

TEST REPORT

FCC LTE B66 Test for SM-S731B/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2507-FC075

DATE OF ISSUE
July 15, 2025

Tested by
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TEST REPORT

REPORT NO.

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Additional Model

SM-S731B

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-S731B/DS

Date of Test

June 05, 2025 ~ July 11, 2025

FCC ID

A3LSMS731B

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	July 15, 2025	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	7
2.1. DESCRIPTION OF EUT	7
2.2. MEASURING INSTRUMENT CALIBRATION	7
2.3. TEST FACILITY	7
3. DESCRIPTION OF TESTS	7
3.1 TEST PROCEDURE	8
3.2 RADIATED POWER	9
3.3 RADIATED SPURIOUS EMISSIONS	10
3.4 PEAK- TO- AVERAGE RATIO	11
3.5 OCCUPIED BANDWIDTH	13
3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL	14
3.7 BAND EDGE	15
3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	17
3.9 WORST CASE(RADIATED TEST)	18
3.10 WORST CASE(CONDUCTED TEST)	19
4. LIST OF TEST EQUIPMENT	20
5. MEASUREMENT UNCERTAINTY	21
6. SUMMARY OF TEST RESULTS	22
7. SAMPLE CALCULATION	23
8. TEST DATA(Main 1 ANT)	25
8.1 EQUIVALENT ISOTROPIC RADIATED POWER	25
8.2 RADIATED SPURIOUS EMISSIONS	28
8.3 PEAK-TO-AVERAGE RATIO	29
8.4 OCCUPIED BANDWIDTH	30
8.5 CONDUCTED SPURIOUS EMISSIONS	31
8.6 BAND EDGE	31
8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	32
9. TEST DATA(Sub 2 ANT)	50
9.1 EQUIVALENT ISOTROPIC RADIATED POWER	50
9.2 RADIATED SPURIOUS EMISSIONS	53
9.3 PEAK-TO-AVERAGE RATIO	54
9.4 OCCUPIED BANDWIDTH	55
9.5 CONDUCTED SPURIOUS EMISSIONS	56
9.6 BAND EDGE	56
9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	57
10. TEST DATA	75
10.1 UPLINK CARRIER AGGREGATION	75
10.1.1 RADIATED SPURIOUS EMISSIONS	75
11. TEST PLOTS(Main 1 ANT)	76
12. TEST PLOTS(Sub 2 ANT)	197
13. ANNEX A_ TEST SETUP PHOTO	318

MEASUREMENT REPORT

1. GENERAL INFORMATION

Model(s):	SM-S731B/DS
Additional Model(s)	SM-S731B
Tx Frequency:	1710.7 MHz – 1779.3 MHz (LTE – Band 66(1.4 MHz)) 1711.5 MHz – 1778.5 MHz (LTE – Band 66(3 MHz)) 1712.5 MHz – 1777.5 MHz (LTE – Band 66(5 MHz)) 1715.0 MHz – 1775.0 MHz (LTE – Band 66(10 MHz)) 1717.5 MHz – 1772.5 MHz (LTE – Band 66(15 MHz)) 1720.0 MHz – 1770.0 MHz (LTE – Band 66(20 MHz))
Serial number:	Radiated : R3CY40QLLEZ Conducted : R3CY40QLBND
Antenna Information	Please refer to the Antenna Specification document.

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(1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.245	23.89
		1M10W7D	16QAM	0.204	23.09
		1M10W7D	64QAM	0.156	21.94
		1M10W7D	256QAM	0.076	18.82
LTE – Band66(3)	1711.5 – 1778.5	2M72G7D	QPSK	0.249	23.96
		2M70W7D	16QAM	0.204	23.09
		2M71W7D	64QAM	0.157	21.95
		2M70W7D	256QAM	0.078	18.91
LTE – Band66(5)	1712.5 – 1777.5	4M53G7D	QPSK	0.248	23.95
		4M50W7D	16QAM	0.209	23.21
		4M53W7D	64QAM	0.158	21.99
		4M54W7D	256QAM	0.078	18.92
LTE – Band66(10)	1715.0 – 1775.0	9M03G7D	QPSK	0.252	24.01
		9M03W7D	16QAM	0.207	23.15
		9M03W7D	64QAM	0.160	22.04
		9M03W7D	256QAM	0.081	19.06
LTE – Band66(15)	1717.5 – 1772.5	13M5G7D	QPSK	0.264	24.22
		13M5W7D	16QAM	0.221	23.44
		13M5W7D	64QAM	0.170	22.31
		13M5W7D	256QAM	0.083	19.21
LTE – Band66(20)	1720.0 – 1770.0	17M9G7D	QPSK	0.272	24.35
		17M9W7D	16QAM	0.226	23.55
		18M0W7D	64QAM	0.175	22.43
		17M9W7D	256QAM	0.087	19.38

Sub 2 ANT

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band66(1.4)	1710.7 – 1779.3	1M10G7D	QPSK	0.101	20.05
		1M10W7D	16QAM	0.084	19.23
		1M10W7D	64QAM	0.070	18.42
		1M10W7D	256QAM	0.033	15.19
LTE – Band66(3)	1711.5 – 1778.5	2M72G7D	QPSK	0.102	20.07
		2M71W7D	16QAM	0.086	19.33
		2M71W7D	64QAM	0.070	18.48
		2M70W7D	256QAM	0.034	15.33
LTE – Band66(5)	1712.5 – 1777.5	4M53G7D	QPSK	0.104	20.15
		4M52W7D	16QAM	0.085	19.30
		4M52W7D	64QAM	0.070	18.48
		4M53W7D	256QAM	0.034	15.36
LTE – Band66(10)	1715.0 – 1775.0	9M01G7D	QPSK	0.106	20.25
		9M02W7D	16QAM	0.084	19.25
		9M05W7D	64QAM	0.069	18.36
		9M02W7D	256QAM	0.034	15.36
LTE – Band66(15)	1717.5 – 1772.5	13M5G7D	QPSK	0.109	20.37
		13M5W7D	16QAM	0.087	19.41
		13M5W7D	64QAM	0.069	18.41
		13M5W7D	256QAM	0.035	15.42
LTE – Band66(20)	1720.0 – 1770.0	18M0G7D	QPSK	0.109	20.36
		17M9W7D	16QAM	0.086	19.34
		17M9W7D	64QAM	0.071	18.54
		17M9W7D	256QAM	0.035	15.49

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.

Detailed description of test facility was submitted to the Commission and accepted dated March 11, 2024 (Registration Number: KR0032).

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 $\geq 3 \times$ 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;

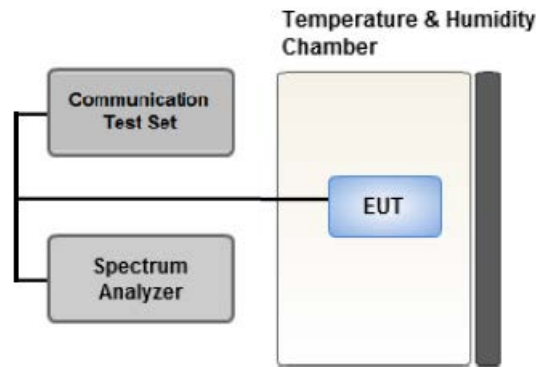
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

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)

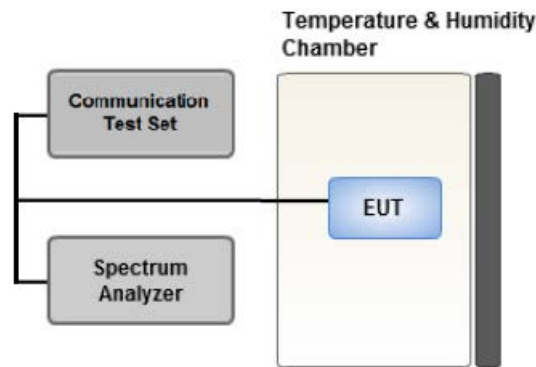
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW $\geq 3 \times$ RBW.

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.

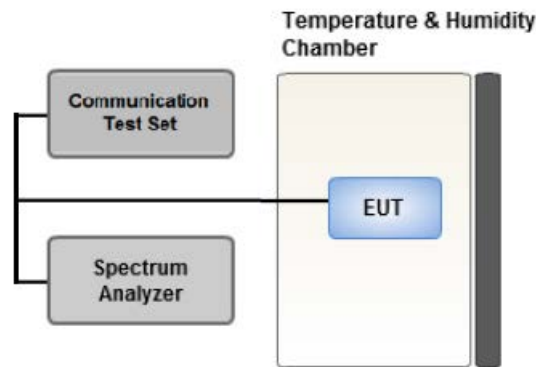
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

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. $VBW \geq 3 \times RBW$
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

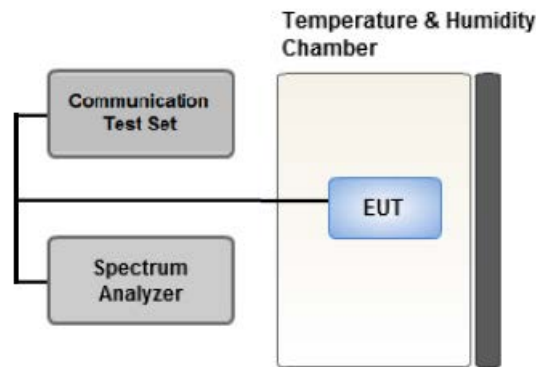
Test Overview

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 $\geq 2 \times \text{Span}/\text{RBW}$
7. Trace mode = trace average
8. Sweep Time > (Number of Points) $\times$ (Symbol Period)
9. The trace was allowed to stabilize

Test Notes

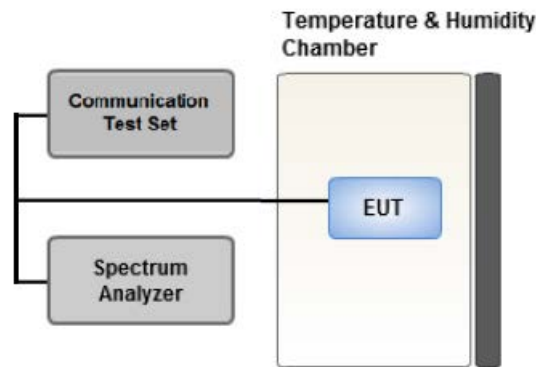
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block 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 $\text{Margin} < 1 \text{ dB}$ the emission level is either corrected by $10 \log(1 \text{ MHz} / \text{RB})$ 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(Main 1 ANT), 15 MHz(Sub 2 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.
- SM-S731B/DS & additional models were tested and the worst case results are reported.
(Worst case : SM-S731B/DS)

[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		Z
Radiated Spurious and Harmonic Emissions	QPSK	See Section 8.2		Z

[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		Z

3.10 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.
 - SM-S731B/DS & additional models were tested and the worst case results are reported.
- (Worst case : SM-S731B/DS)

[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	Manufacture	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	05/14/2026	Annual
Signal Analyzer(2 Hz ~ 50.0 GHz)	N9040B	KEYSIGHT	US55230216	12/09/2025	Annual
Automation Software	FCC 2G/3G/4G Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC NR Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC LTE Radiated	HCT CO., LTD	-	-	-
Automation Software	FCC NR Radiated	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 ($\pm$ dB)
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
Peak- to- Average Ratio	§ 27.50(d)	< 13 dB	PASS
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	Note1
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. Refer to the 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 1.4 MHz	QPSK	-17.46	15.91	10.04	2.06	V	< 1.00	0.245	23.89	1	0
		16-QAM	-18.26	15.11	10.04	2.06	V		0.204	23.09		
		64-QAM	-19.41	13.96	10.04	2.06	V		0.156	21.94		
		256-QAM	-22.53	10.84	10.04	2.06	V		0.076	18.82		
1745.0		QPSK	-17.80	15.66	10.18	2.07	V		0.238	23.77	1	0
		16-QAM	-18.54	14.92	10.18	2.07	V		0.201	23.03		
		64-QAM	-19.67	13.79	10.18	2.07	V		0.155	21.90		
		256-QAM	-22.77	10.69	10.18	2.07	V		0.076	18.80		
1779.3		QPSK	-18.13	15.69	10.26	2.09	V		0.243	23.86	1	0
		16-QAM	-19.00	14.82	10.26	2.09	V		0.199	22.99		
		64-QAM	-20.14	13.68	10.26	2.09	V		0.153	21.85		
		256-QAM	-23.21	10.61	10.26	2.09	V		0.076	18.78		

