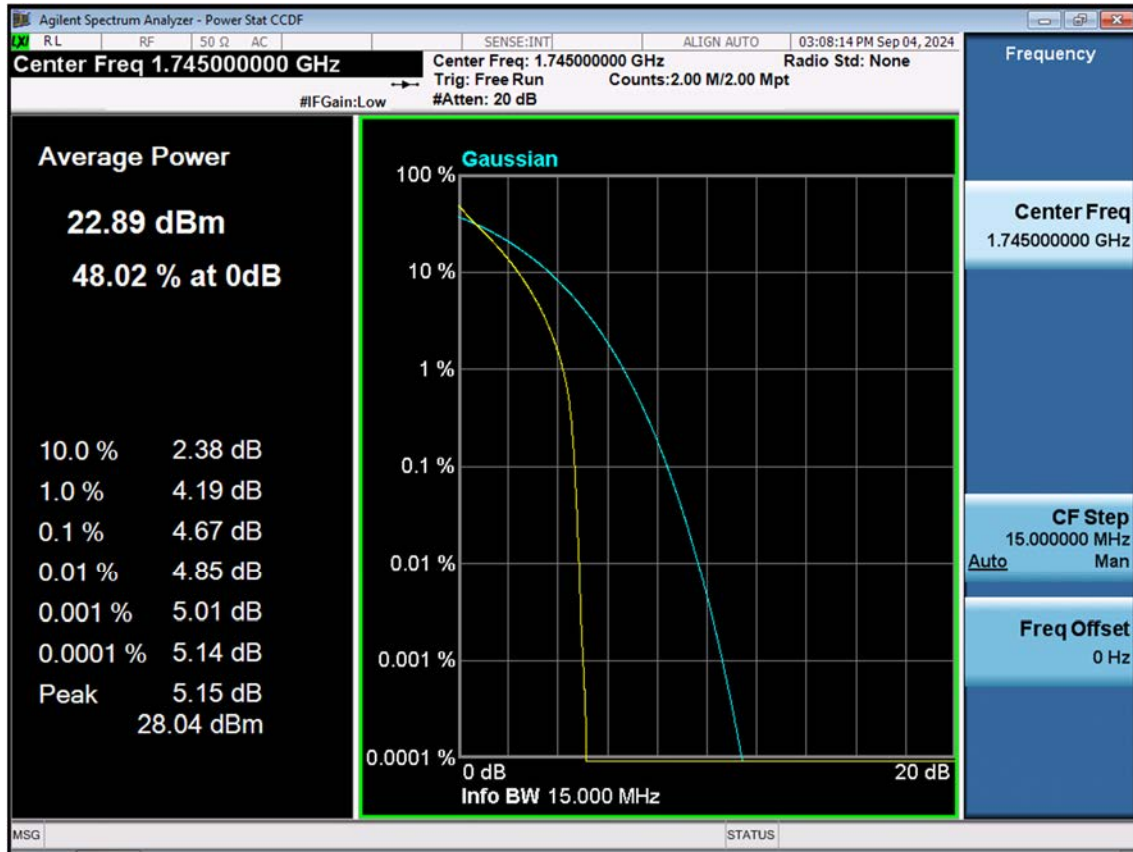
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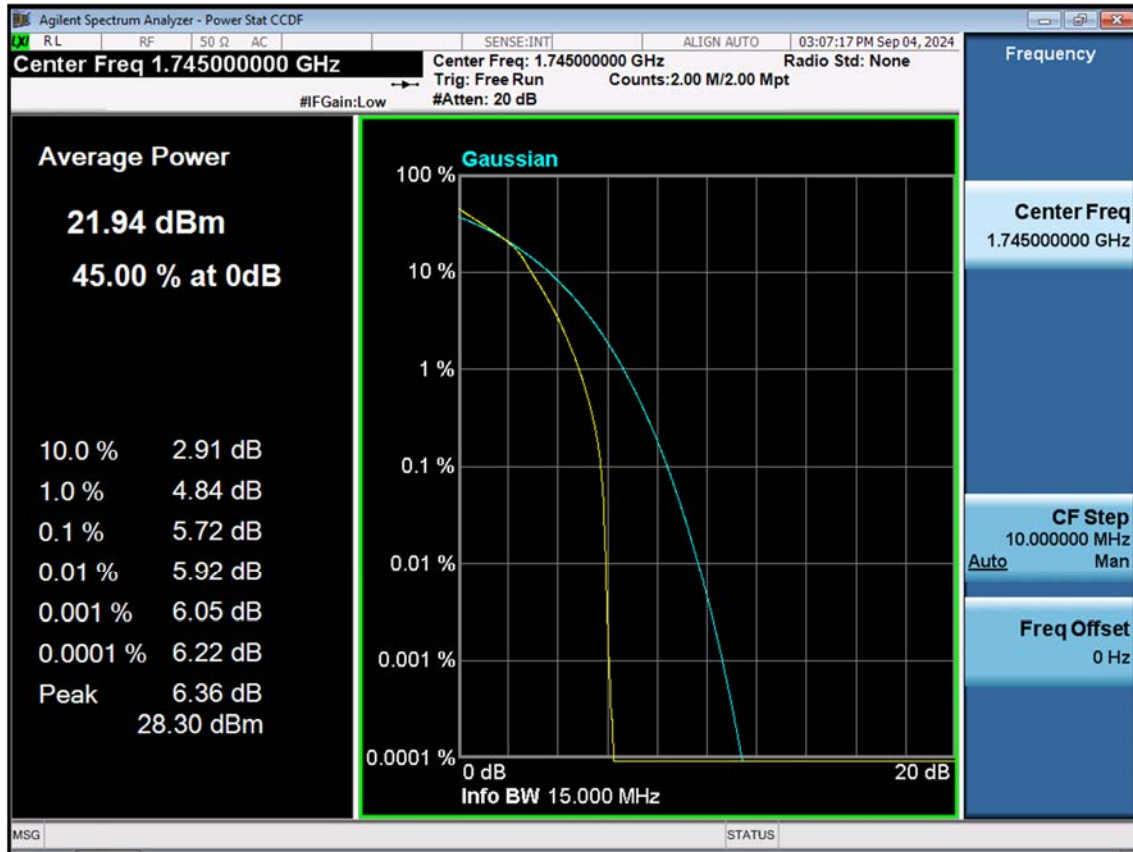
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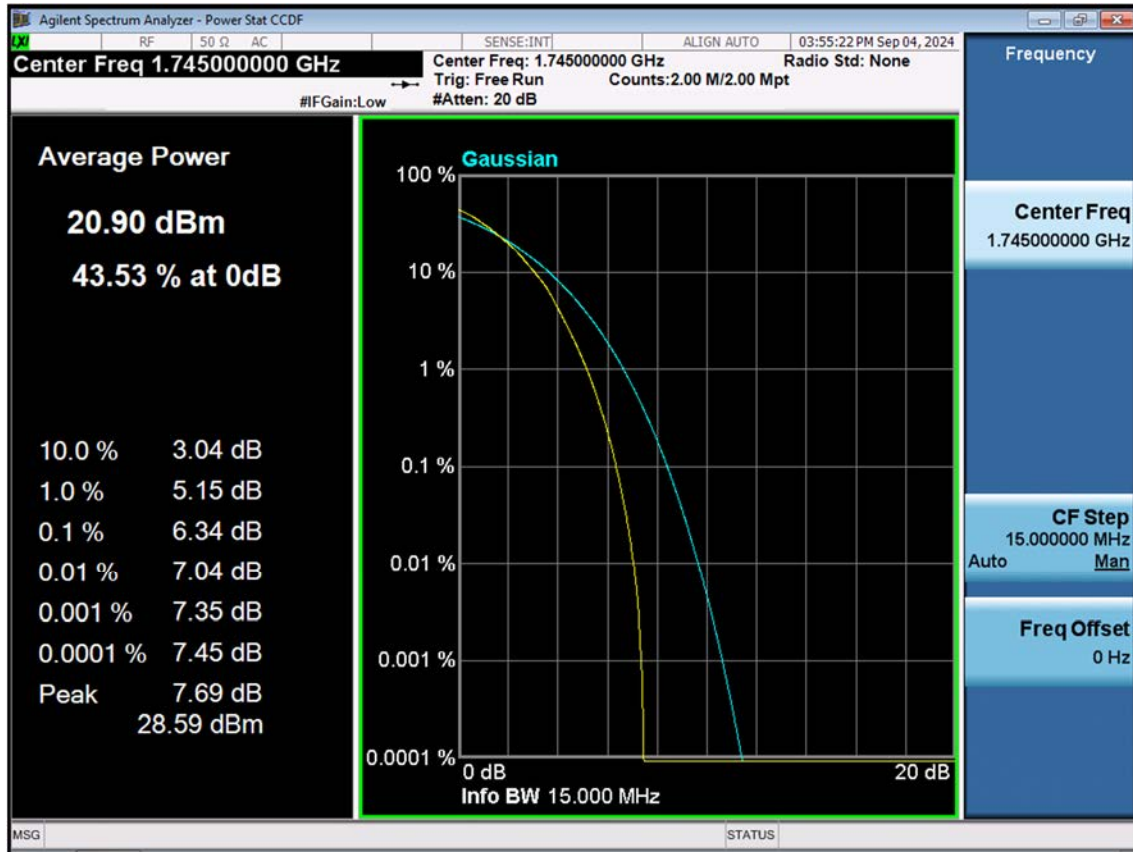
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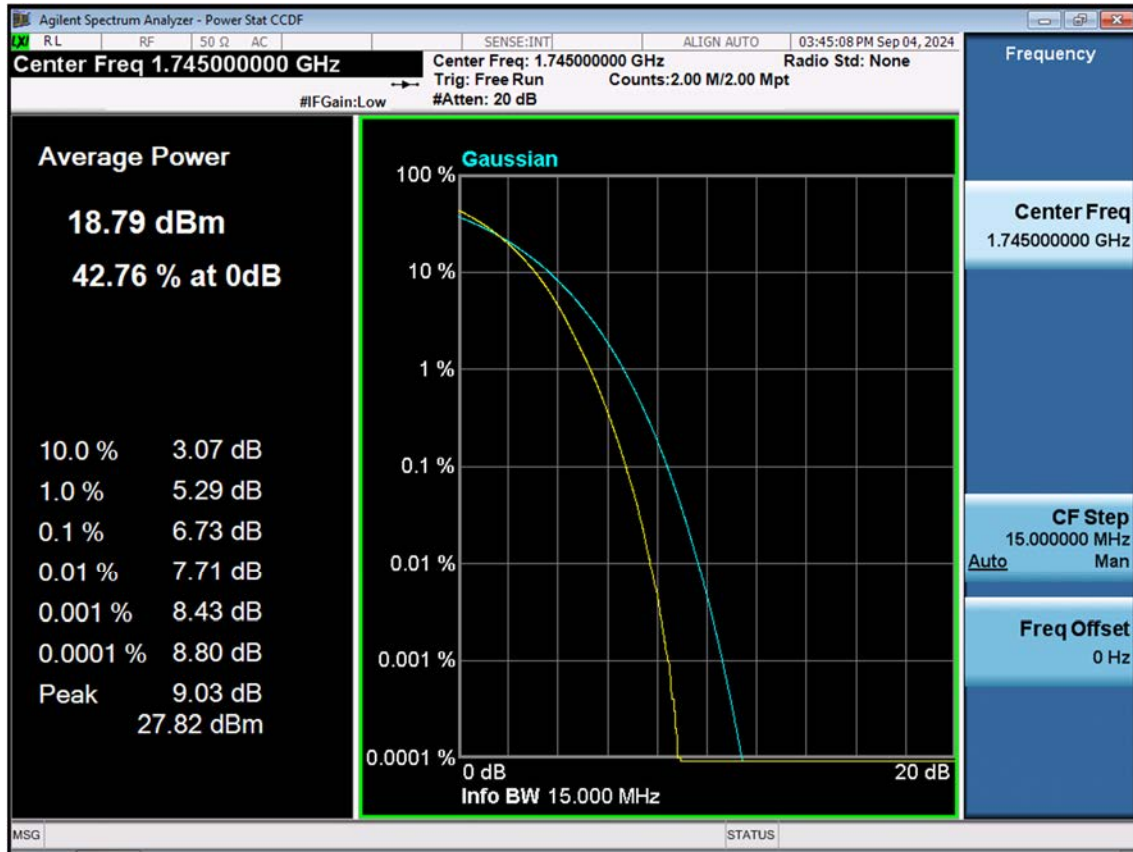
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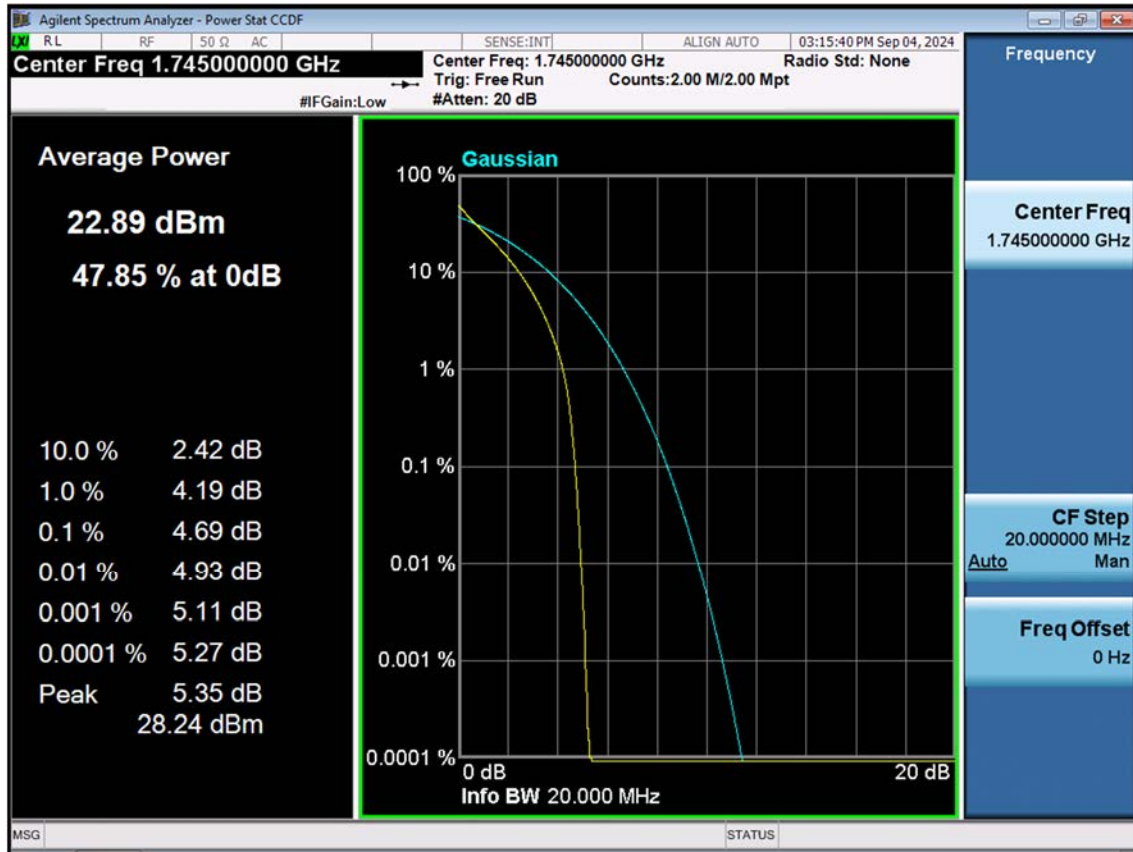