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 3 MHz	QPSK	-17.57	15.80	10.04	2.06	V	< 1.00	0.239	23.78	1	0
		16-QAM	-18.26	15.11	10.04	2.06	V		0.204	23.09		
		64-QAM	-19.40	13.97	10.04	2.06	V		0.157	21.95		
		256-QAM	-22.48	10.89	10.04	2.06	V		0.077	18.87		
1745.0		QPSK	-17.76	15.70	10.18	2.07	V		0.240	23.81	1	0
		16-QAM	-18.50	14.96	10.18	2.07	V		0.203	23.07		
		64-QAM	-19.63	13.83	10.18	2.07	V		0.156	21.94		
		256-QAM	-22.70	10.76	10.18	2.07	V		0.077	18.87		
1778.5		QPSK	-18.03	15.79	10.26	2.09	V		0.249	23.96	1	0
		16-QAM	-18.95	14.87	10.26	2.09	V		0.201	23.04		
		64-QAM	-20.04	13.78	10.26	2.09	V		0.157	21.95		
		256-QAM	-23.08	10.74	10.26	2.09	V		0.078	18.91		

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 5 MHz	QPSK	-17.44	15.95	10.06	2.06	V	< 1.00	0.248	23.95	1	0
		16-QAM	-18.18	15.21	10.06	2.06	V		0.209	23.21		
		64-QAM	-19.40	13.99	10.06	2.06	V		0.158	21.99		
		256-QAM	-22.49	10.90	10.06	2.06	V		0.078	18.90		
1745.0		QPSK	-17.79	15.67	10.18	2.07	V		0.239	23.78	1	0
		16-QAM	-18.52	14.94	10.18	2.07	V		0.202	23.05		
		64-QAM	-19.66	13.80	10.18	2.07	V		0.155	21.91		
		256-QAM	-22.74	10.72	10.18	2.07	V		0.076	18.83		
1777.5		QPSK	-18.13	15.69	10.26	2.09	V		0.243	23.86	1	0
		16-QAM	-18.91	14.91	10.26	2.09	V		0.203	23.08		
		64-QAM	-20.02	13.80	10.26	2.09	V		0.157	21.97		
		256-QAM	-23.07	10.75	10.26	2.09	V		0.078	18.92		

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 10 MHz	QPSK	-17.51	15.88	10.06	2.06	V	< 1.00	0.244	23.88	1	0
		16-QAM	-18.36	15.03	10.06	2.06	V		0.201	23.03		
		64-QAM	-19.48	13.91	10.06	2.06	V		0.155	21.91		
		256-QAM	-22.44	10.95	10.06	2.06	V		0.079	18.95		
1745.0		QPSK	-17.74	15.72	10.18	2.07	V		0.242	23.83	1	0
		16-QAM	-18.61	14.85	10.18	2.07	V		0.198	22.96		
		64-QAM	-19.73	13.73	10.18	2.07	V		0.153	21.84		
		256-QAM	-22.67	10.79	10.18	2.07	V		0.078	18.90		
1775.0		QPSK	-17.91	15.85	10.25	2.09	V		0.252	24.01	1	0
		16-QAM	-18.77	14.99	10.25	2.09	V		0.207	23.15		
		64-QAM	-19.88	13.88	10.25	2.09	V		0.160	22.04		
		256-QAM	-22.86	10.90	10.25	2.09	V		0.081	19.06		

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 15 MHz	QPSK	-17.50	15.92	10.08	2.06	V	< 1.00	0.248	23.94	1	0
		16-QAM	-18.29	15.13	10.08	2.06	V		0.207	23.15		
		64-QAM	-19.42	14.00	10.08	2.06	V		0.159	22.02		
		256-QAM	-22.47	10.95	10.08	2.06	V		0.079	18.97		
1745.0		QPSK	-17.77	15.69	10.18	2.07	V		0.240	23.80	1	0
		16-QAM	-18.58	14.88	10.18	2.07	V		0.199	22.99		
		64-QAM	-19.72	13.74	10.18	2.07	V		0.153	21.85		
		256-QAM	-22.74	10.72	10.18	2.07	V		0.076	18.83		
1772.5		QPSK	-17.70	16.06	10.25	2.09	V		0.264	24.22	1	0
		16-QAM	-18.48	15.28	10.25	2.09	V		0.221	23.44		
		64-QAM	-19.61	14.15	10.25	2.09	V		0.170	22.31		
		256-QAM	-22.71	11.05	10.25	2.09	V		0.083	19.21		

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 20 MHz	QPSK	-17.46	15.96	10.08	2.06	V	< 1.00	0.250	23.98	1	0
		16-QAM	-18.26	15.16	10.08	2.06	V		0.208	23.18		
		64-QAM	-19.40	14.02	10.08	2.06	V		0.160	22.04		
		256-QAM	-22.39	11.03	10.08	2.06	V		0.080	19.05		
1745.0		QPSK	-17.55	15.91	10.18	2.07	V		0.252	24.02	1	0
		16-QAM	-18.39	15.07	10.18	2.07	V		0.208	23.18		
		64-QAM	-19.52	13.94	10.18	2.07	V		0.160	22.05		
		256-QAM	-22.48	10.98	10.18	2.07	V		0.081	19.09		
1770.0		QPSK	-17.50	16.20	10.24	2.09	V		0.272	24.35	1	0
		16-QAM	-18.30	15.40	10.24	2.09	V		0.226	23.55		
		64-QAM	-19.42	14.28	10.24	2.09	V		0.175	22.43		
		256-QAM	-22.47	11.23	10.24	2.09	V		0.087	19.38		

8.2 RADIATED SPURIOUS EMISSIONS

MODE: LTE B66
 MODULATION SIGNAL: 20 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
132072 (1720.0)	3 440.00	-41.83	12.40	-60.53	3.04	V	-51.17	1	0
	5 160.00	-42.99	12.44	-55.63	3.76	V	-46.95		
	6 880.00	-43.54	11.82	-50.55	4.44	V	-43.17		
132322 (1745.0)	3 490.00	-43.82	12.34	-62.07	3.04	V	-52.77	1	0
	5 235.00	-43.52	12.84	-56.10	3.78	V	-47.04		
	6 980.00	-43.46	11.40	-49.78	4.48	V	-42.86		
132572 (1770.0)	3 540.00	-43.06	12.34	-60.81	3.06	V	-51.53	1	0
	5 310.00	-44.63	13.08	-58.01	3.82	H	-48.75		
	7 080.00	-43.68	10.93	-48.33	4.49	V	-41.89		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
66	1.4 MHz	1745.0	QPSK	6	0	5.19	13.00
			16-QAM			5.97	
			64-QAM			6.21	
			256-QAM			6.03	
	3 MHz		QPSK	15		5.32	
			16-QAM			6.01	
			64-QAM			6.24	
			256-QAM			6.13	
	5 MHz		QPSK	25		5.34	
			16-QAM			6.08	
			64-QAM			6.28	
			256-QAM			6.16	
	10 MHz		QPSK	50		5.45	
			16-QAM			6.11	
			64-QAM			6.35	
			256-QAM			6.19	
	15 MHz		QPSK	75		5.47	
			16-QAM			6.18	
			64-QAM			6.38	
			256-QAM			6.18	
	20 MHz		QPSK	100		5.46	
			16-QAM			6.21	
			64-QAM			6.43	
			256-QAM			6.22	

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	1.4 MHz	1745.0	QPSK	6	0	1.0981
			16-QAM			1.0974
			64-QAM			1.0963
			256-QAM			1.0960
	3 MHz		QPSK	15		2.7208
			16-QAM			2.7041
			64-QAM			2.7061
			256-QAM			2.7044
	5 MHz		QPSK	25		4.5309
			16-QAM			4.5024
			64-QAM			4.5340
			256-QAM			4.5416
	10 MHz		QPSK	50		9.0262
			16-QAM			9.0310
			64-QAM			9.0333
			256-QAM			9.0304
	15 MHz		QPSK	75		13.510
			16-QAM			13.503
			64-QAM			13.474
			256-QAM			13.521
	20 MHz		QPSK	100		17.940
			16-QAM			17.914
			64-QAM			17.945
			256-QAM			17.915

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	1.4	1710.7	6.2912	28.591	-63.530	-34.939	-13.00
		1745.0	6.1616	28.591	-64.287	-35.696	
		1779.3	3.6691	27.976	-63.678	-35.702	
	3	1711.5	5.6730	28.591	-64.419	-35.828	
		1745.0	6.5604	28.591	-63.150	-34.559	
		1778.5	3.7089	27.976	-63.858	-35.882	
	5	1712.5	3.4597	27.976	-64.065	-36.089	
		1745.0	6.0519	28.591	-64.490	-35.899	
		1777.5	3.6790	27.976	-64.248	-36.272	
	10	1715.0	3.6790	27.976	-63.925	-35.949	
		1745.0	5.8226	28.591	-62.901	-34.310	
		1775.0	8.1356	28.591	-64.086	-35.495	
	15	1717.5	6.3011	28.591	-64.554	-35.963	
		1745.0	3.2005	27.976	-64.254	-36.278	
		1772.5	3.0409	27.976	-64.018	-36.042	
	20	1720.0	5.9023	28.591	-64.101	-35.510	
		1745.0	5.3141	28.591	-64.105	-35.514	
		1770.0	3.6691	27.976	-64.511	-36.535	

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

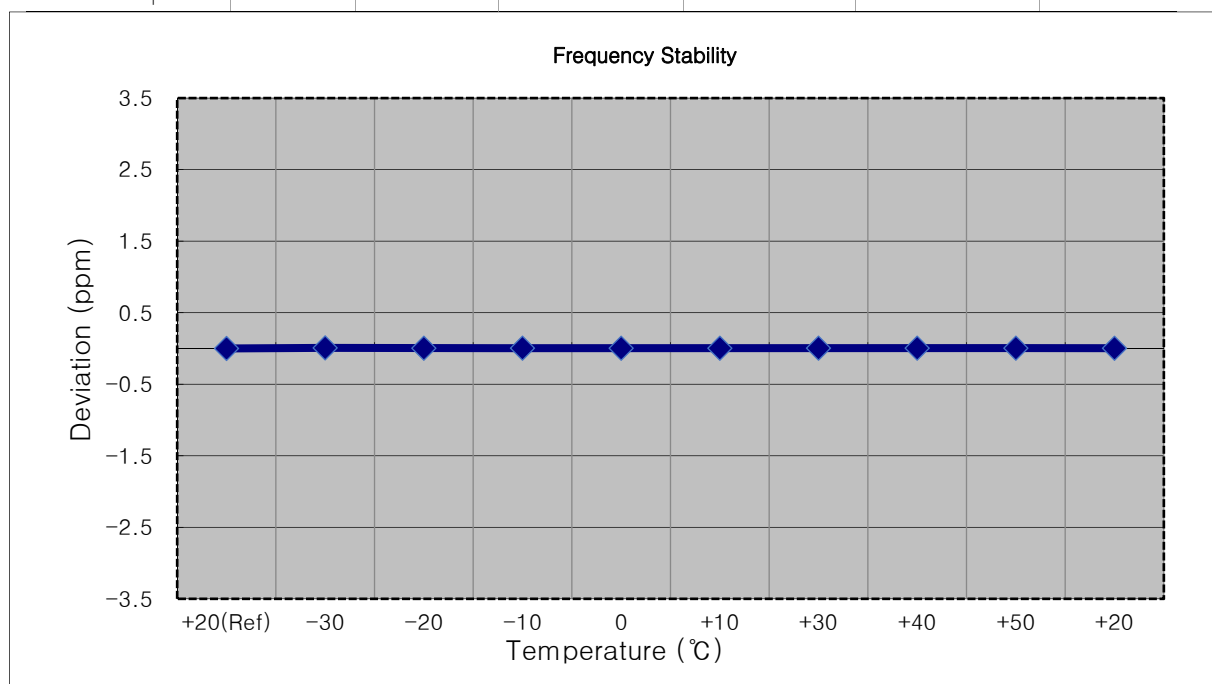
8.6 BAND EDGE

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

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

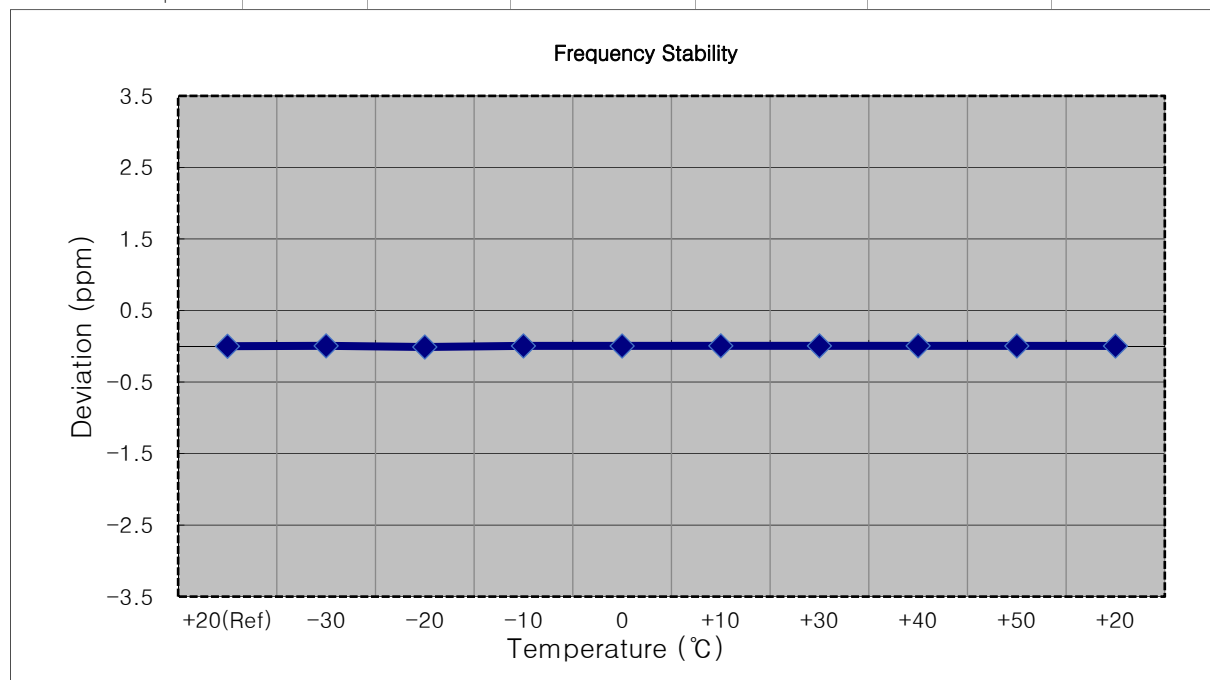
MODE:	<u>LTE 66</u>
OPERATING FREQUENCY:	<u>1710,700,000 Hz</u>
CHANNEL:	<u>131979 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

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 700 021	13.9	0.000 001	0.008
100 %		-20	1710 700 014	6.7	0.000 000	0.004
100 %		-10	1710 700 014	7.1	0.000 000	0.004
100 %		0	1710 700 014	6.9	0.000 000	0.004
100 %		+10	1710 700 013	6.3	0.000 000	0.004
100 %		+30	1710 700 015	7.4	0.000 000	0.004
100 %		+40	1710 700 015	7.5	0.000 000	0.004
100 %		+50	1710 700 015	7.8	0.000 000	0.005
Batt. Endpoint	3.300	+20	1710 700 013	5.7	0.000 000	0.003



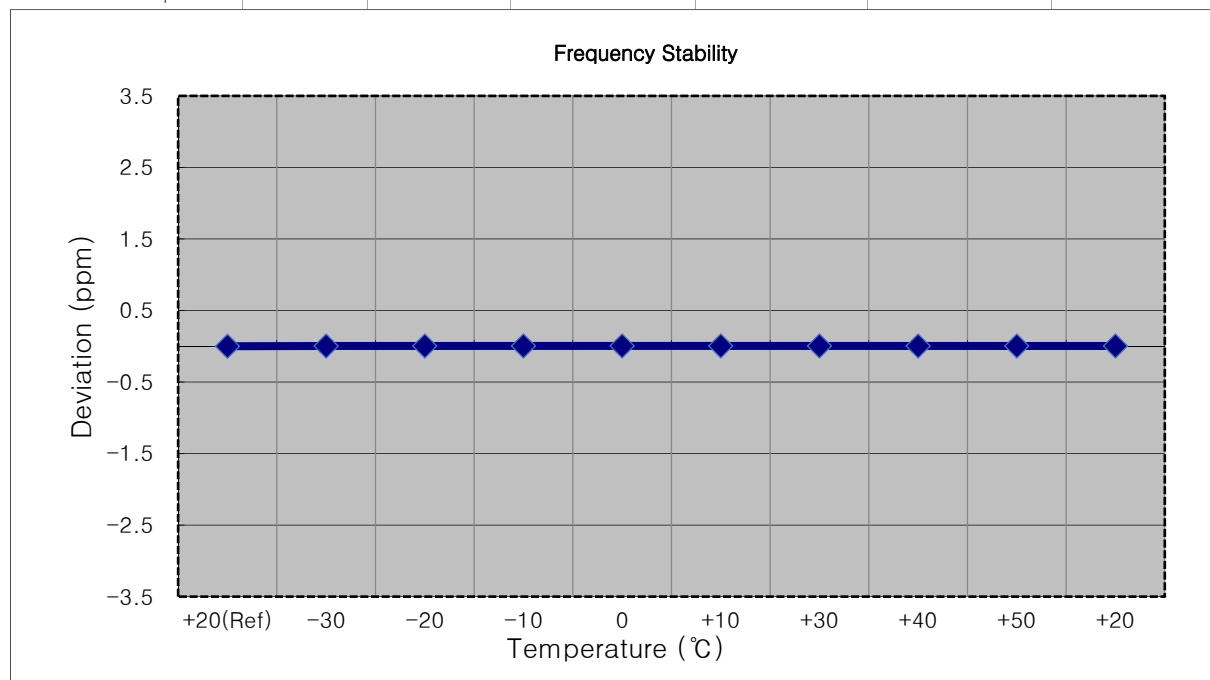
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1711,500,000 Hz
 ■ CHANNEL: 131987 (3 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1711 500 009	0.0	0.000 000	0.000
100 %		-30	1711 500 018	9.2	0.000 001	0.005
100 %		-20	1711 499 991	-17.7	-0.000 001	-0.010
100 %		-10	1711 500 017	7.9	0.000 000	0.005
100 %		0	1711 500 016	7.0	0.000 000	0.004
100 %		+10	1711 500 019	9.8	0.000 001	0.006
100 %		+30	1711 500 018	9.2	0.000 001	0.005
100 %		+40	1711 500 019	10.2	0.000 001	0.006
100 %		+50	1711 500 017	7.7	0.000 000	0.004
Batt. Endpoint	3.300	+20	1711 500 016	6.8	0.000 000	0.004



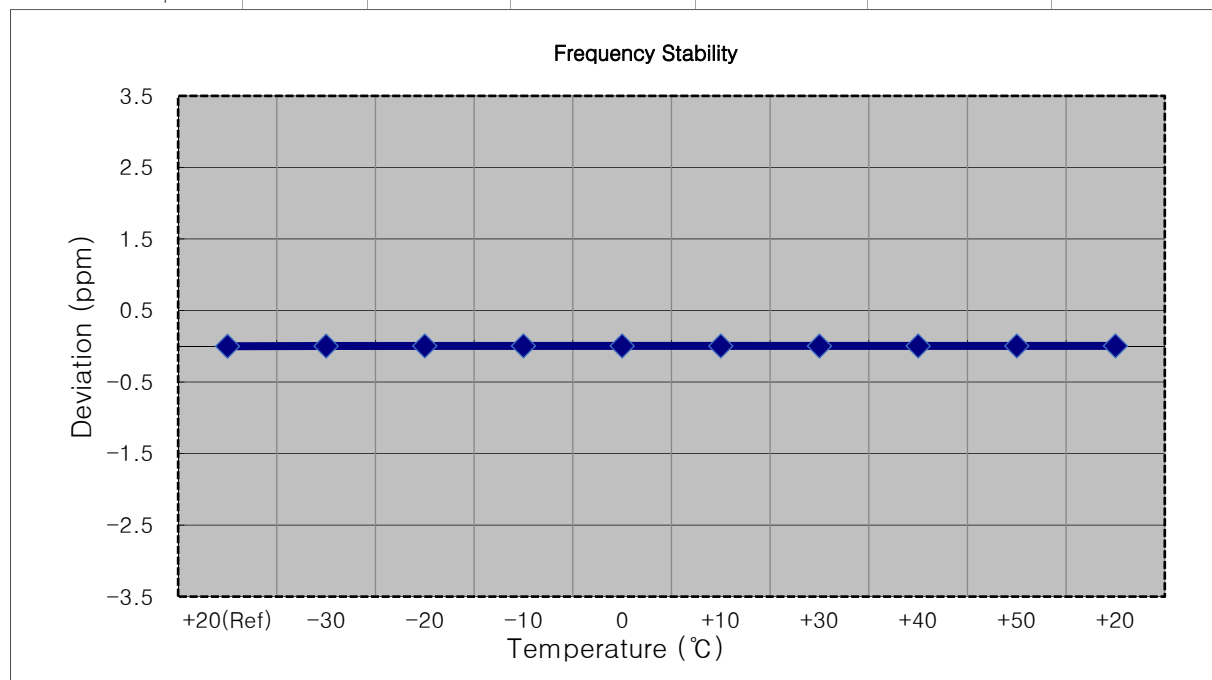
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1712,500,000 Hz
 ■ CHANNEL: 131997 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1712 499 987	0.0	0.000 000	0.000
100 %		-30	1712 499 993	5.6	0.000 000	0.003
100 %		-20	1712 499 993	5.8	0.000 000	0.003
100 %		-10	1712 499 993	5.8	0.000 000	0.003
100 %		0	1712 499 995	7.3	0.000 000	0.004
100 %		+10	1712 499 995	7.7	0.000 000	0.004
100 %		+30	1712 499 994	7.0	0.000 000	0.004
100 %		+40	1712 499 994	6.9	0.000 000	0.004
100 %		+50	1712 499 993	6.2	0.000 000	0.004
Batt. Endpoint	3.300	+20	1712 499 993	6.2	0.000 000	0.004