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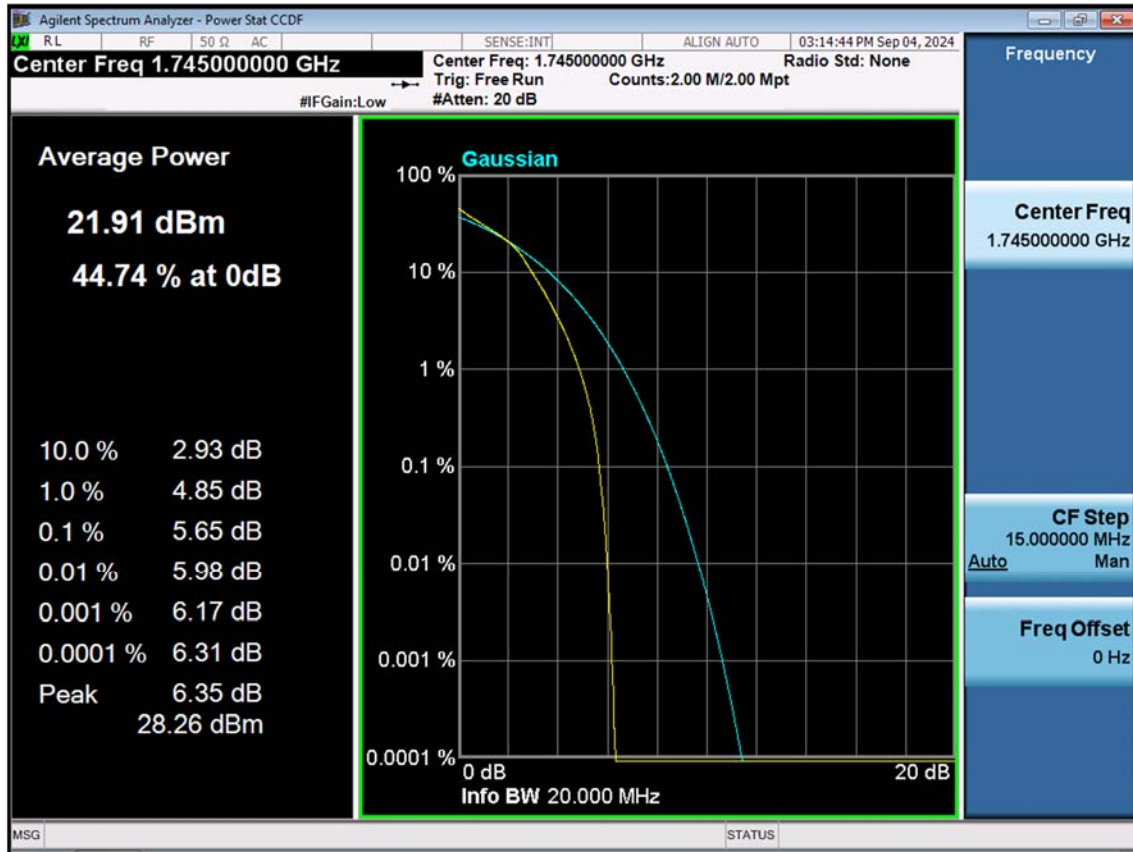
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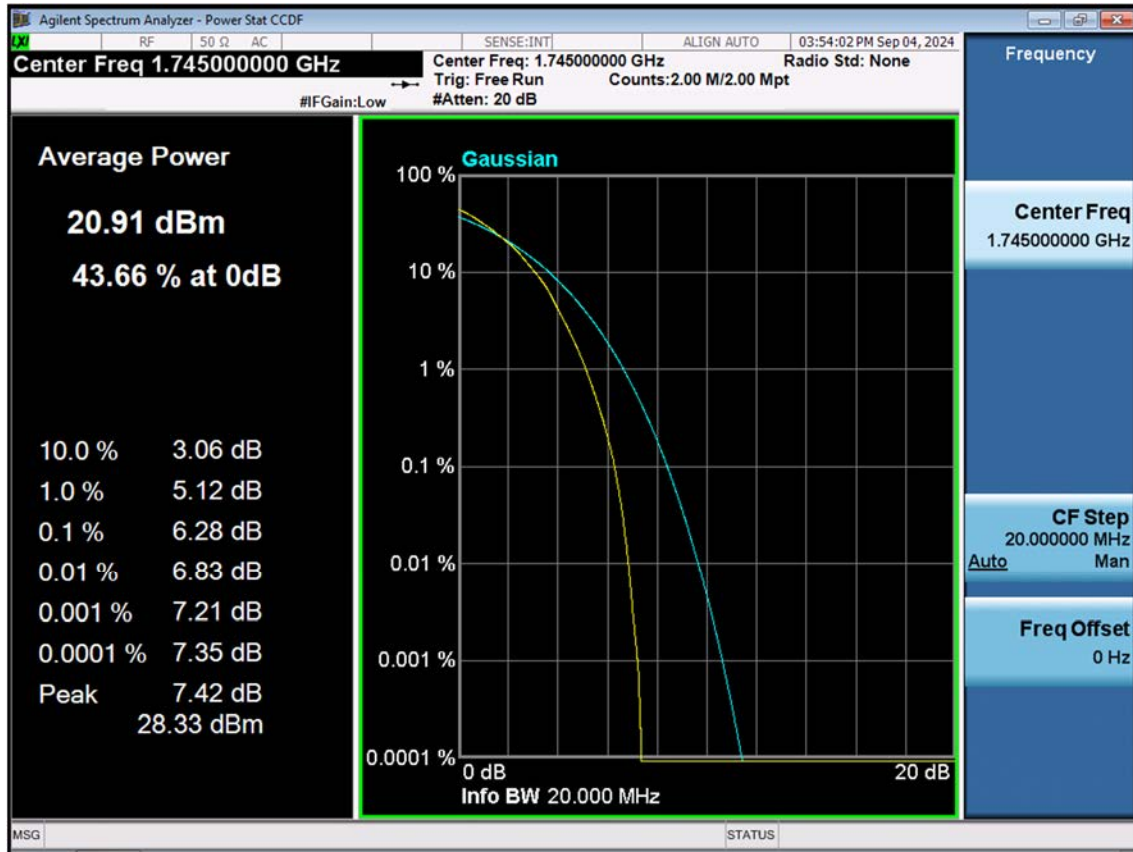
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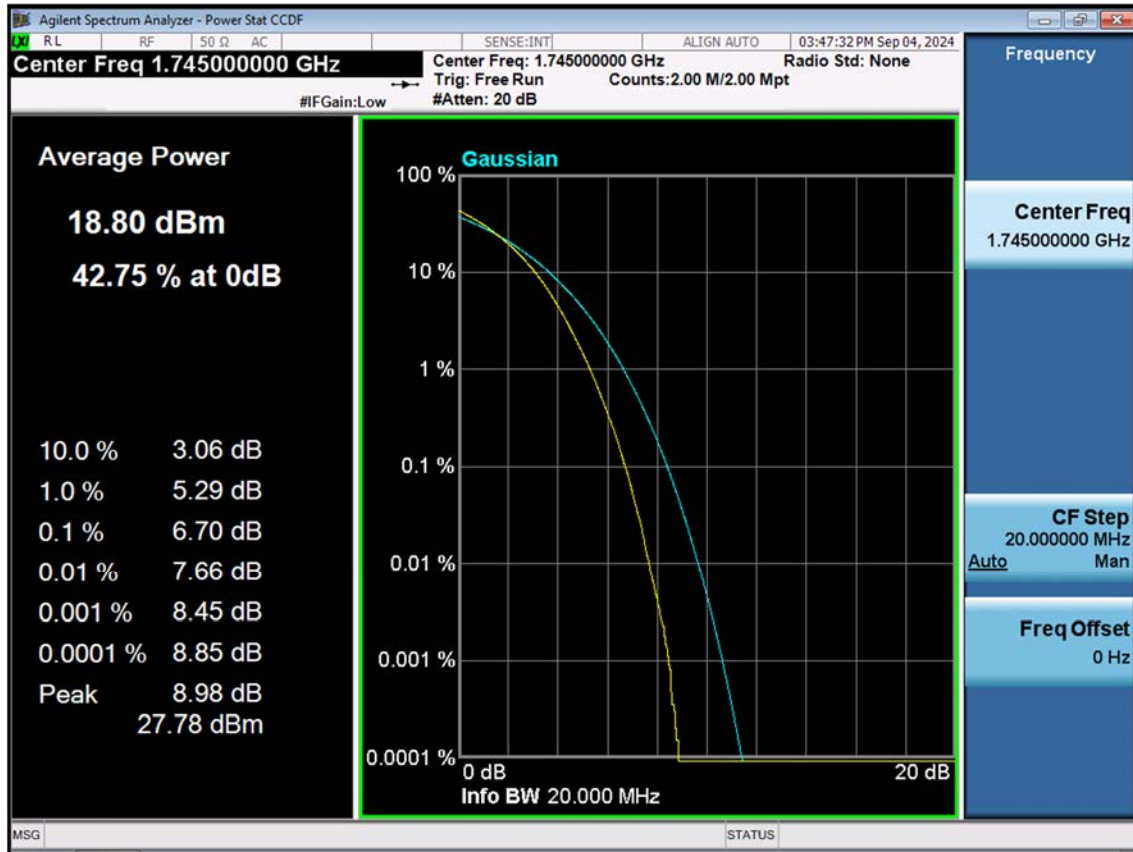
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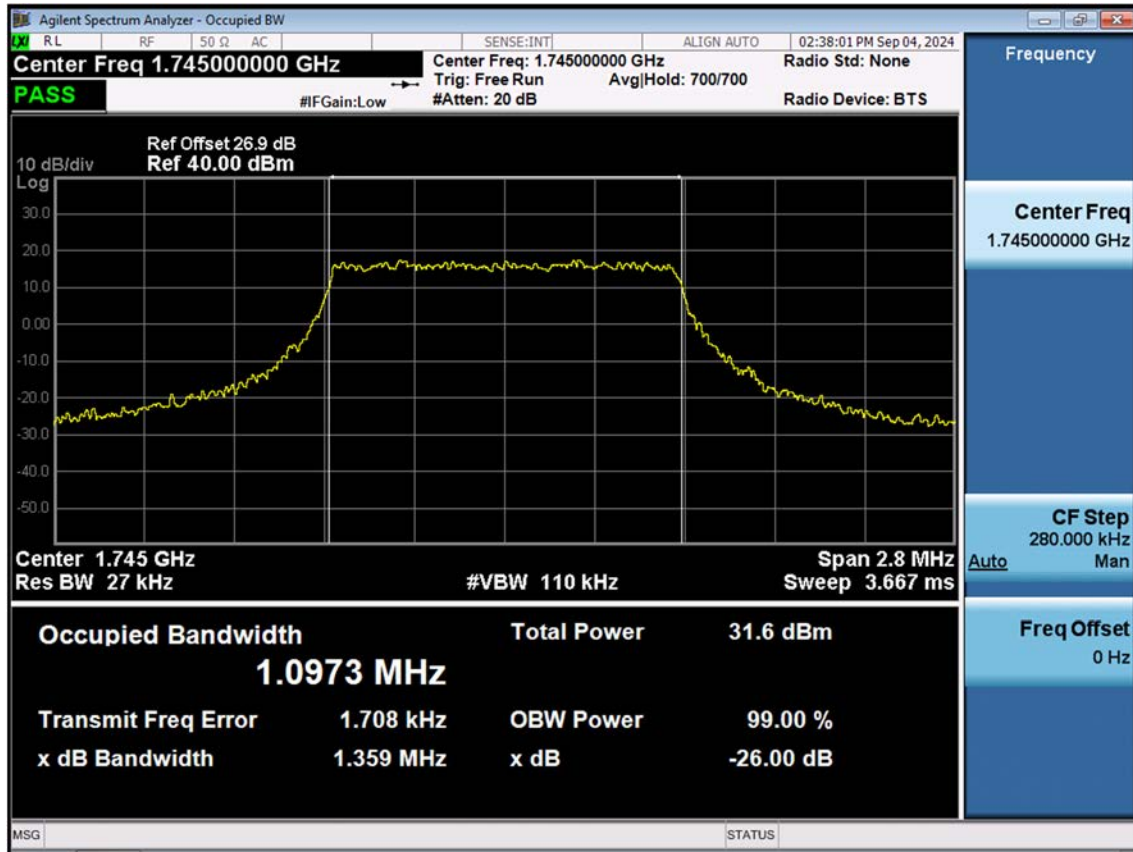
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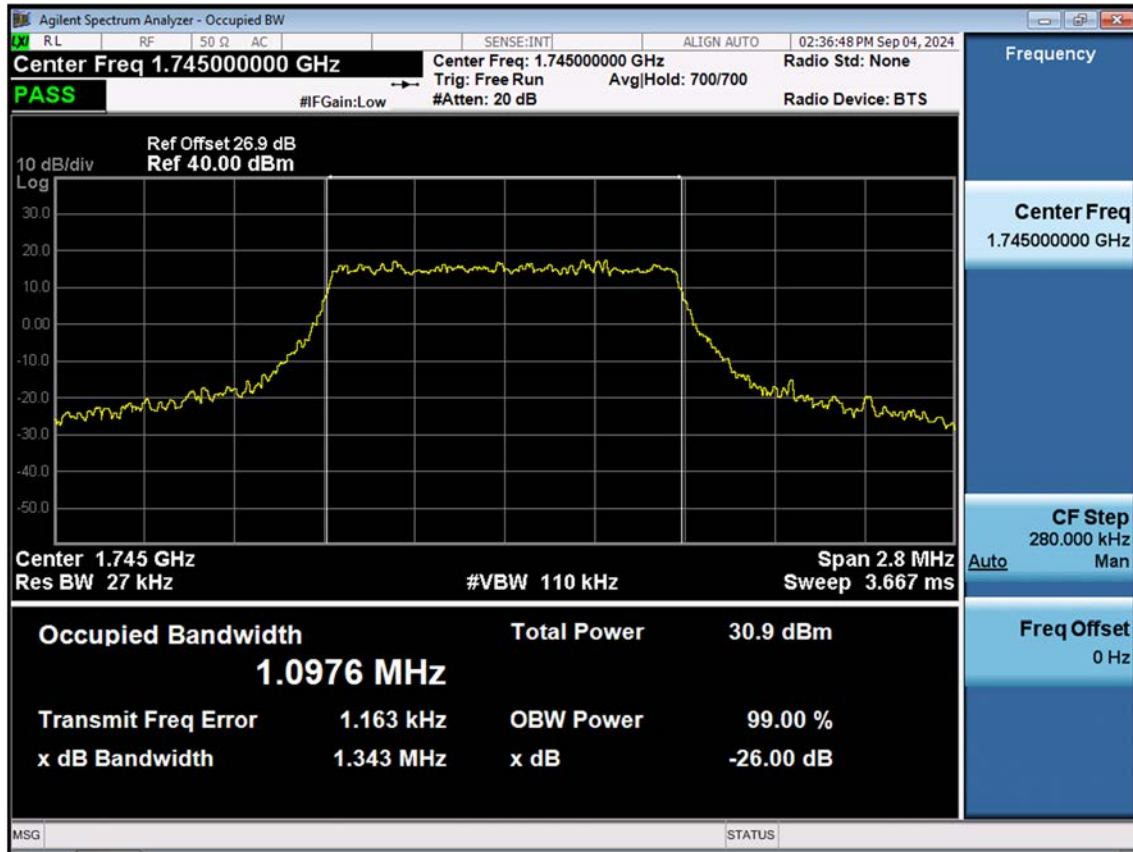