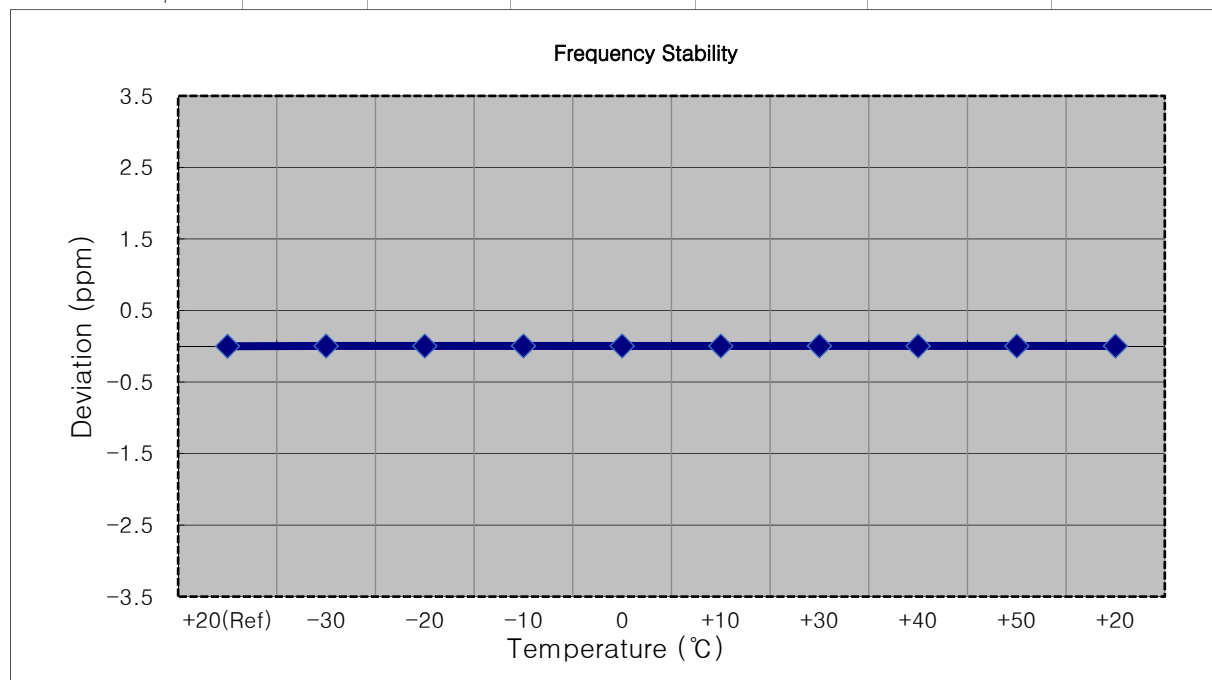
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1715,000,000 Hz
- ▣ CHANNEL: 132022 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1715 000 006	0.0	0.000 000	0.000
100 %		-30	1715 000 011	5.5	0.000 000	0.003
100 %		-20	1715 000 013	7.7	0.000 000	0.004
100 %		-10	1715 000 015	9.2	0.000 001	0.005
100 %		0	1715 000 013	7.9	0.000 000	0.005
100 %		+10	1715 000 013	7.0	0.000 000	0.004
100 %		+30	1715 000 011	5.4	0.000 000	0.003
100 %		+40	1715 000 013	7.3	0.000 000	0.004
100 %		+50	1715 000 013	7.6	0.000 000	0.004
Batt. Endpoint	3.300	+20	1715 000 014	8.5	0.000 000	0.005



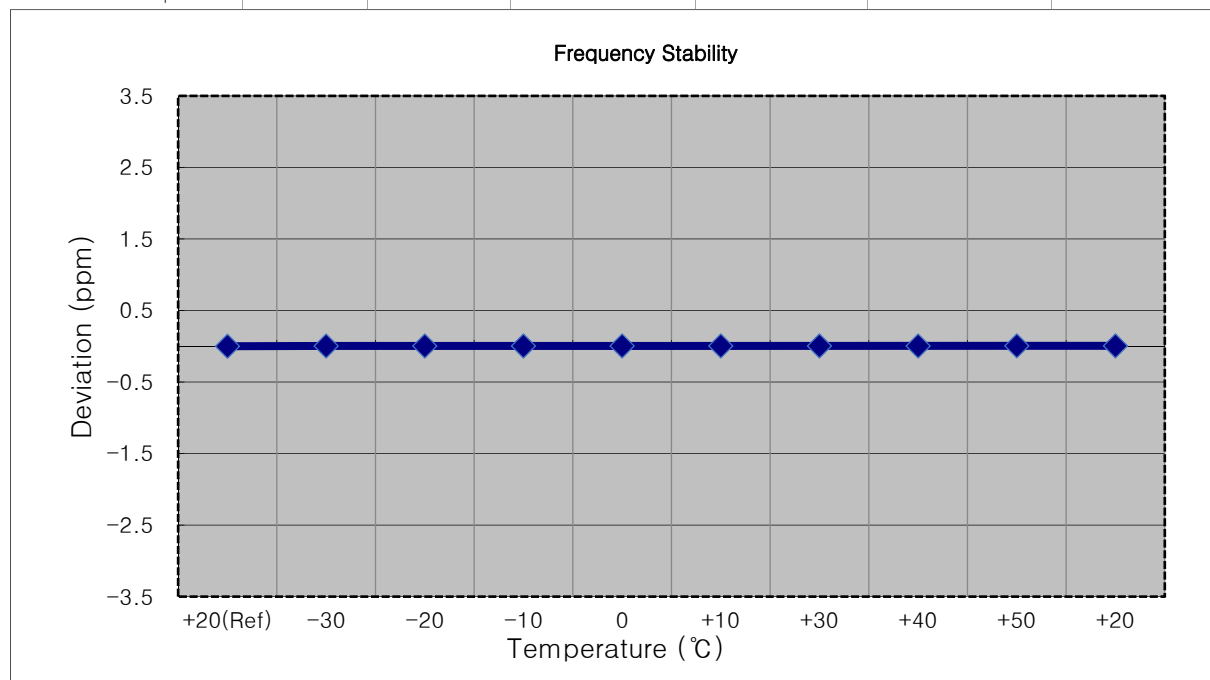
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1717,500,000 Hz
- ▣ CHANNEL: 132047 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1717 500 006	0.0	0.000 000	0.000
100 %		-30	1717 500 013	6.8	0.000 000	0.004
100 %		-20	1717 500 012	6.2	0.000 000	0.004
100 %		-10	1717 500 014	7.8	0.000 000	0.005
100 %		0	1717 500 013	7.3	0.000 000	0.004
100 %		+10	1717 500 012	6.3	0.000 000	0.004
100 %		+30	1717 500 013	7.4	0.000 000	0.004
100 %		+40	1717 500 012	6.2	0.000 000	0.004
100 %		+50	1717 500 013	6.8	0.000 000	0.004
Batt. Endpoint	3.300	+20	1717 500 012	6.2	0.000 000	0.004



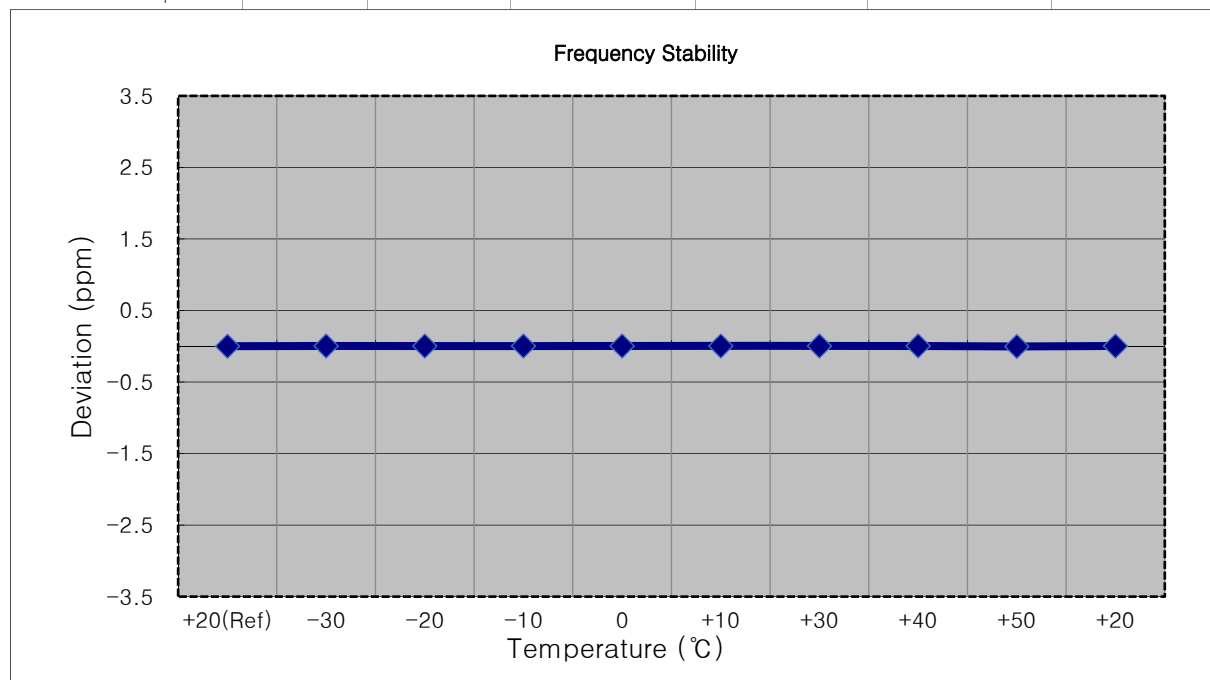
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1720,000,000 Hz
- ▣ CHANNEL: 132072 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1720 000 008	0.0	0.000 000	0.000
100 %		-30	1720 000 015	7.0	0.000 000	0.004
100 %		-20	1720 000 015	7.0	0.000 000	0.004
100 %		-10	1720 000 014	6.1	0.000 000	0.004
100 %		0	1720 000 016	7.8	0.000 000	0.005
100 %		+10	1720 000 016	7.9	0.000 000	0.005
100 %		+30	1720 000 015	7.6	0.000 000	0.004
100 %		+40	1720 000 014	6.4	0.000 000	0.004
100 %		+50	1720 000 018	10.0	0.000 001	0.006
Batt. Endpoint	3.300	+20	1720 000 017	9.3	0.000 001	0.005