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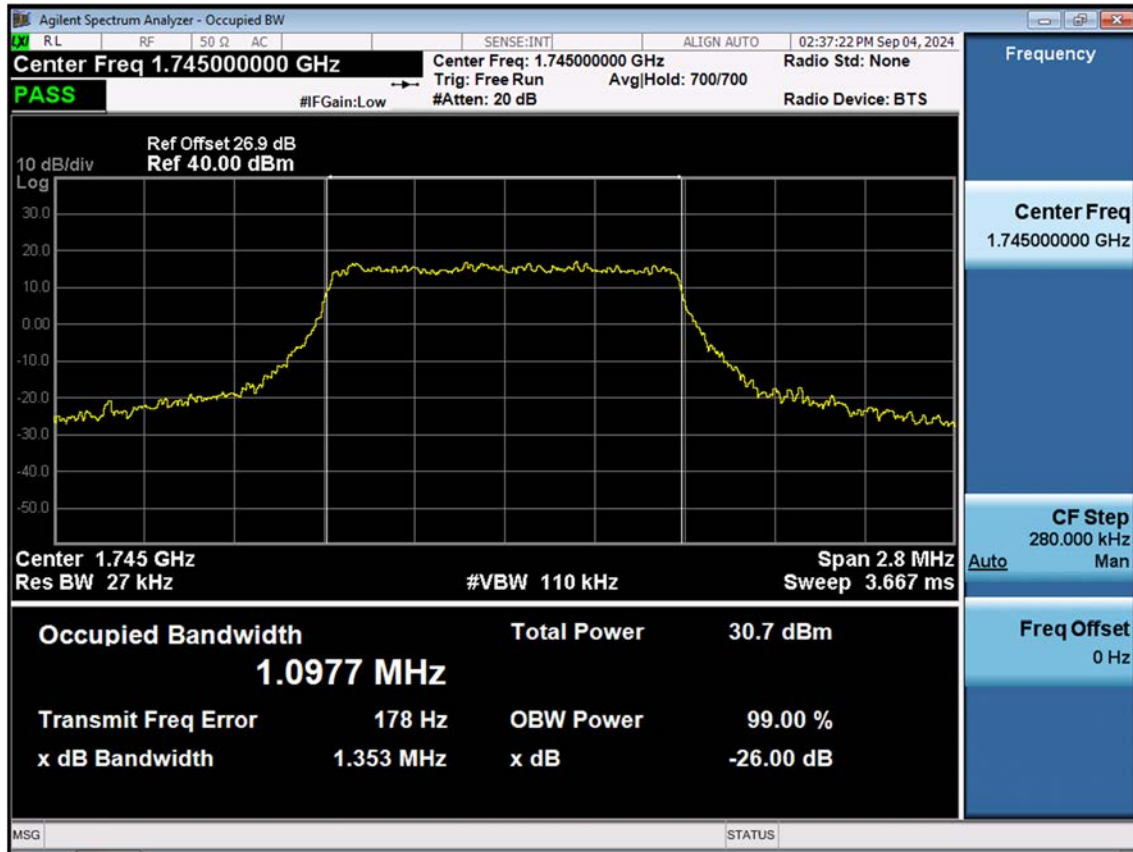
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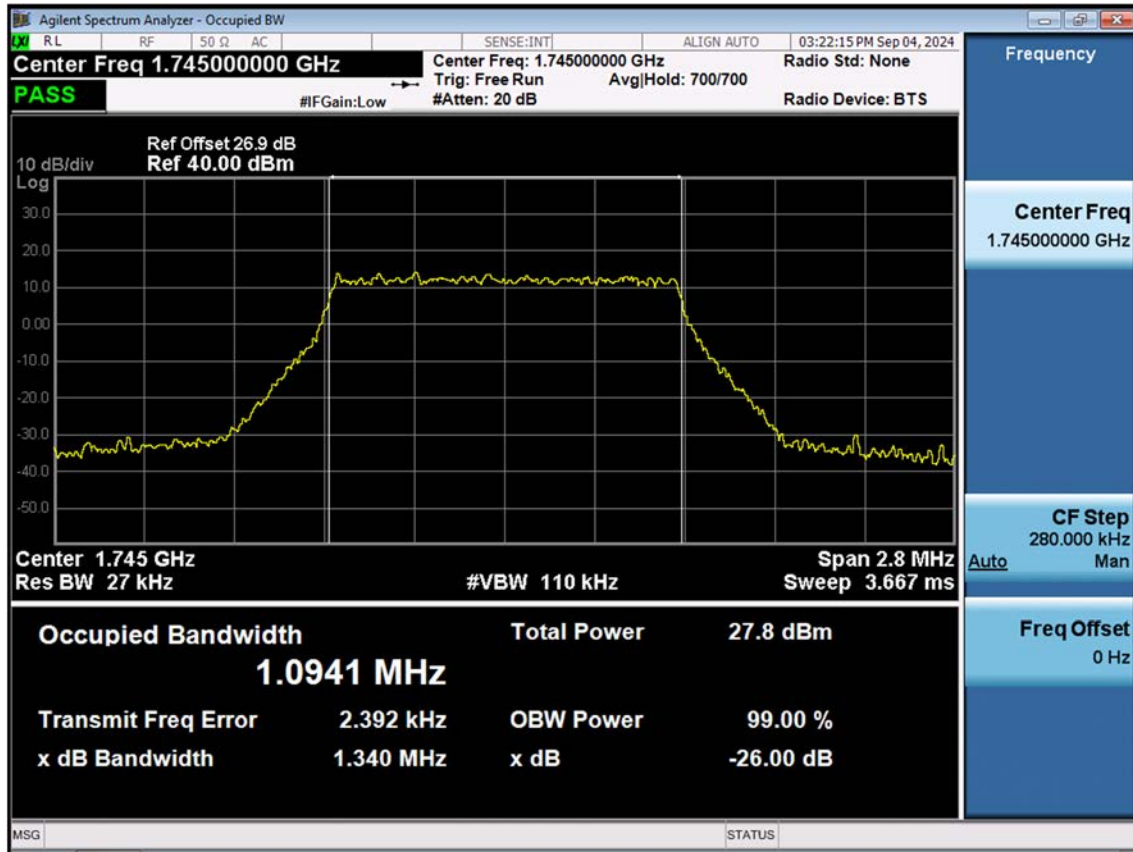
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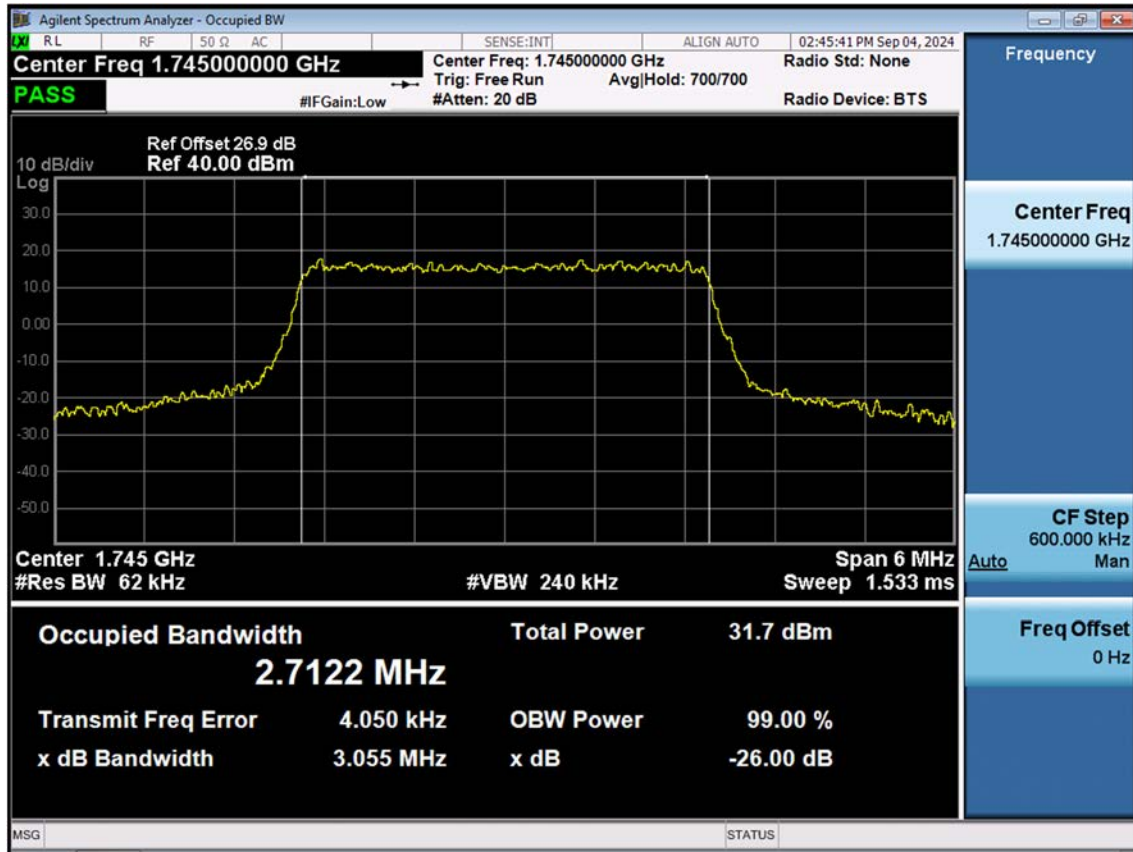
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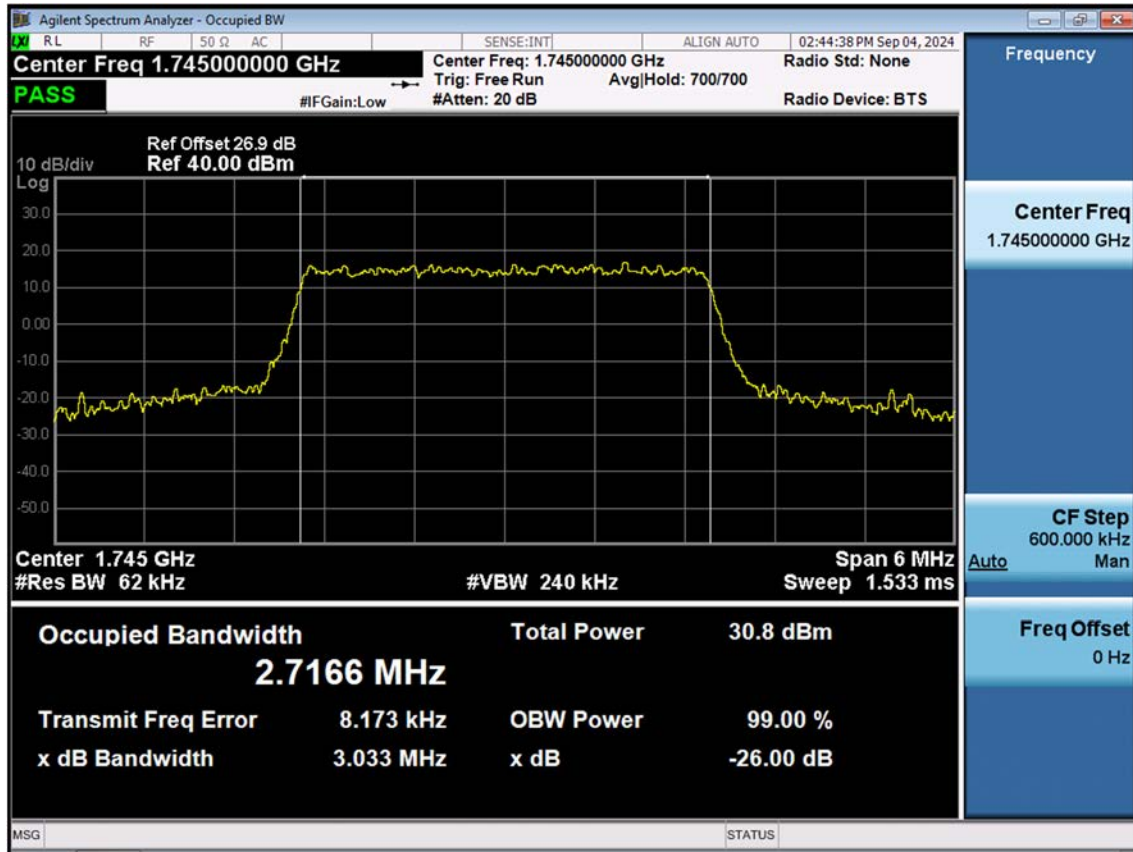
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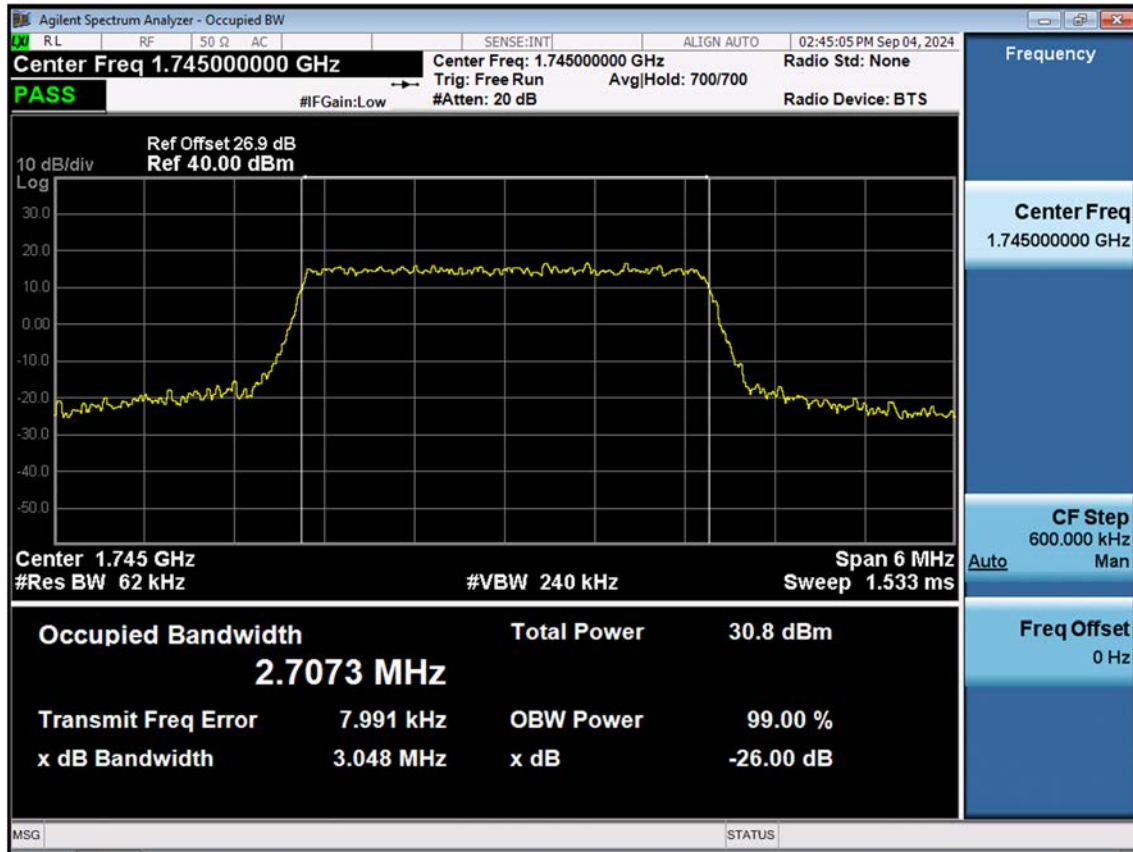