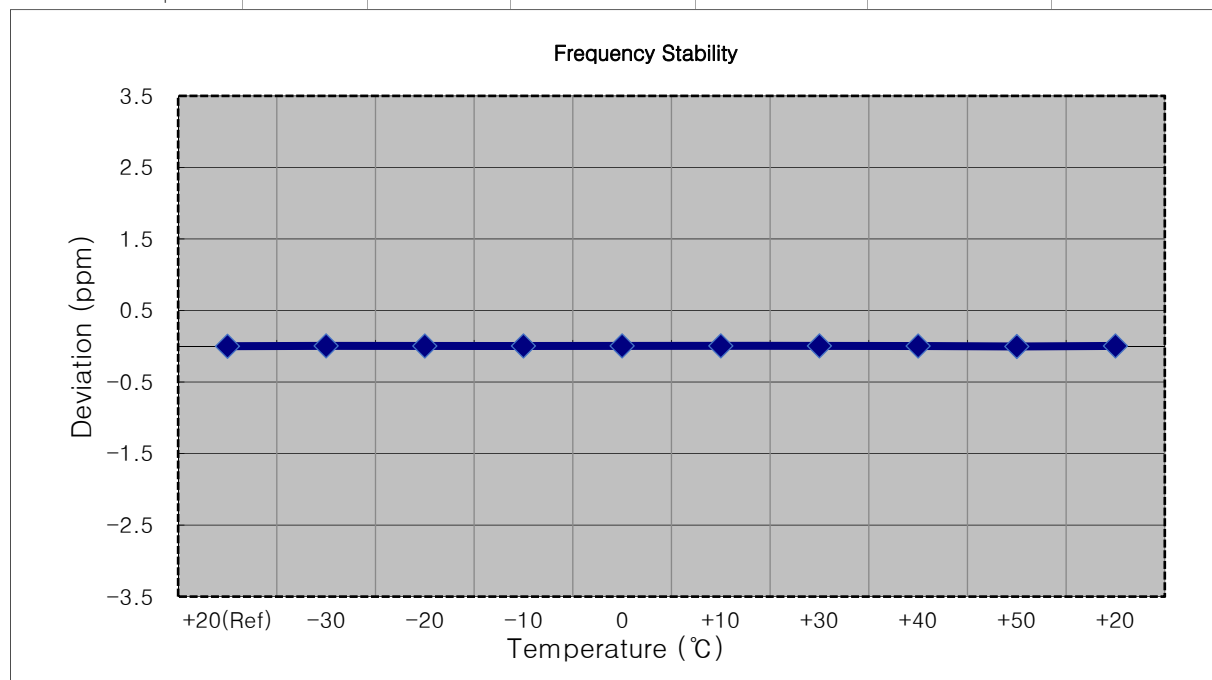
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1745,000,000 Hz
 ■ CHANNEL: 132322 (1.4 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 008	0.0	0.000 000	0.000
100 %		-30	1745 000 014	6.3	0.000 000	0.004
100 %		-20	1745 000 013	5.0	0.000 000	0.003
100 %		-10	1745 000 014	6.4	0.000 000	0.004
100 %		0	1745 000 014	6.5	0.000 000	0.004
100 %		+10	1745 000 015	7.1	0.000 000	0.004
100 %		+30	1745 000 014	6.7	0.000 000	0.004
100 %		+40	1745 000 016	8.5	0.000 000	0.005
100 %		+50	1745 000 002	-5.7	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1745 000 013	5.3	0.000 000	0.003



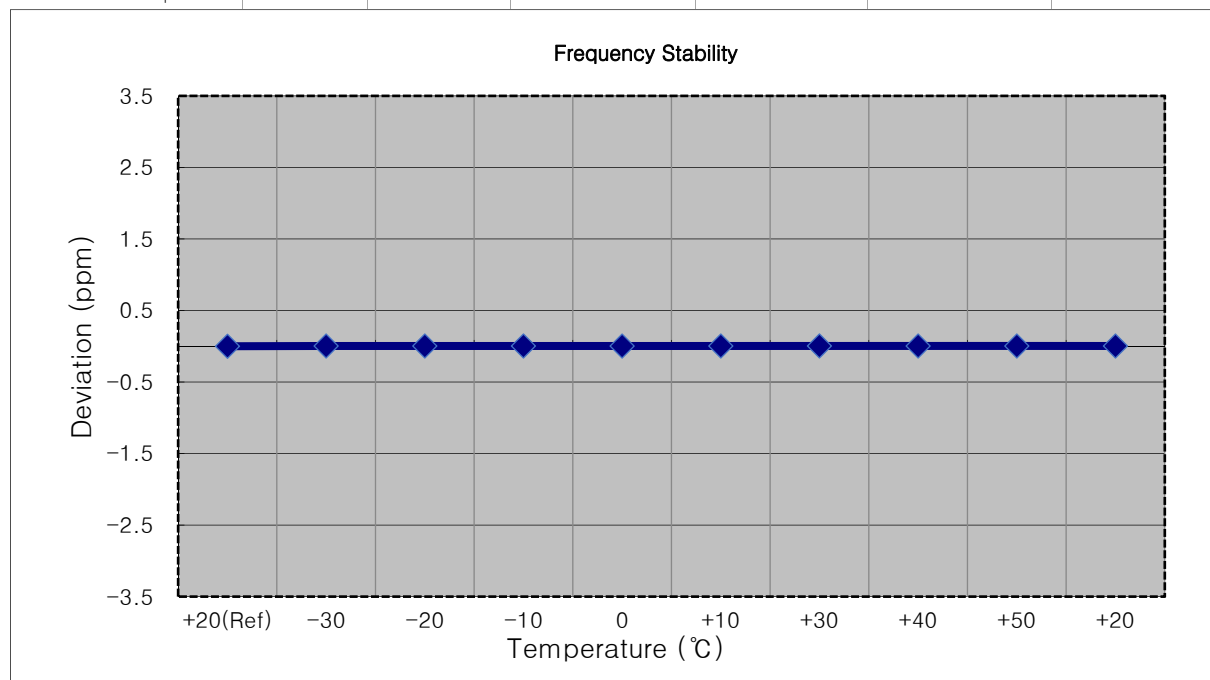
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 009	0.0	0.000 000	0.000
100 %		-30	1745 000 018	9.0	0.000 001	0.005
100 %		-20	1745 000 015	6.2	0.000 000	0.004
100 %		-10	1745 000 016	7.6	0.000 000	0.004
100 %		0	1745 000 018	9.1	0.000 001	0.005
100 %		+10	1745 000 018	9.0	0.000 001	0.005
100 %		+30	1745 000 018	9.5	0.000 001	0.005
100 %		+40	1745 000 015	6.2	0.000 000	0.004
100 %		+50	1745 000 004	-5.3	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1745 000 017	8.2	0.000 000	0.005



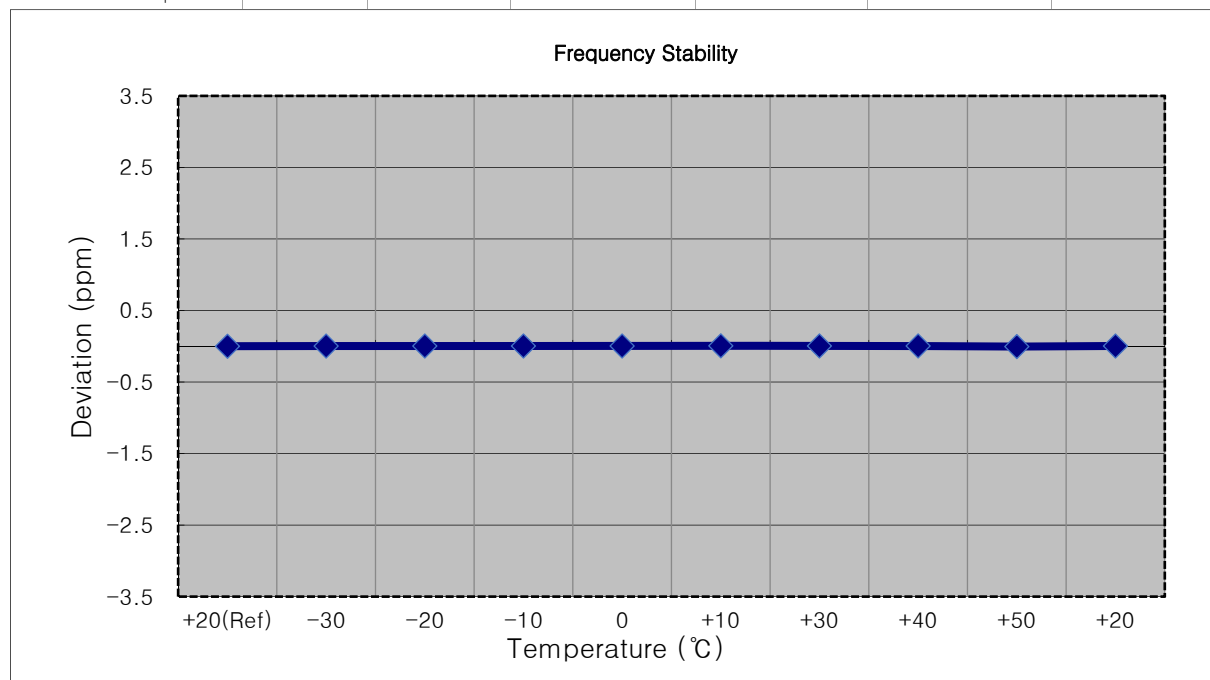
MODE:	<u>LTE 66</u>
OPERATING FREQUENCY:	<u>1745,000,000 Hz</u>
CHANNEL:	<u>132322 (5 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 006	0.0	0.000 000	0.000
100 %		-30	1745 000 012	6.1	0.000 000	0.003
100 %		-20	1745 000 013	6.5	0.000 000	0.004
100 %		-10	1745 000 013	6.3	0.000 000	0.004
100 %		0	1745 000 012	5.3	0.000 000	0.003
100 %		+10	1745 000 013	6.4	0.000 000	0.004
100 %		+30	1745 000 014	8.0	0.000 000	0.005
100 %		+40	1745 000 013	6.7	0.000 000	0.004
100 %		+50	1745 000 013	6.8	0.000 000	0.004
Batt. Endpoint	3.300	+20	1745 000 013	6.7	0.000 000	0.004



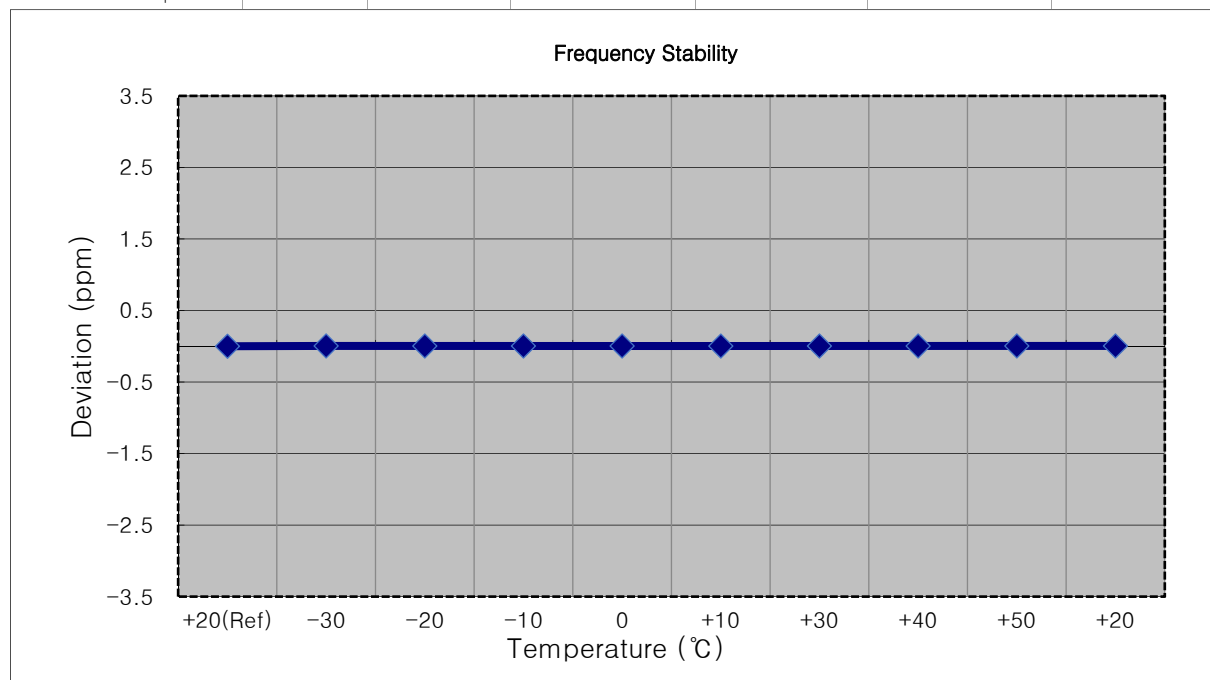
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 007	0.0	0.000 000	0.000
100 %		-30	1745 000 013	5.2	0.000 000	0.003
100 %		-20	1745 000 014	6.7	0.000 000	0.004
100 %		-10	1745 000 013	5.9	0.000 000	0.003
100 %		0	1745 000 014	7.0	0.000 000	0.004
100 %		+10	1745 000 018	10.6	0.000 001	0.006
100 %		+30	1745 000 015	7.6	0.000 000	0.004
100 %		+40	1745 000 015	7.8	0.000 000	0.004
100 %		+50	1744 999 999	-8.4	0.000 000	-0.005
Batt. Endpoint	3.300	+20	1745 000 014	6.4	0.000 000	0.004