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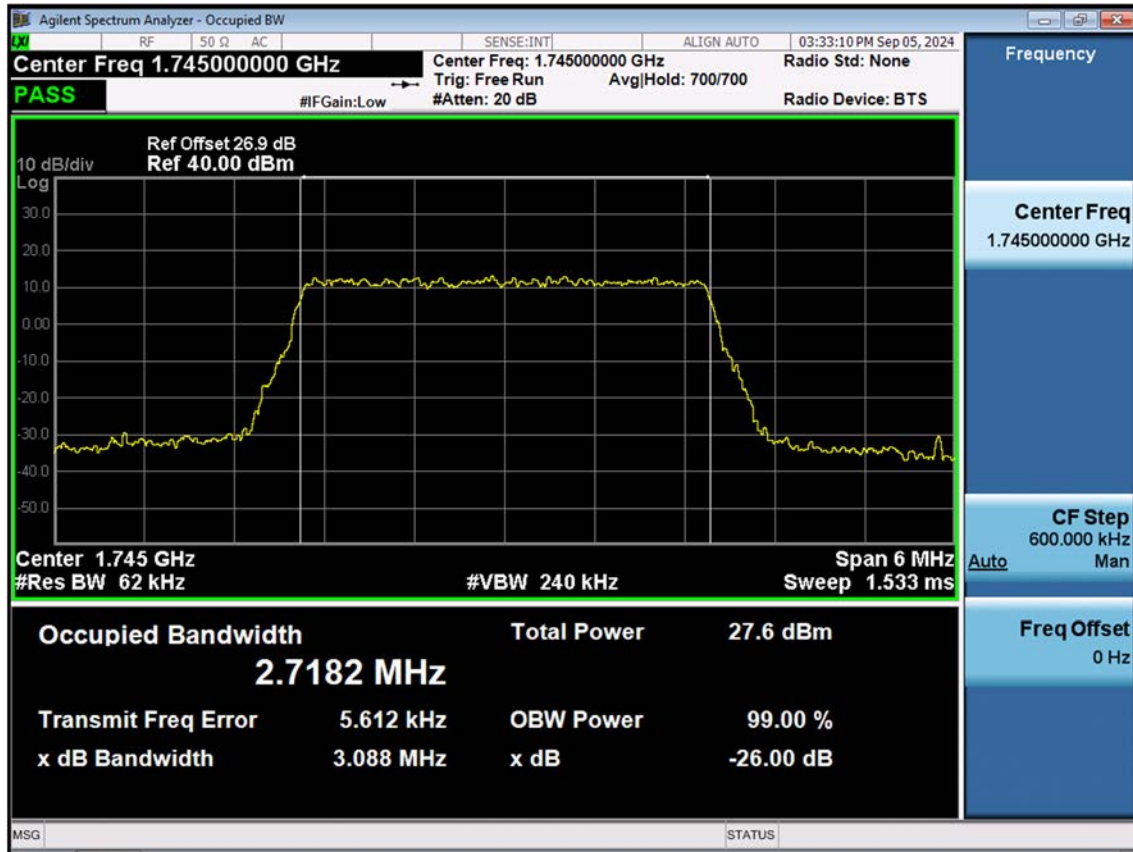
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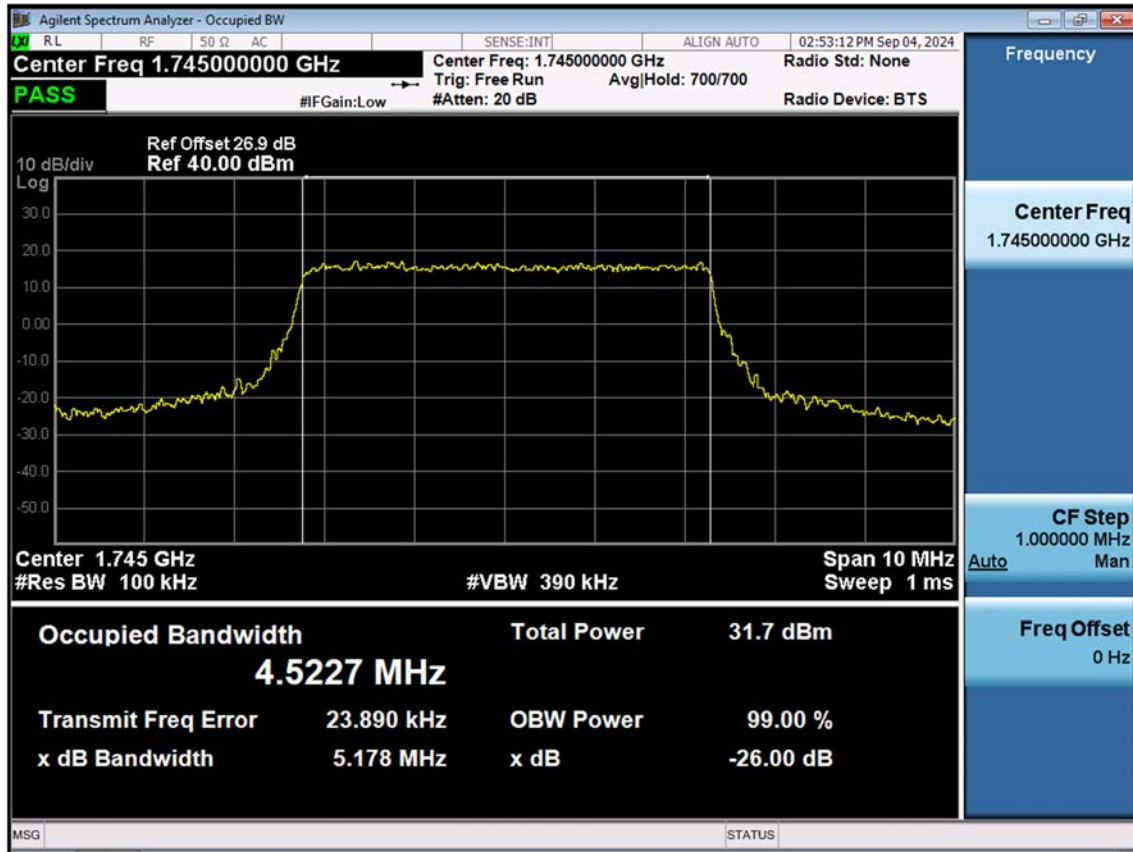
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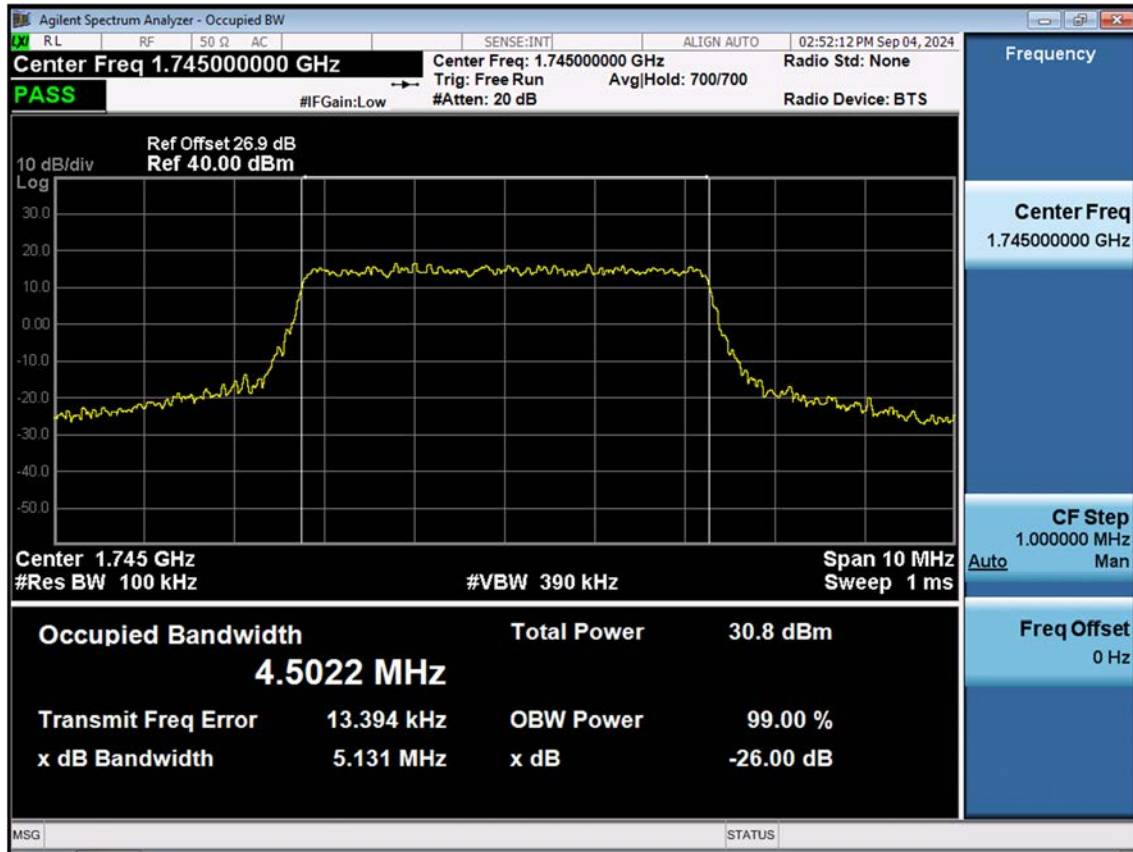
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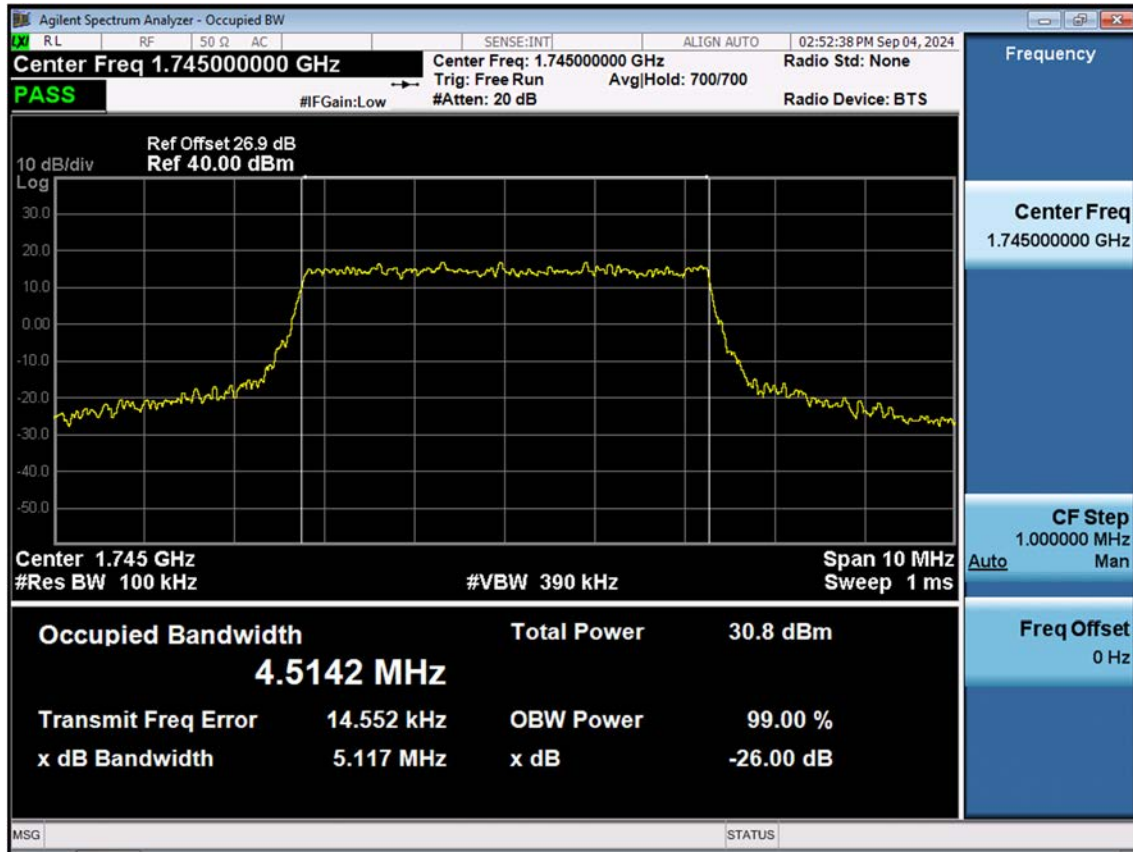
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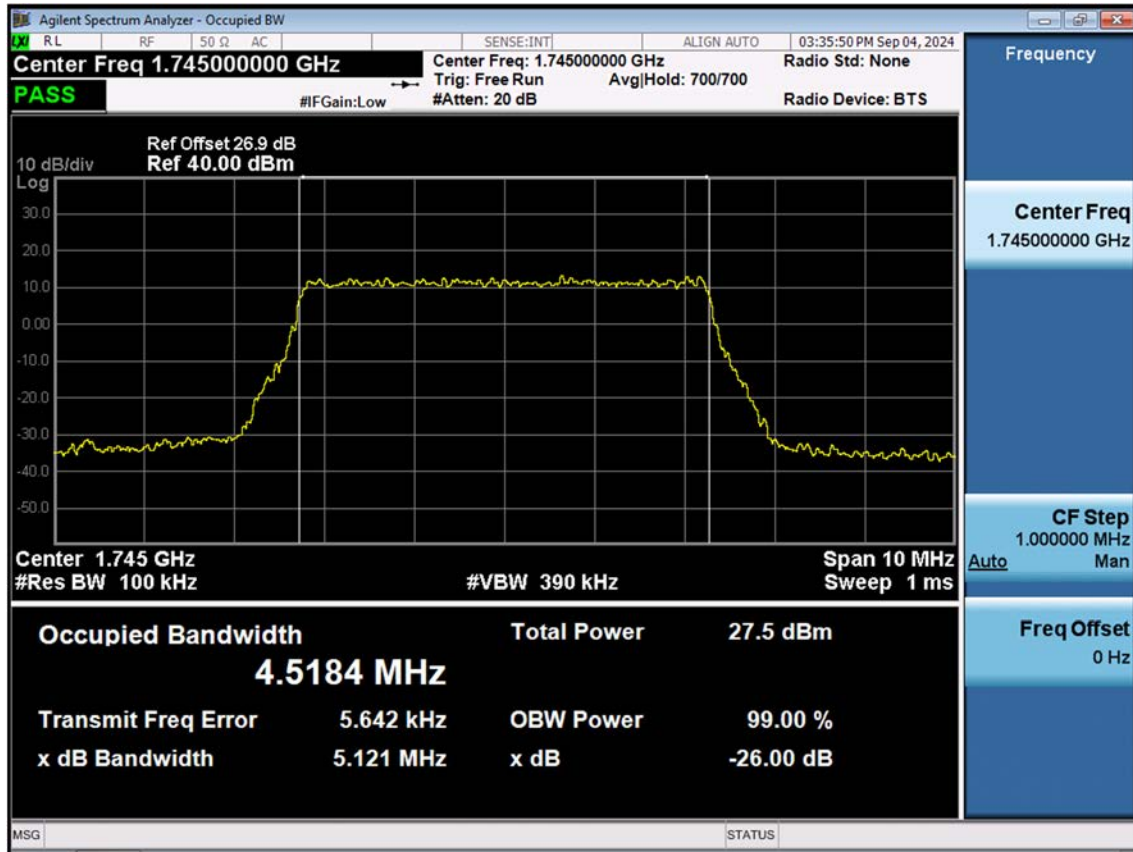
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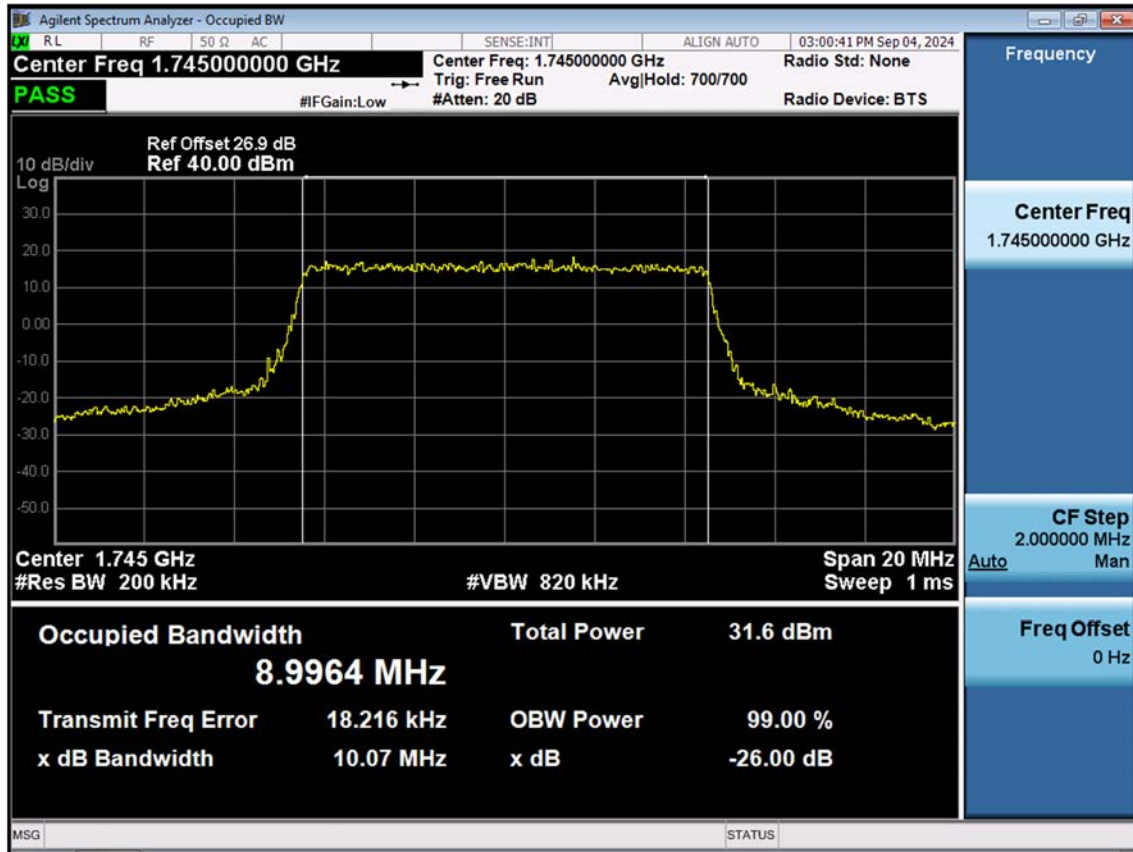
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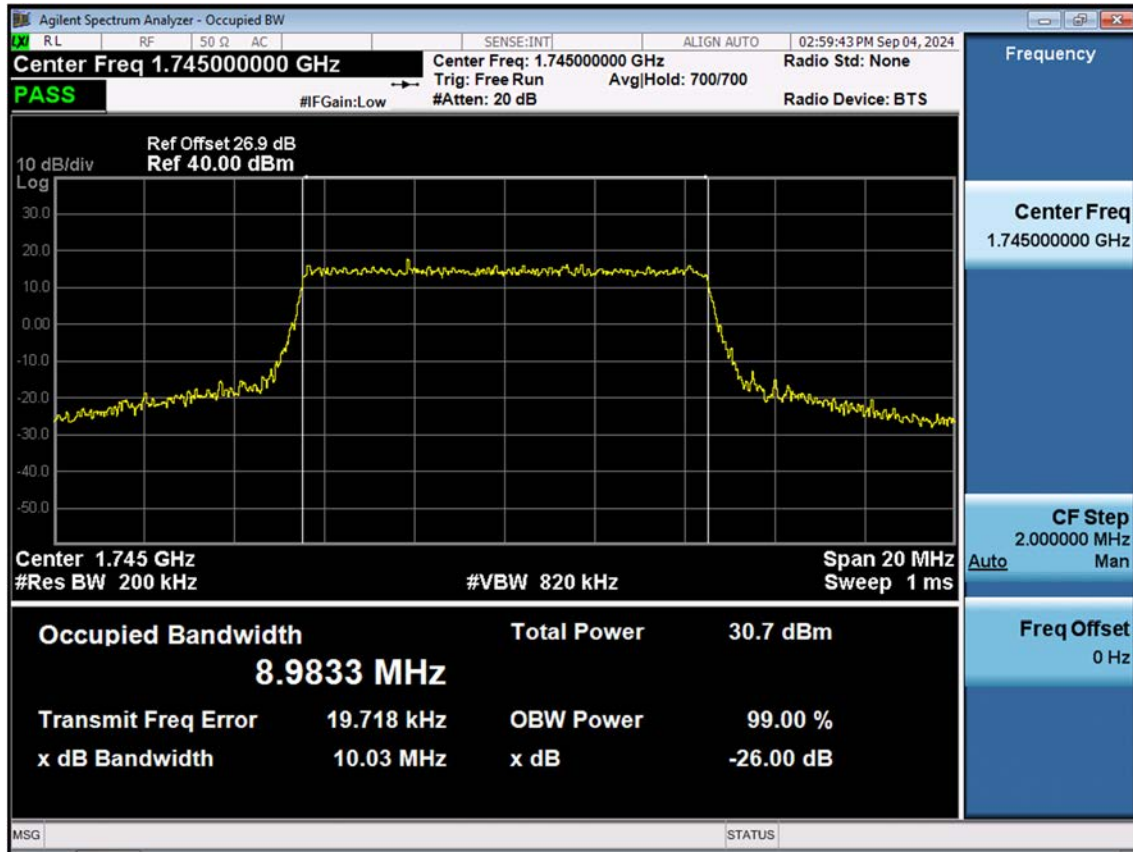
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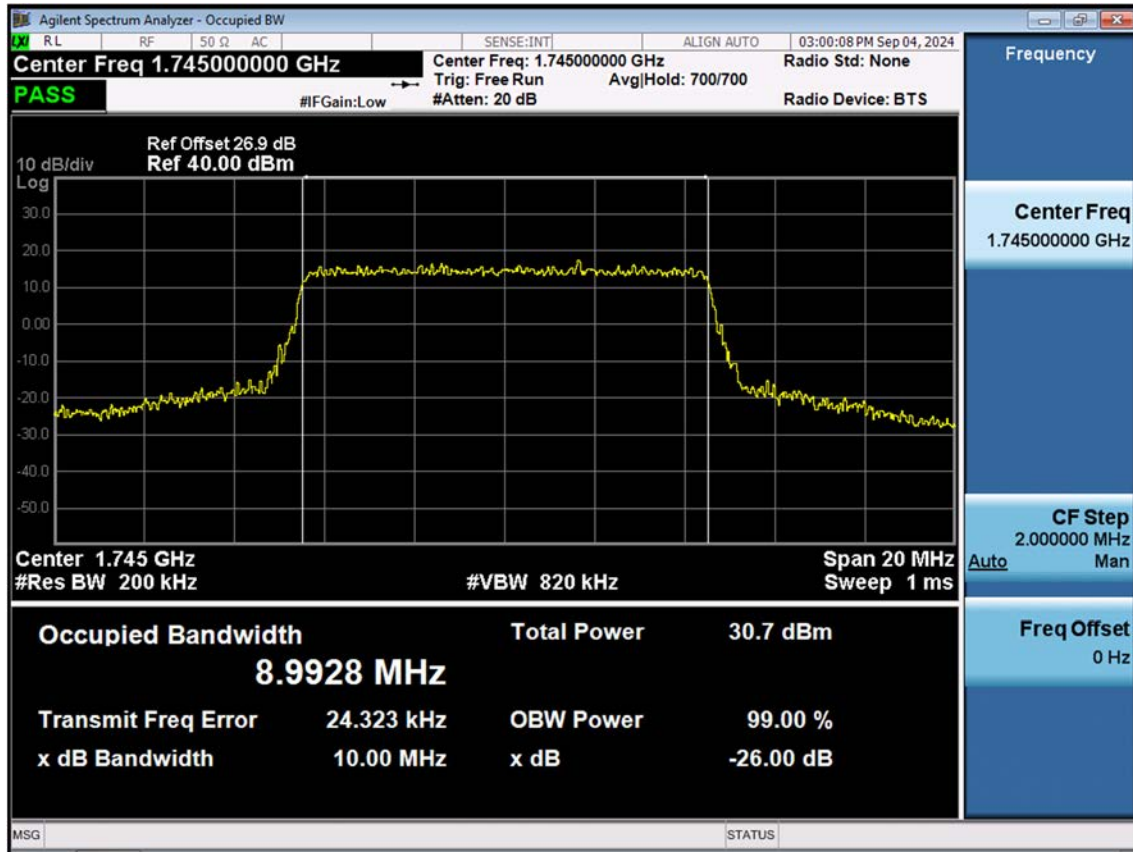
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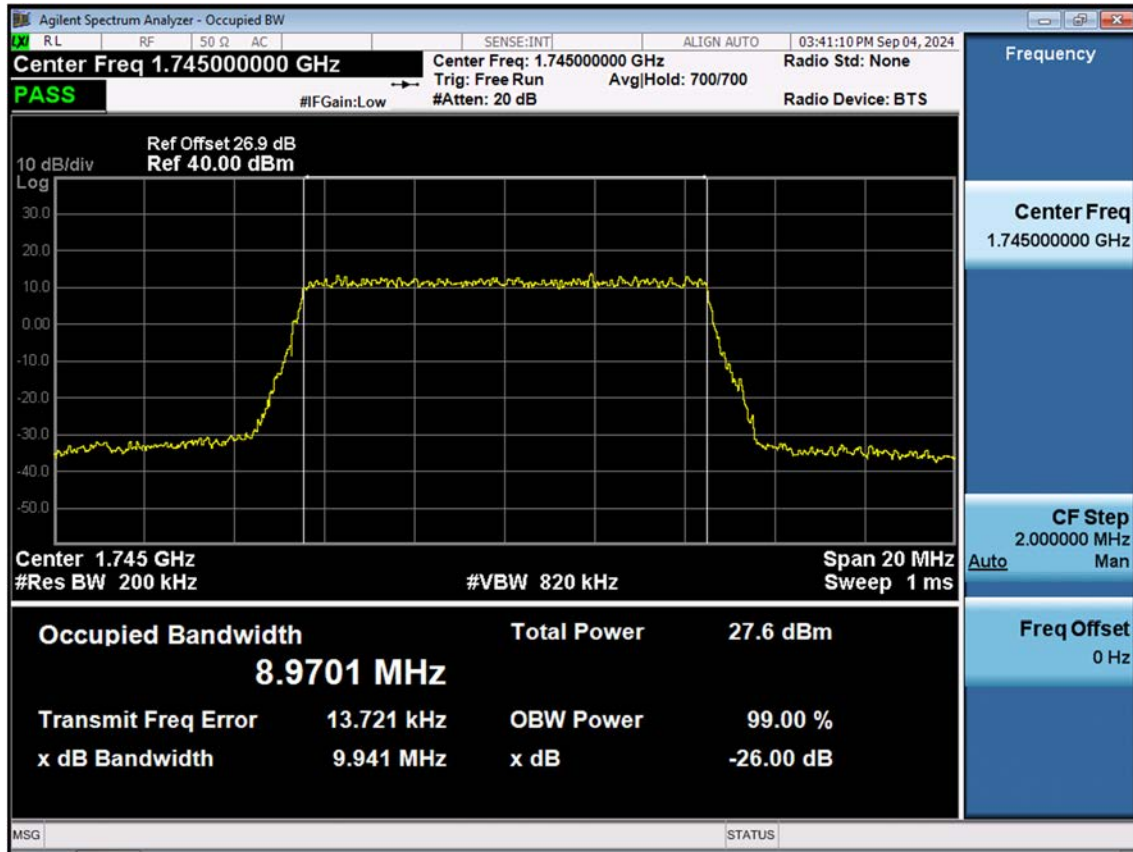