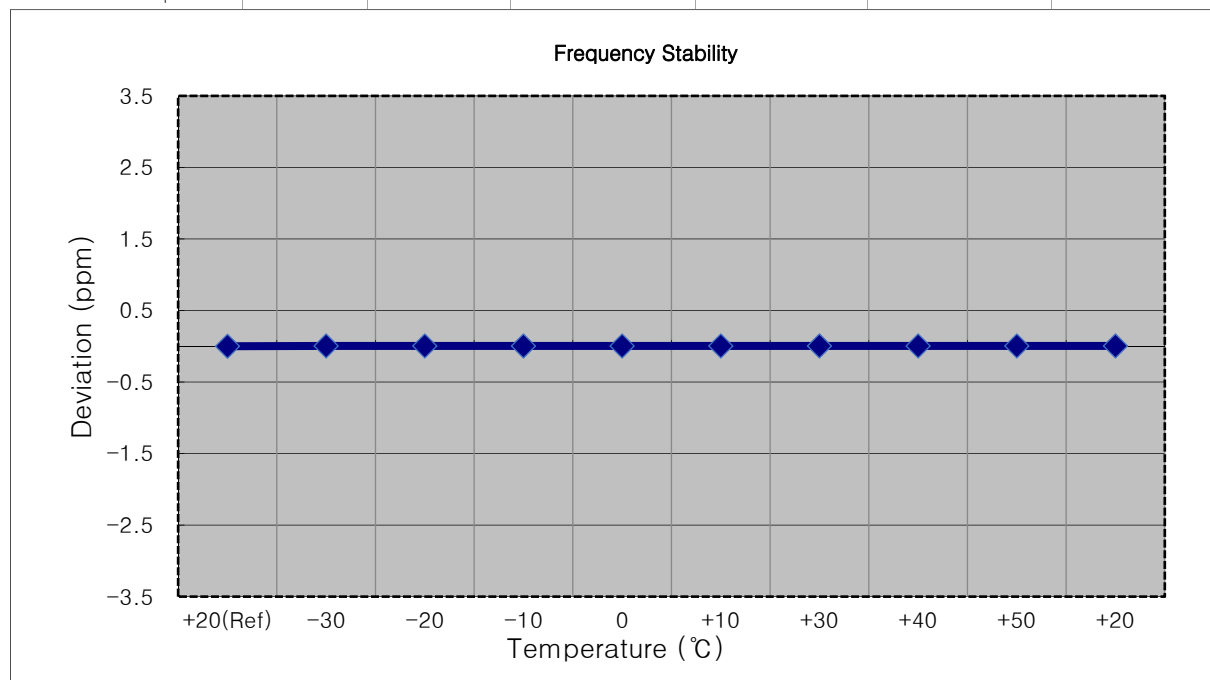
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 007	0.0	0.000 000	0.000
100 %		-30	1745 000 015	7.7	0.000 000	0.004
100 %		-20	1745 000 014	7.0	0.000 000	0.004
100 %		-10	1745 000 014	6.6	0.000 000	0.004
100 %		0	1745 000 013	5.9	0.000 000	0.003
100 %		+10	1745 000 012	5.1	0.000 000	0.003
100 %		+30	1745 000 013	5.9	0.000 000	0.003
100 %		+40	1745 000 014	7.0	0.000 000	0.004
100 %		+50	1745 000 015	7.9	0.000 000	0.005
Batt. Endpoint	3.300	+20	1745 000 015	7.5	0.000 000	0.004



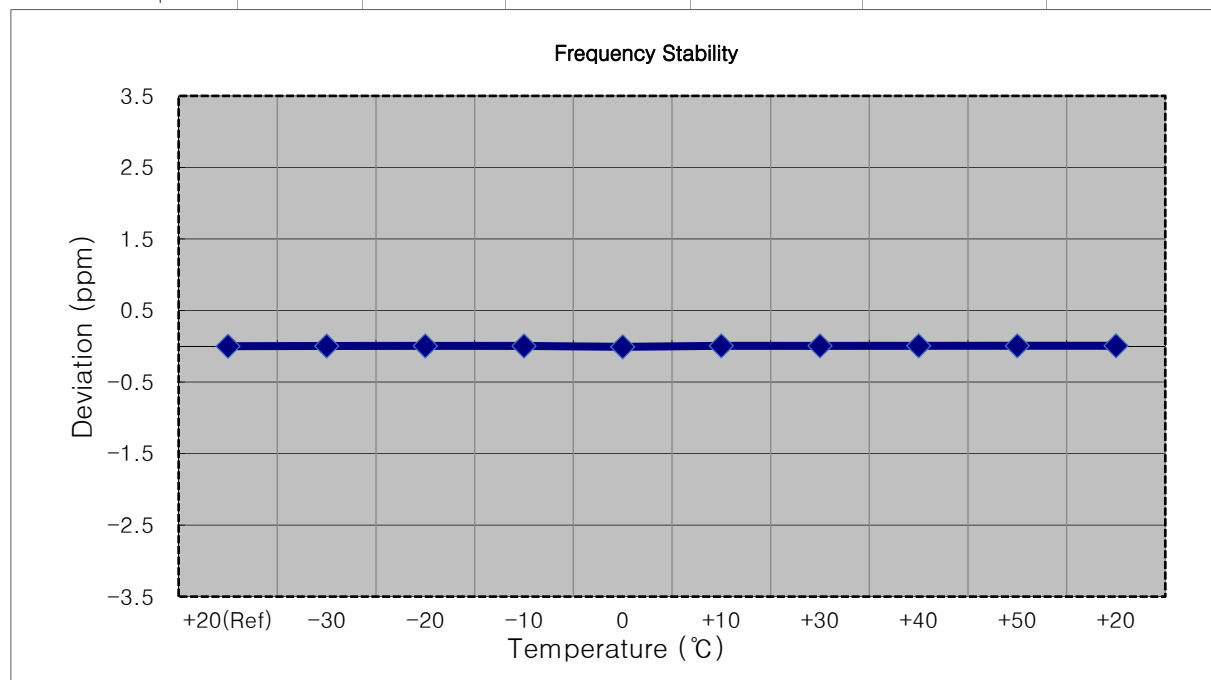
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1745,000,000 Hz
 ■ CHANNEL: 132322 (20 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1744 999 994	0.0	0.000 000	0.000
100 %		-30	1745 000 001	7.5	0.000 000	0.004
100 %		-20	1745 000 002	8.3	0.000 000	0.005
100 %		-10	1745 000 001	6.6	0.000 000	0.004
100 %		0	1745 000 001	6.9	0.000 000	0.004
100 %		+10	1745 000 001	7.4	0.000 000	0.004
100 %		+30	1745 000 001	7.4	0.000 000	0.004
100 %		+40	1745 000 002	7.6	0.000 000	0.004
100 %		+50	1745 000 002	7.8	0.000 000	0.004
Batt. Endpoint	3.300	+20	1745 000 001	7.3	0.000 000	0.004



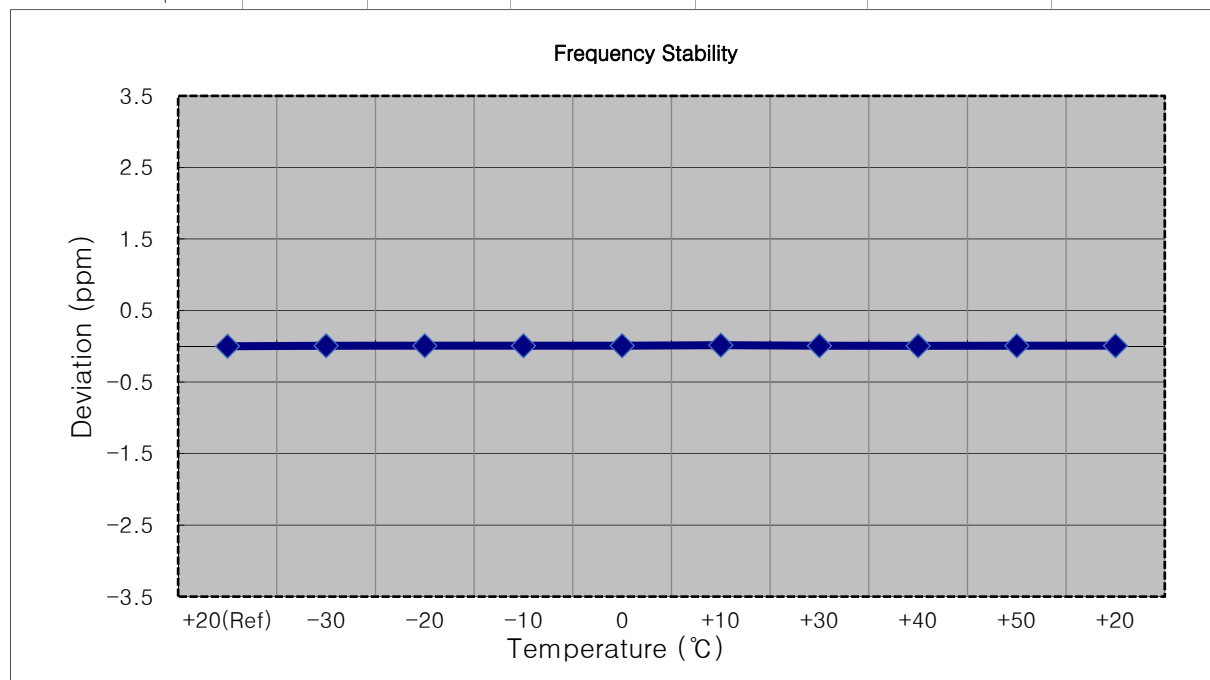
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1779,300,000 Hz
- ▣ CHANNEL: 132665 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1779 300 009	0.0	0.000 000	0.000
100 %		-30	1779 300 015	5.8	0.000 000	0.003
100 %		-20	1779 300 018	8.6	0.000 000	0.005
100 %		-10	1779 300 016	6.7	0.000 000	0.004
100 %		0	1779 299 995	-14.5	-0.000 001	-0.008
100 %		+10	1779 300 019	10.2	0.000 001	0.006
100 %		+30	1779 300 018	9.0	0.000 001	0.005
100 %		+40	1779 300 019	10.3	0.000 001	0.006
100 %		+50	1779 300 020	10.7	0.000 001	0.006
Batt. Endpoint	3.300	+20	1779 300 021	11.9	0.000 001	0.007