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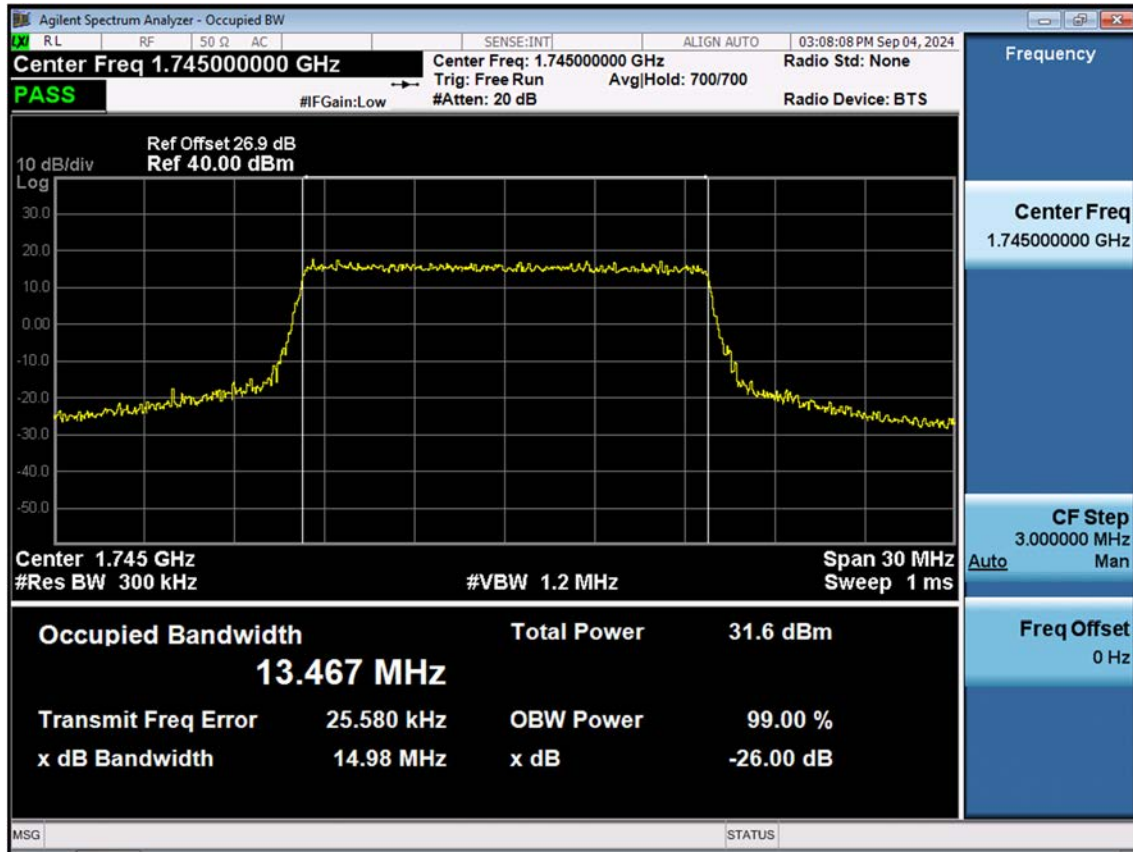
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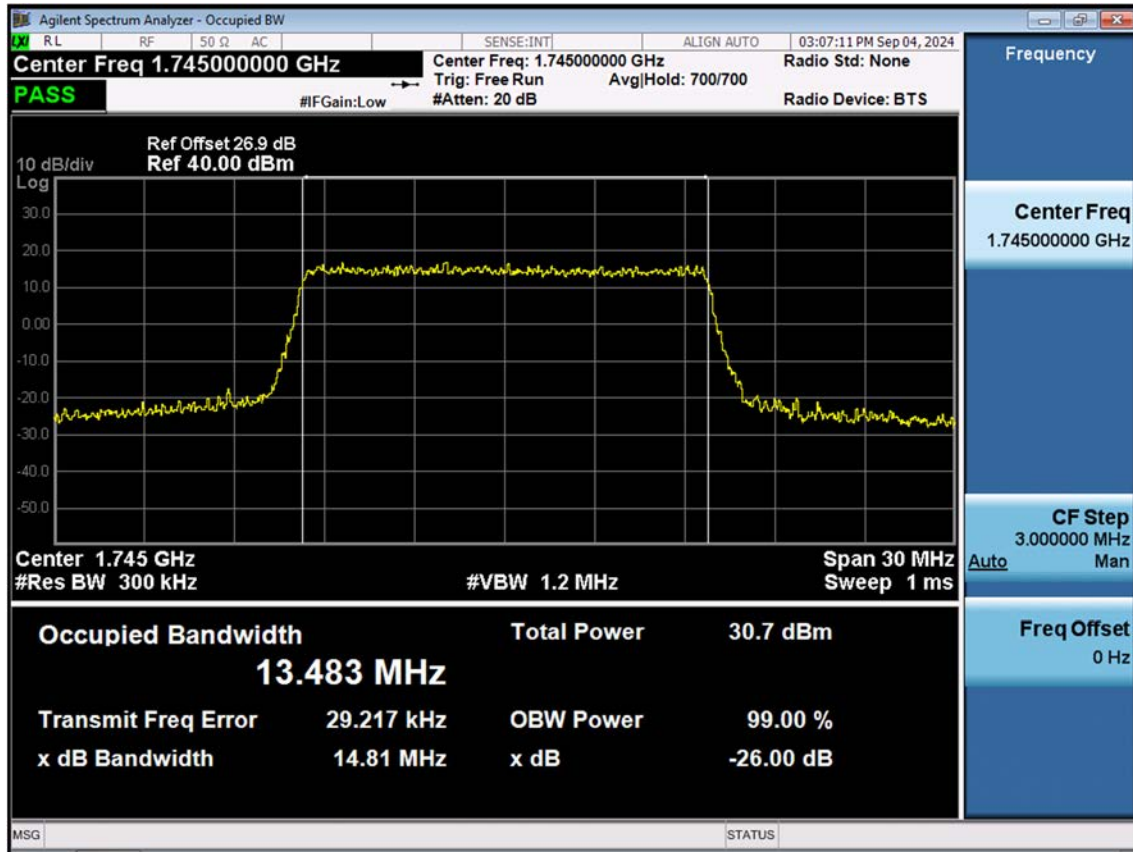
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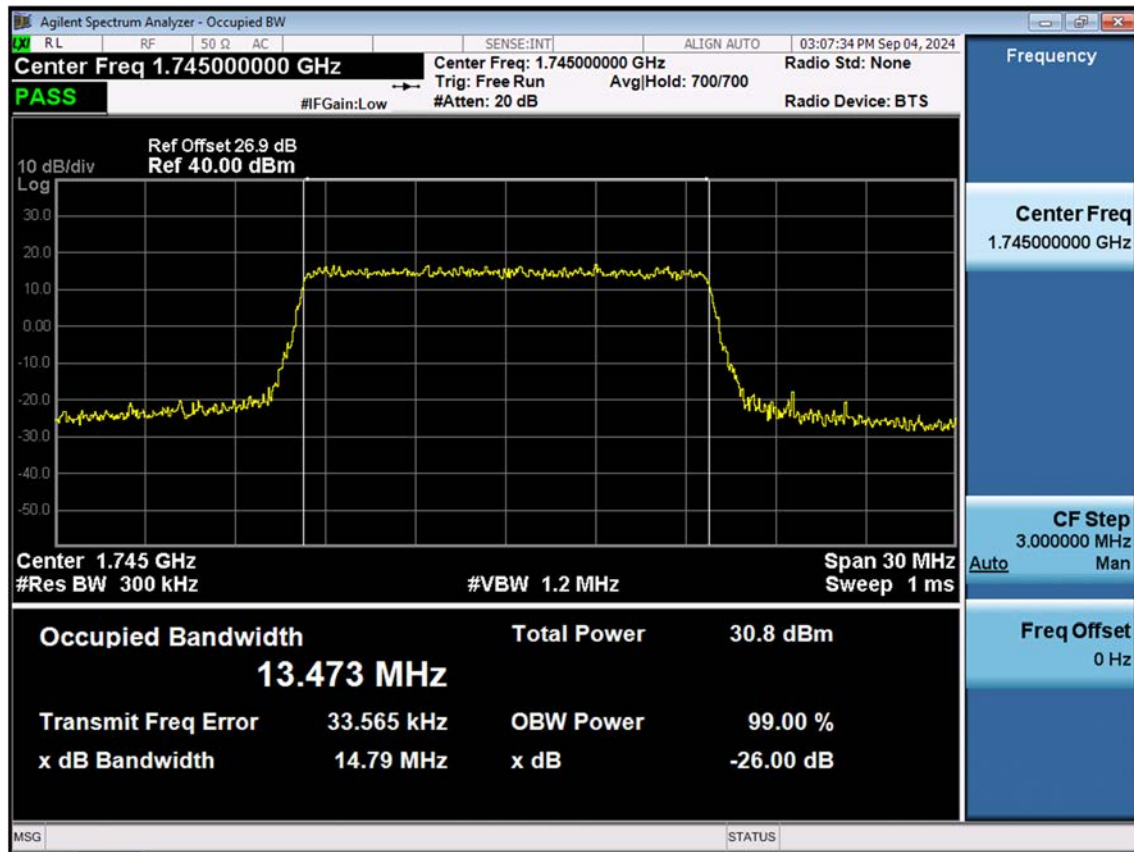
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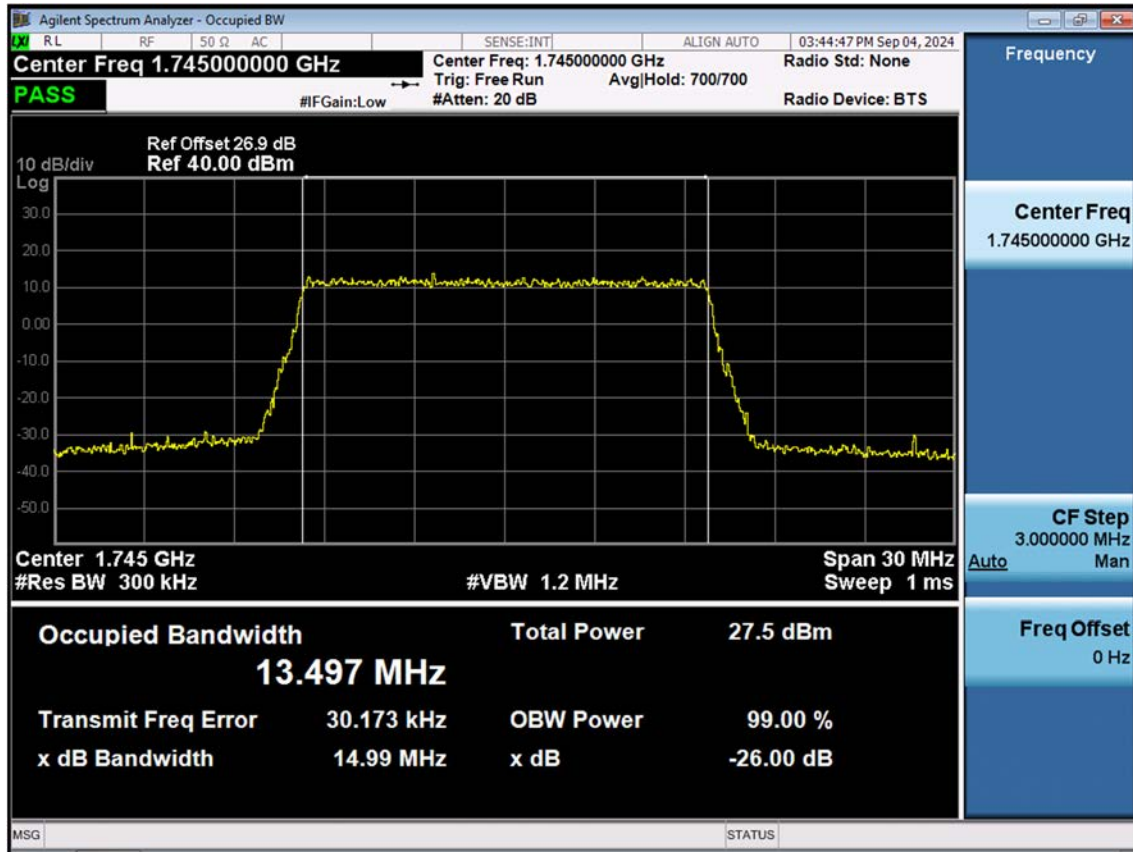
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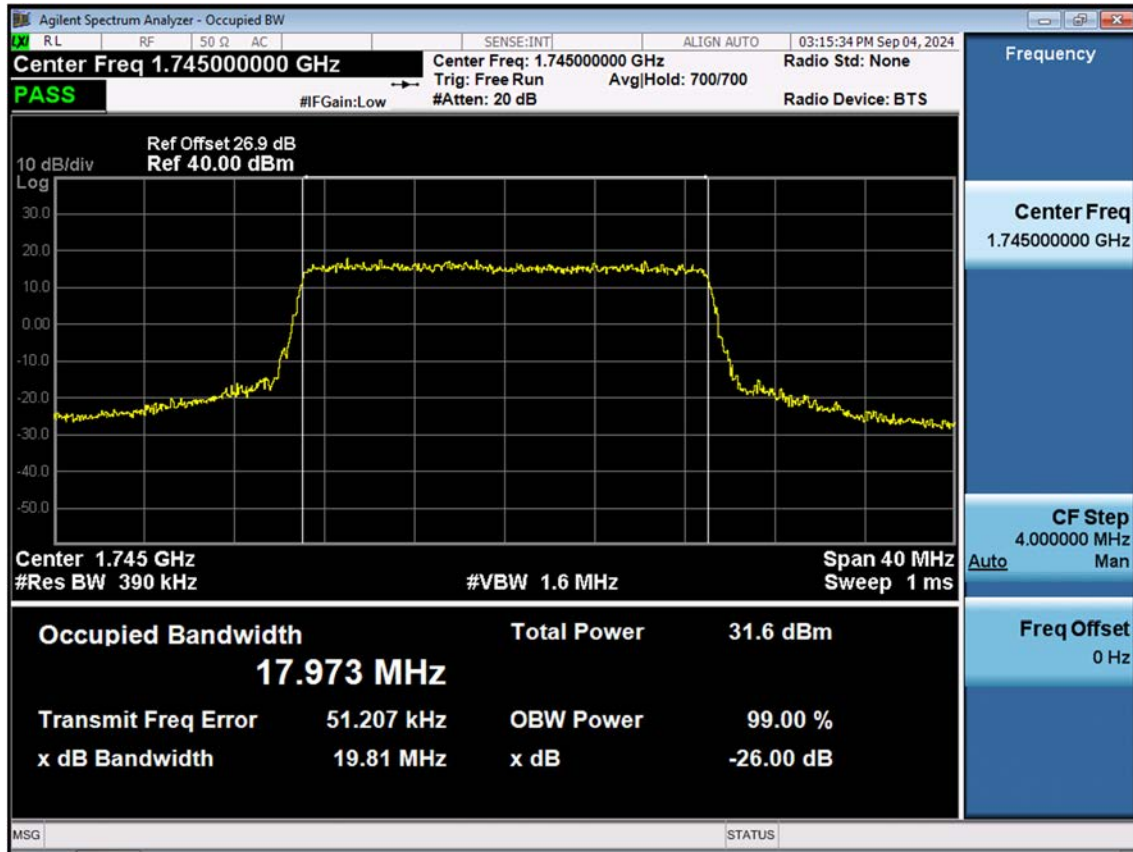
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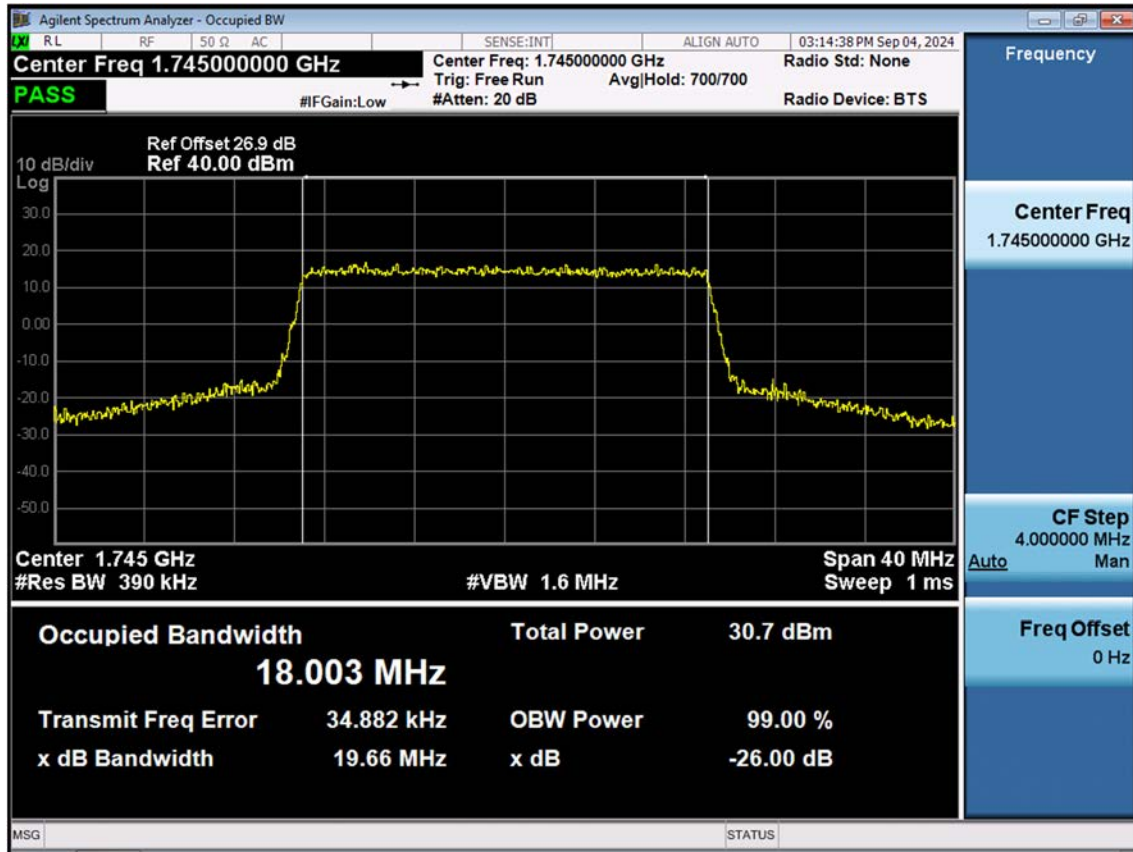
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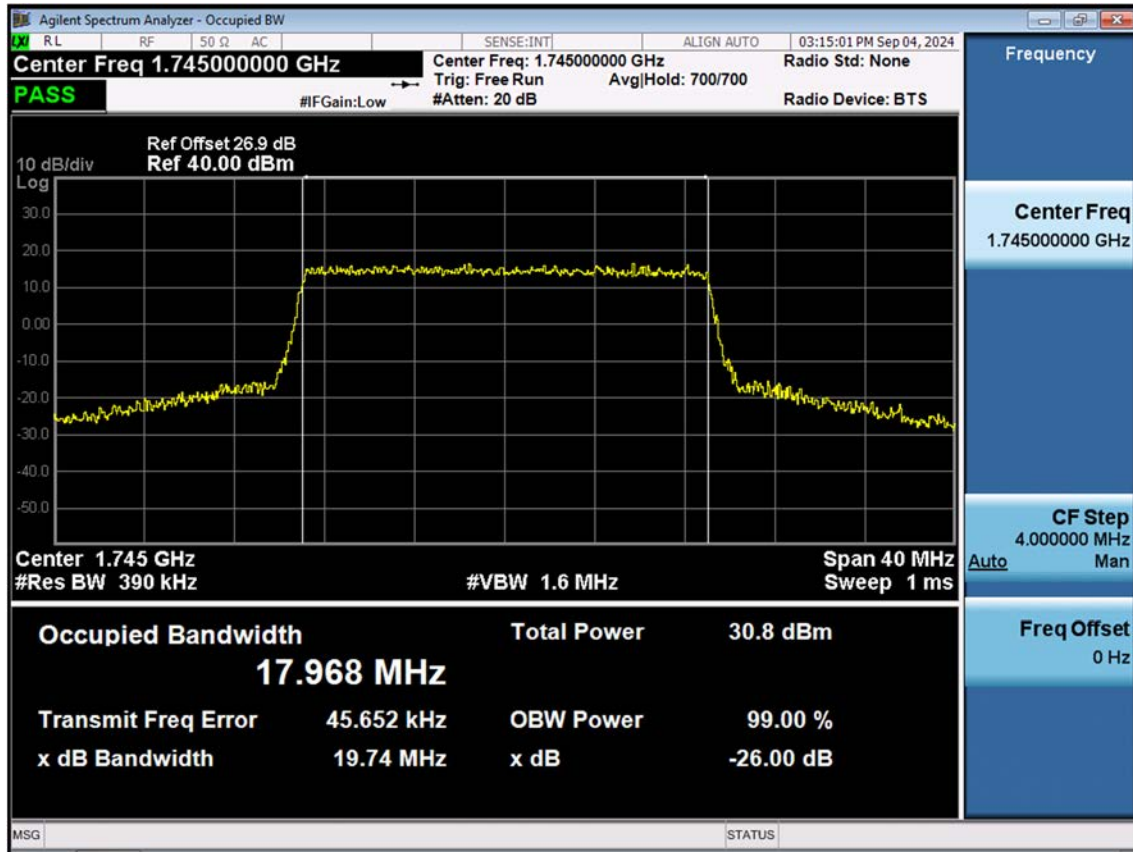
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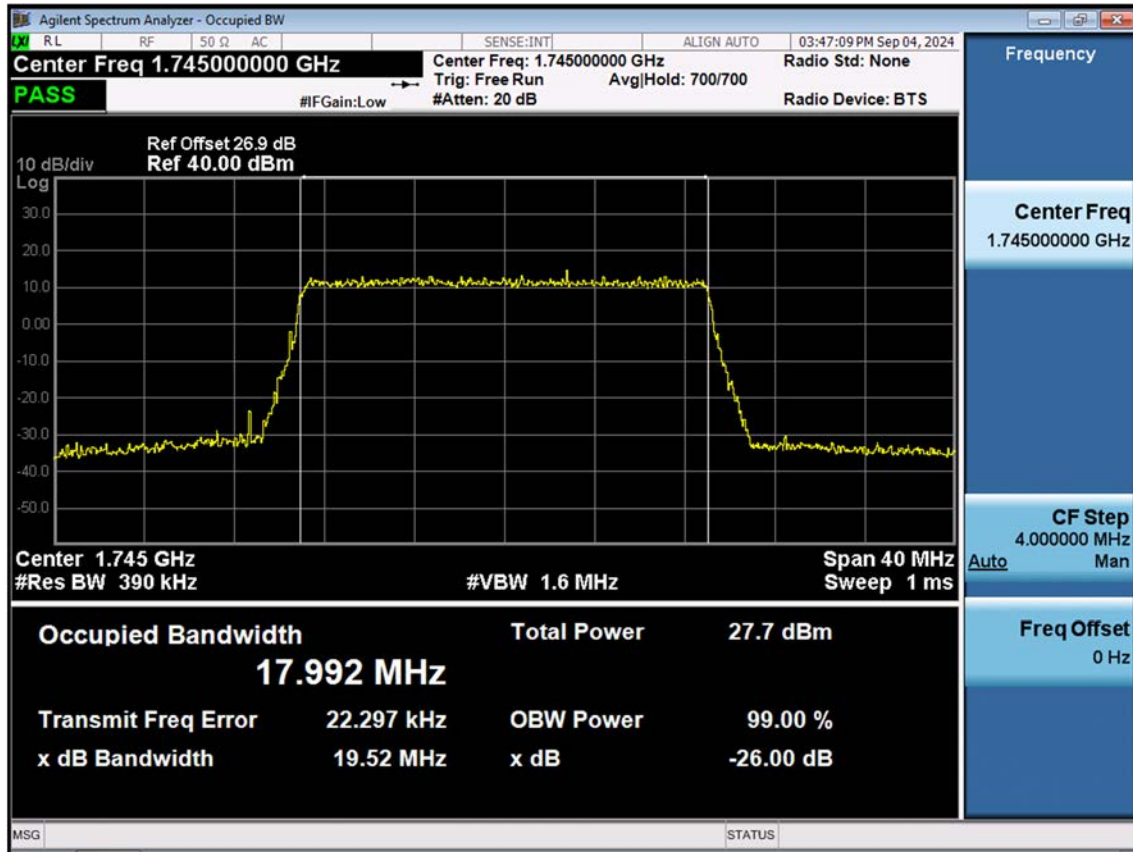
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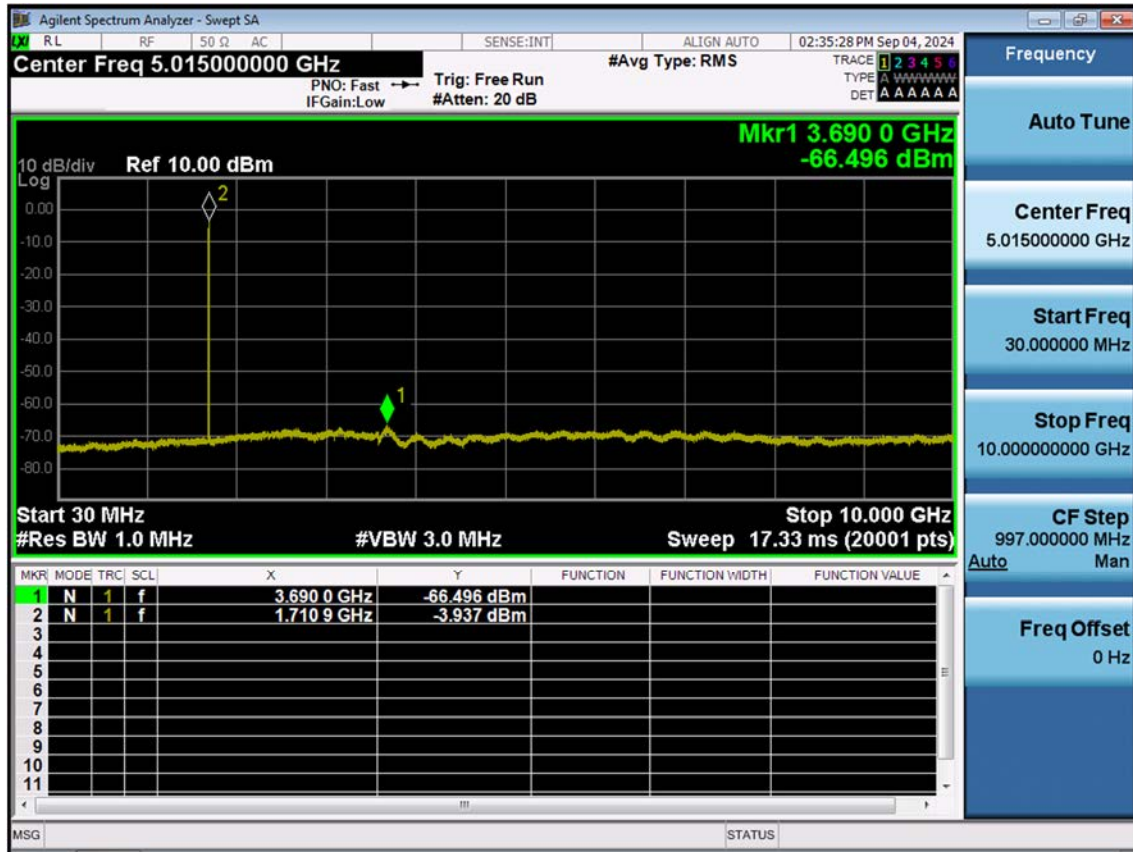
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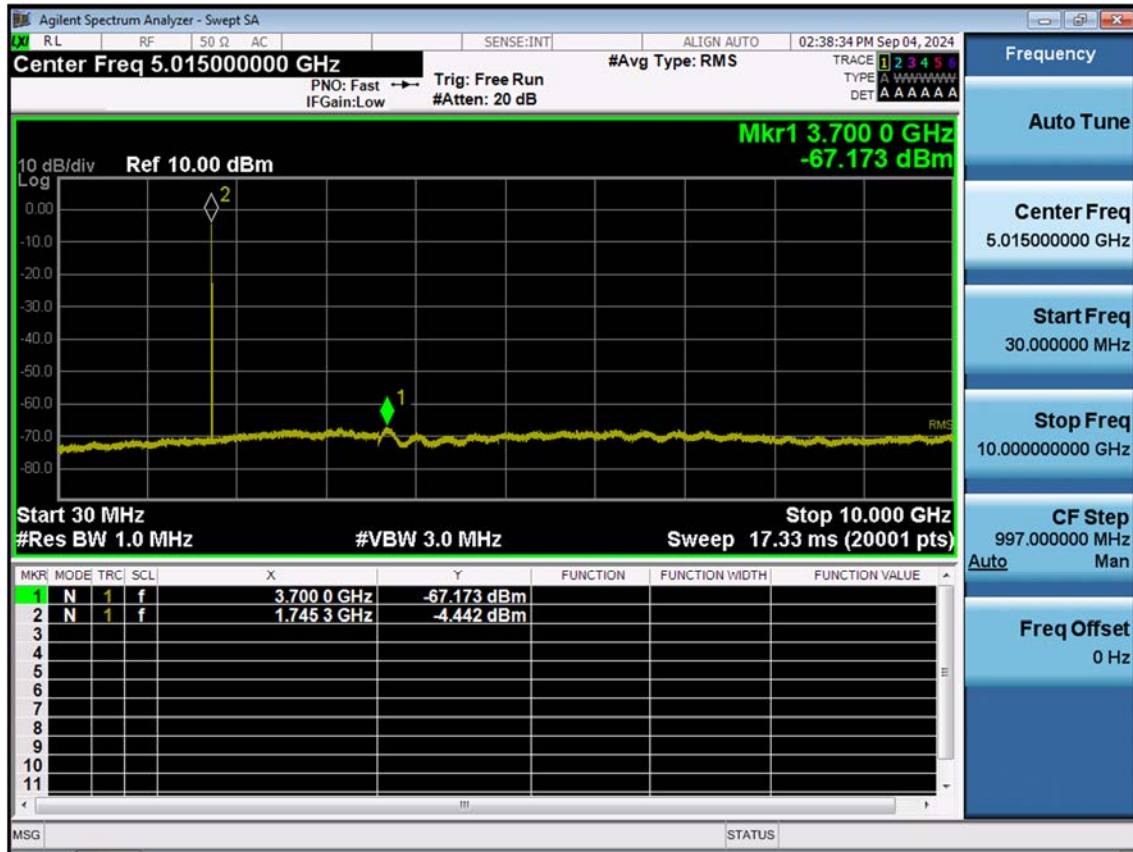
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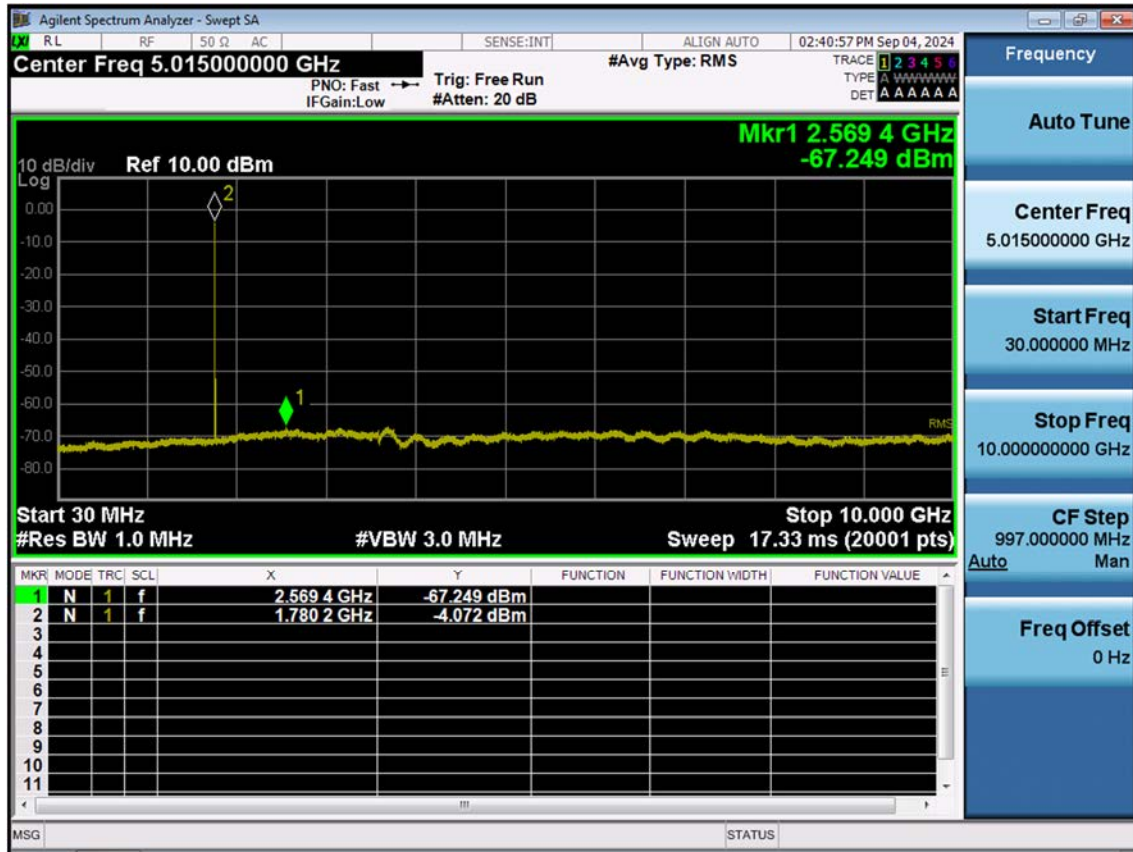
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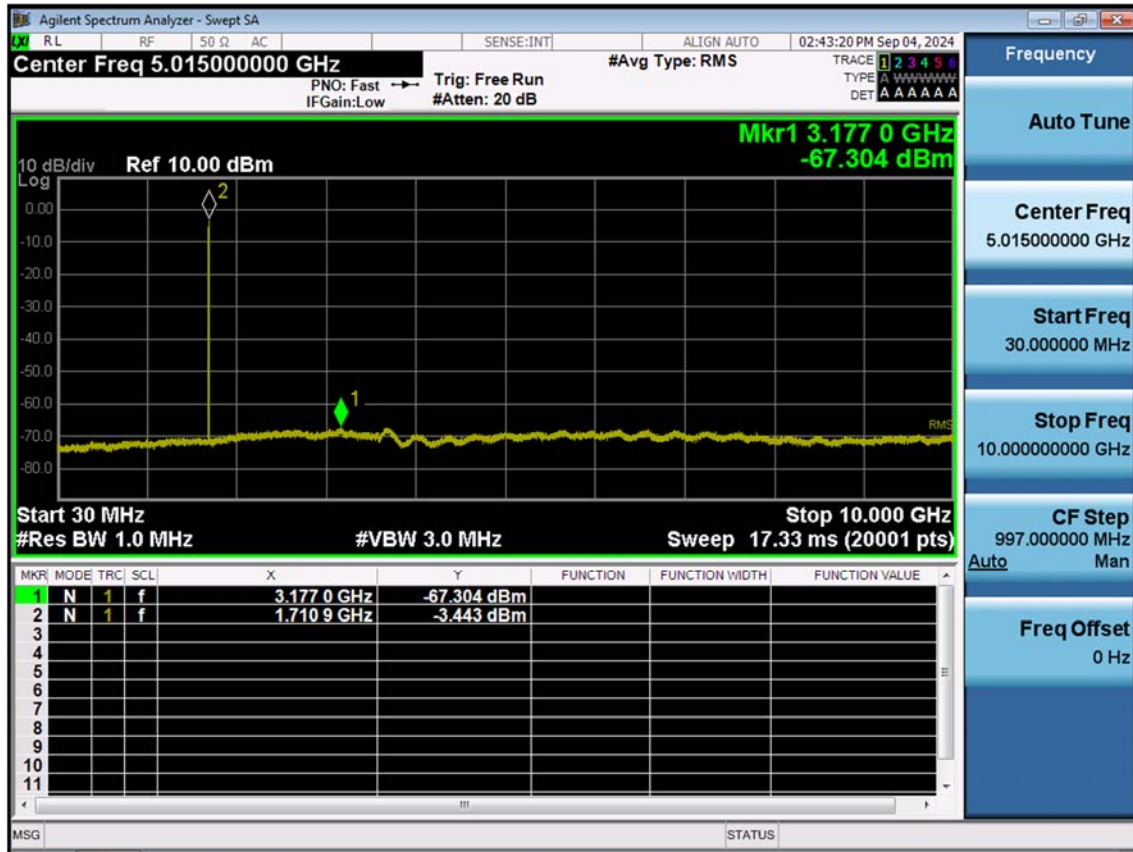
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



LTE B66_1.4M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



LTE B66_3 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



LTE B66_3 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB