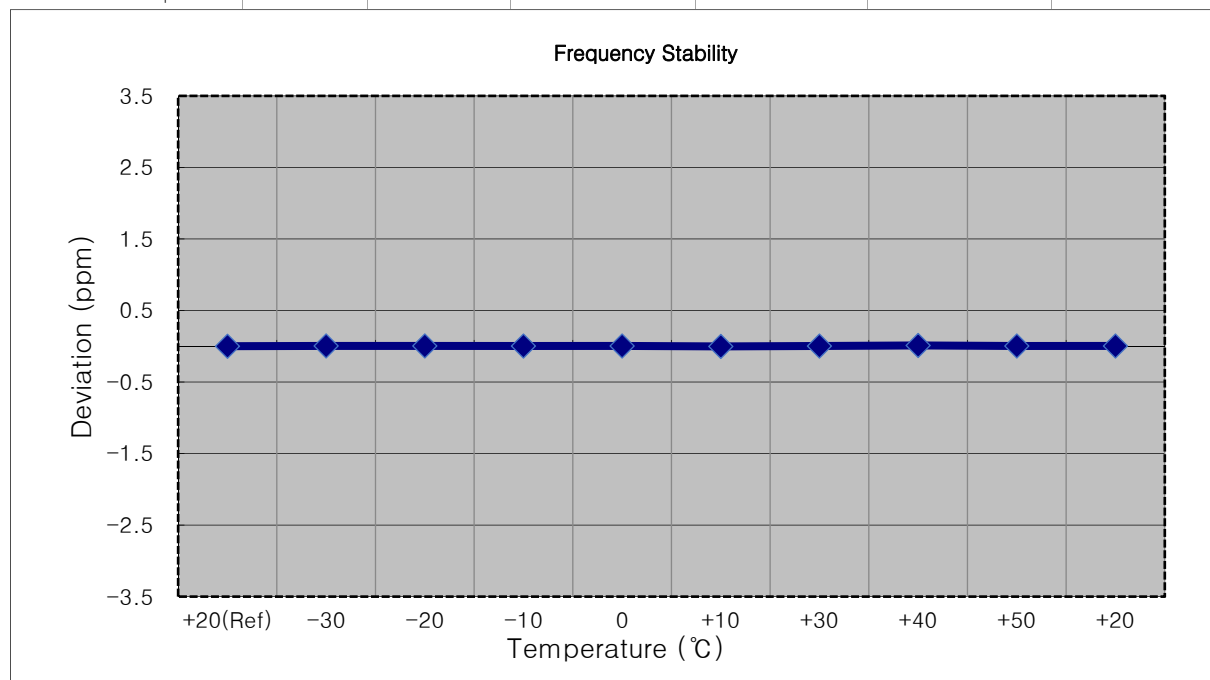
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1778,500,000 Hz
 ■ CHANNEL: 132657 (3 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1778 500 012	0.0	0.000 000	0.000
100 %		-30	1778 500 024	11.9	0.000 001	0.007
100 %		-20	1778 500 026	13.7	0.000 001	0.008
100 %		-10	1778 500 024	12.3	0.000 001	0.007
100 %		0	1778 500 025	13.0	0.000 001	0.007
100 %		+10	1778 500 038	26.1	0.000 001	0.015
100 %		+30	1778 500 024	12.2	0.000 001	0.007
100 %		+40	1778 500 022	10.1	0.000 001	0.006
100 %		+50	1778 500 025	12.7	0.000 001	0.007
Batt. Endpoint	3.300	+20	1778 500 026	13.7	0.000 001	0.008



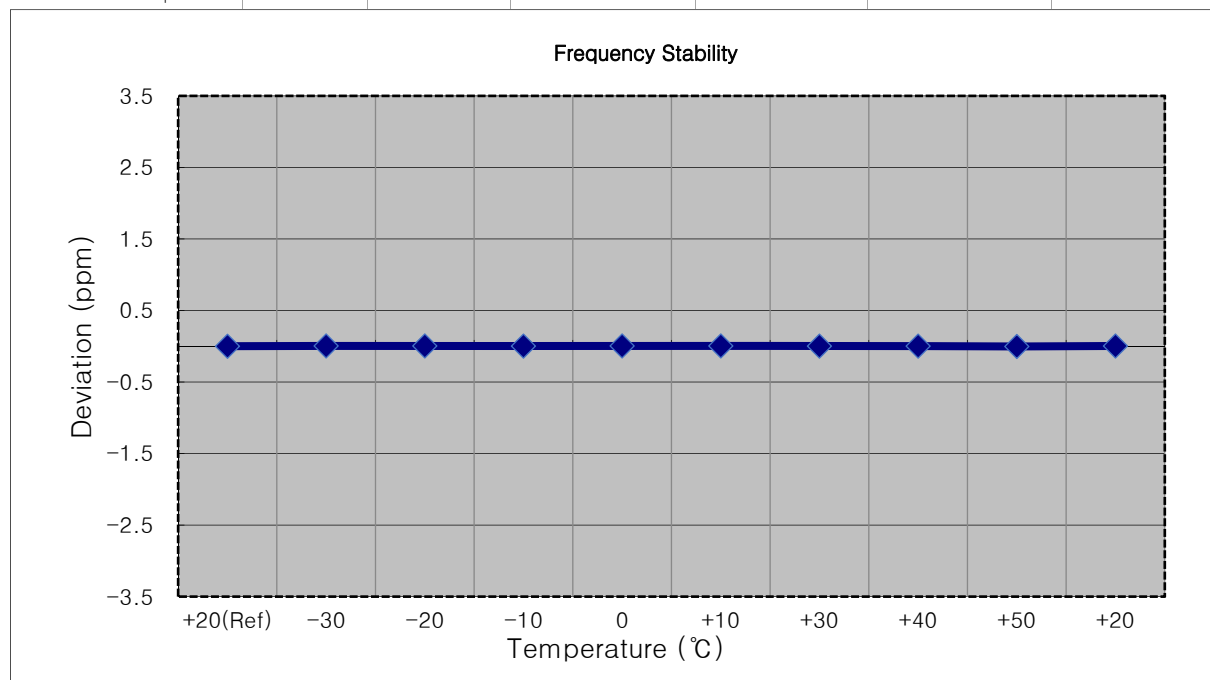
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1777,500,000 Hz
 ■ CHANNEL: 132647 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1777 500 007	0.0	0.000 000	0.000
100 %		-30	1777 500 014	7.3	0.000 000	0.004
100 %		-20	1777 500 014	7.7	0.000 000	0.004
100 %		-10	1777 500 012	5.7	0.000 000	0.003
100 %		0	1777 500 014	7.2	0.000 000	0.004
100 %		+10	1777 500 002	-4.4	0.000 000	-0.002
100 %		+30	1777 500 012	5.4	0.000 000	0.003
100 %		+40	1777 500 026	19.9	0.000 001	0.011
100 %		+50	1777 500 013	6.5	0.000 000	0.004
Batt. Endpoint	3.300	+20	1777 500 013	6.8	0.000 000	0.004



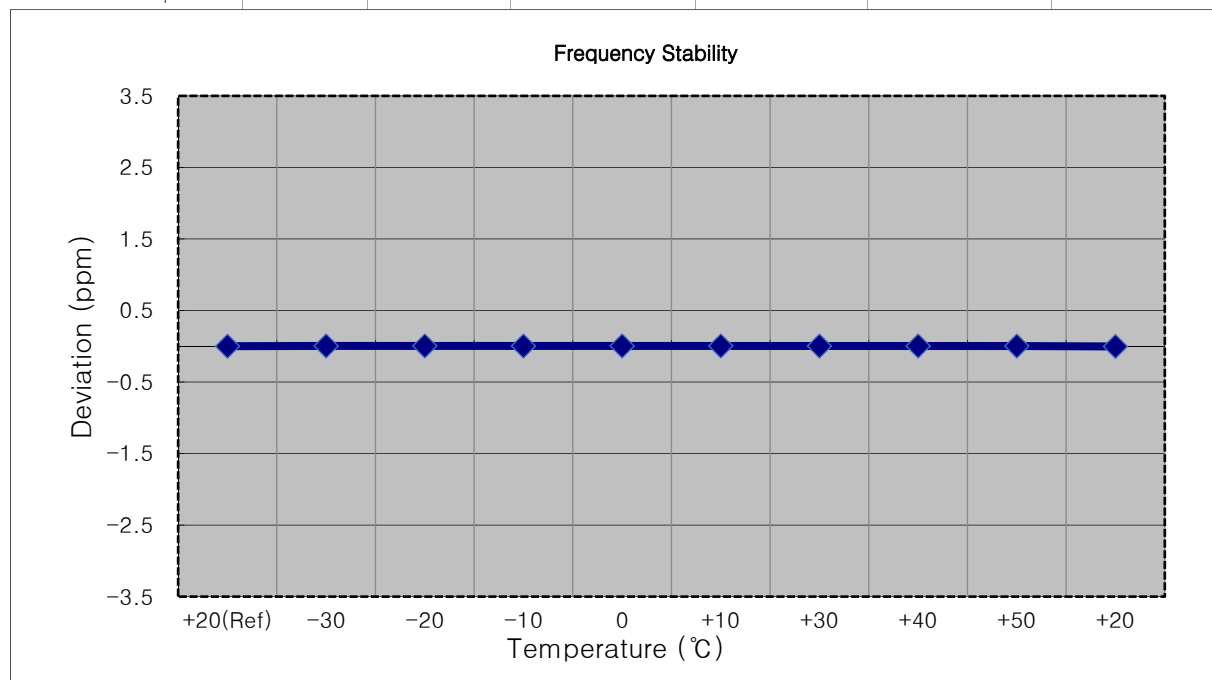
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1775,000,000 Hz
 ■ CHANNEL: 132622 (10 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1774 999 991	0.0	0.000 000	0.000
100 %		-30	1774 999 999	8.2	0.000 000	0.005
100 %		-20	1774 999 998	7.5	0.000 000	0.004
100 %		-10	1774 999 995	4.4	0.000 000	0.002
100 %		0	1774 999 998	7.5	0.000 000	0.004
100 %		+10	1774 999 999	8.1	0.000 000	0.005
100 %		+30	1774 999 996	4.6	0.000 000	0.003
100 %		+40	1774 999 995	4.3	0.000 000	0.002
100 %		+50	1774 999 985	-5.6	0.000 000	-0.003
Batt. Endpoint	3.300	+20	1774 999 997	6.0	0.000 000	0.003



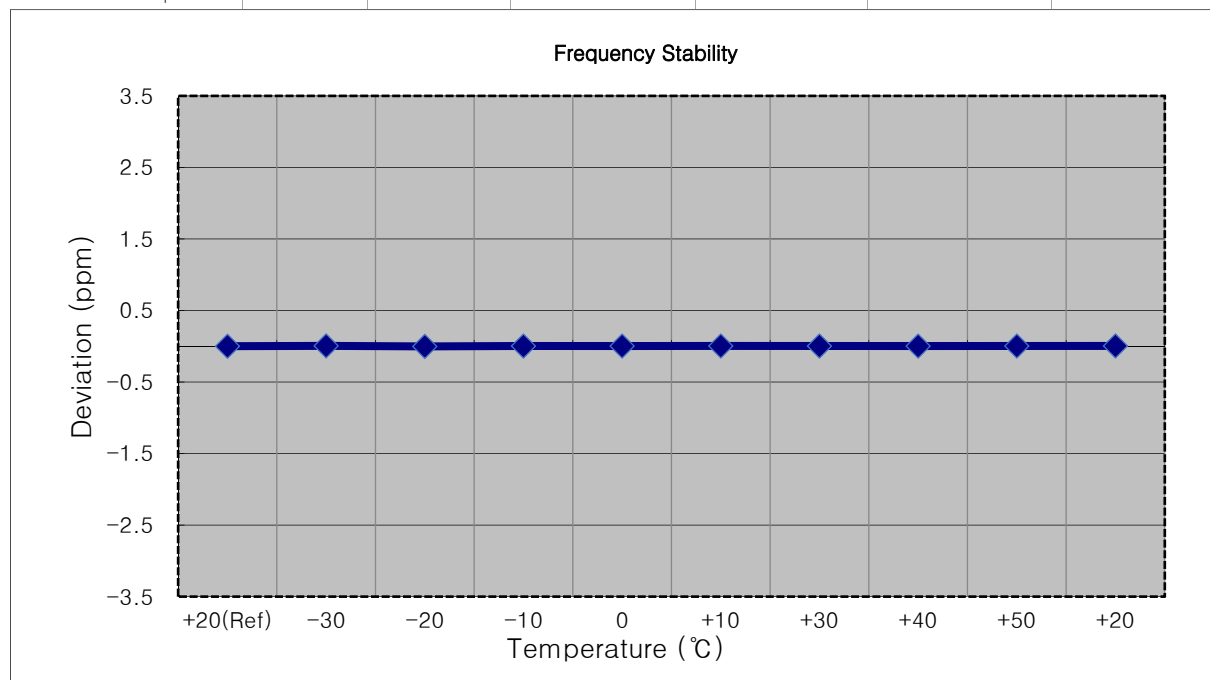
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1772,500,000 Hz
 ■ CHANNEL: 132597 (15 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1772 500 007	0.0	0.000 000	0.000
100 %		-30	1772 500 015	8.1	0.000 000	0.005
100 %		-20	1772 500 015	7.8	0.000 000	0.004
100 %		-10	1772 500 012	5.2	0.000 000	0.003
100 %		0	1772 500 015	7.3	0.000 000	0.004
100 %		+10	1772 500 015	7.3	0.000 000	0.004
100 %		+30	1772 500 013	5.6	0.000 000	0.003
100 %		+40	1772 500 014	6.5	0.000 000	0.004
100 %		+50	1772 500 012	5.0	0.000 000	0.003
Batt. Endpoint	3.300	+20	1772 500 001	-5.8	0.000 000	-0.003



■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1770,000,000 Hz
 ■ CHANNEL: 132572 (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)	1770 000 007	0.0	0.000 000	0.000
100 %		-30	1770 000 016	9.1	0.000 001	0.005
100 %		-20	1770 000 003	-4.3	0.000 000	-0.002
100 %		-10	1770 000 013	5.8	0.000 000	0.003
100 %		0	1770 000 012	4.9	0.000 000	0.003
100 %		+10	1770 000 014	7.2	0.000 000	0.004
100 %		+30	1770 000 013	5.5	0.000 000	0.003
100 %		+40	1770 000 012	4.5	0.000 000	0.003
100 %		+50	1770 000 013	5.9	0.000 000	0.003
Batt. Endpoint	3.300	+20	1770 000 015	7.5	0.000 000	0.004



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 1.4 MHz	QPSK	-21.30	12.07	10.04	2.06	H	< 1.00	0.101	20.05	1	0
		16-QAM	-22.17	11.20	10.04	2.06	H		0.083	19.18		
		64-QAM	-22.93	10.44	10.04	2.06	H		0.070	18.42		
		256-QAM	-26.23	7.14	10.04	2.06	H		0.033	15.12		
1745.0		QPSK	-21.59	11.87	10.18	2.07	H		0.100	19.98	1	0
		16-QAM	-22.34	11.12	10.18	2.07	H		0.084	19.23		
		64-QAM	-23.40	10.06	10.18	2.07	H		0.066	18.17		
		256-QAM	-26.38	7.08	10.18	2.07	H		0.033	15.19		
1779.3		QPSK	-21.99	11.83	10.26	2.09	H		0.100	20.00	1	0
		16-QAM	-22.76	11.06	10.26	2.09	H		0.084	19.23		
		64-QAM	-23.89	9.93	10.26	2.09	H		0.065	18.10		
		256-QAM	-26.94	6.88	10.26	2.09	H		0.032	15.05		

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
1711.5	LTE B66 3 MHz	QPSK	-21.28	12.09	10.04	2.06	H	< 1.00	0.102	20.07	1	0
		16-QAM	-22.15	11.22	10.04	2.06	H		0.083	19.20		
		64-QAM	-22.87	10.50	10.04	2.06	H		0.070	18.48		
		256-QAM	-26.15	7.22	10.04	2.06	H		0.033	15.20		
1745.0		QPSK	-21.51	11.95	10.18	2.07	H		0.101	20.06	1	0
		16-QAM	-22.24	11.22	10.18	2.07	H		0.086	19.33		
		64-QAM	-23.32	10.14	10.18	2.07	H		0.067	18.25		
		256-QAM	-26.24	7.22	10.18	2.07	H		0.034	15.33		
1778.5		QPSK	-21.95	11.87	10.26	2.09	H		0.101	20.04	1	0
		16-QAM	-22.88	10.94	10.26	2.09	H		0.081	19.11		
		64-QAM	-23.95	9.87	10.26	2.09	H		0.064	18.04		
		256-QAM	-26.78	7.04	10.26	2.09	H		0.033	15.21		

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 5 MHz	QPSK	-21.24	12.15	10.06	2.06	H	< 1.00	0.104	20.15	1	0
		16-QAM	-22.15	11.24	10.06	2.06	H		0.084	19.24		
		64-QAM	-22.91	10.48	10.06	2.06	H		0.070	18.48		
		256-QAM	-26.15	7.24	10.06	2.06	H		0.033	15.24		
1745.0		QPSK	-21.48	11.98	10.18	2.07	H		0.102	20.09	1	0
		16-QAM	-22.27	11.19	10.18	2.07	H		0.085	19.30		
		64-QAM	-23.35	10.11	10.18	2.07	H		0.066	18.22		
		256-QAM	-26.28	7.18	10.18	2.07	H		0.034	15.29		
1777.5		QPSK	-21.99	11.83	10.26	2.09	H		0.100	20.00	1	0
		16-QAM	-22.71	11.11	10.26	2.09	H		0.085	19.28		
		64-QAM	-23.88	9.94	10.26	2.09	H		0.065	18.11		
		256-QAM	-26.63	7.19	10.26	2.09	H		0.034	15.36		

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 10 MHz	QPSK	-21.14	12.25	10.06	2.06	H	< 1.00	0.106	20.25	1	0
		16-QAM	-22.21	11.18	10.06	2.06	H		0.083	19.18		
		64-QAM	-23.03	10.36	10.06	2.06	H		0.069	18.36		
		256-QAM	-26.03	7.36	10.06	2.06	H		0.034	15.36		
1745.0		QPSK	-21.35	12.11	10.18	2.07	H		0.105	20.22	1	0
		16-QAM	-22.32	11.14	10.18	2.07	H		0.084	19.25		
		64-QAM	-23.44	10.02	10.18	2.07	H		0.065	18.13		
		256-QAM	-26.22	7.24	10.18	2.07	H		0.034	15.35		
1775.0		QPSK	-22.07	11.69	10.25	2.09	H		0.097	19.85	1	0
		16-QAM	-22.82	10.94	10.25	2.09	H		0.081	19.10		
		64-QAM	-23.90	9.86	10.25	2.09	H		0.063	18.02		
		256-QAM	-26.71	7.05	10.25	2.09	H		0.033	15.21		

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 15 MHz	QPSK	-21.07	12.35	10.08	2.06	H	< 1.00	0.109	20.37	1	0
		16-QAM	-22.15	11.27	10.08	2.06	H		0.085	19.29		
		64-QAM	-23.03	10.39	10.08	2.06	H		0.069	18.41		
		256-QAM	-26.02	7.40	10.08	2.06	H		0.035	15.42		
1745.0		QPSK	-21.42	12.04	10.18	2.07	H		0.104	20.15	1	0
		16-QAM	-22.16	11.30	10.18	2.07	H		0.087	19.41		
		64-QAM	-23.22	10.24	10.18	2.07	H		0.068	18.35		
		256-QAM	-26.21	7.25	10.18	2.07	H		0.034	15.36		
1772.5		QPSK	-21.94	11.82	10.25	2.09	H		0.100	19.98	1	0
		16-QAM	-22.73	11.03	10.25	2.09	H		0.083	19.19		
		64-QAM	-23.70	10.06	10.25	2.09	H		0.066	18.22		
		256-QAM	-26.70	7.06	10.25	2.09	H		0.033	15.22		

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 20 MHz	QPSK	-21.08	12.34	10.08	2.06	H	< 1.00	0.109	20.36	1	0
		16-QAM	-22.10	11.32	10.08	2.06	H		0.086	19.34		
		64-QAM	-22.90	10.52	10.08	2.06	H		0.071	18.54		
		256-QAM	-26.07	7.35	10.08	2.06	H		0.034	15.37		
1745.0		QPSK	-21.36	12.10	10.18	2.07	H		0.105	20.21	1	0
		16-QAM	-22.31	11.15	10.18	2.07	H		0.084	19.26		
		64-QAM	-23.37	10.09	10.18	2.07	H		0.066	18.20		
		256-QAM	-26.08	7.38	10.18	2.07	H		0.035	15.49		
1770.0		QPSK	-21.79	11.91	10.24	2.09	H		0.101	20.06	1	0
		16-QAM	-22.71	10.99	10.24	2.09	H		0.082	19.14		
		64-QAM	-23.85	9.85	10.24	2.09	H		0.063	18.00		
		256-QAM	-26.48	7.22	10.24	2.09	H		0.034	15.37		

9.2 RADIATED SPURIOUS EMISSIONS

■ MODE: LTE B66
 ■ 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
132047 (1717.5)	3 435.00	-41.43	12.41	-60.19	3.03	V	-50.81	1	74
	5 152.50	-44.26	12.41	-56.92	3.76	V	-48.27		
	6 870.00	-44.81	11.85	-51.62	4.43	V	-44.20		
132322 (1745.0)	3 490.00	-41.10	12.34	-59.35	3.04	H	-50.05	1	0
	5 235.00	-43.54	12.84	-56.12	3.78	V	-47.06		
	6 980.00	-43.35	11.40	-49.67	4.48	V	-42.75		
132597 (1772.5)	3 545.00	-43.26	12.34	-60.97	3.07	H	-51.70	1	0
	5 317.50	-43.23	13.08	-56.74	3.79	H	-47.45		
	7 090.00	-43.36	10.91	-47.61	4.48	V	-41.18		

9.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
66	1.4 MHz	1745.0	QPSK	6	0	5.60	13.00
			16-QAM			6.30	
			64-QAM			6.30	
			256-QAM			6.51	
	3 MHz		QPSK	15		5.67	
			16-QAM			6.33	
			64-QAM			6.29	
			256-QAM			6.57	
	5 MHz		QPSK	25		5.68	
			16-QAM			6.37	
			64-QAM			6.35	
			256-QAM			6.65	
	10 MHz		QPSK	50		5.83	
			16-QAM			6.45	
			64-QAM			6.42	
			256-QAM			6.68	
	15 MHz		QPSK	75		5.74	
			16-QAM			6.38	
			64-QAM			6.64	
			256-QAM			6.63	
	20 MHz		QPSK	100		5.68	
			16-QAM			6.38	
			64-QAM			6.61	
			256-QAM			6.62	

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	1.4 MHz	1745.0	QPSK	6	0	1.0984
			16-QAM			1.0952
			64-QAM			1.0976
			256-QAM			1.0958
	3 MHz		QPSK	15		2.7172
			16-QAM			2.7068
			64-QAM			2.7103
			256-QAM			2.7044
	5 MHz		QPSK	25		4.5318
			16-QAM			4.5163
			64-QAM			4.5216
			256-QAM			4.5246
	10 MHz		QPSK	50		9.0128
			16-QAM			9.0213
			64-QAM			9.0485
			256-QAM			9.0146
	15 MHz		QPSK	75		13.488
			16-QAM			13.505
			64-QAM			13.475
			256-QAM			13.485
	20 MHz		QPSK	100		18.006
			16-QAM			17.942
			64-QAM			17.936
			256-QAM			17.925

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	1.4	1710.7	6.0020	28.591	-64.272	-35.681	-13.00
		1745.0	3.0409	27.976	-63.797	-35.821	
		1779.3	3.7189	27.976	-64.061	-36.085	
	3	1711.5	5.3340	28.591	-64.306	-35.715	
		1745.0	2.6222	27.976	-63.984	-36.008	
		1778.5	3.6691	27.976	-63.867	-35.891	
	5	1712.5	3.7189	27.976	-63.325	-35.349	
		1745.0	2.2733	27.976	-64.007	-36.031	
		1777.5	3.2902	27.976	-64.402	-36.426	
	10	1715.0	6.0718	28.591	-64.012	-35.421	
		1745.0	3.6790	27.976	-64.233	-36.257	
		1775.0	3.1606	27.976	-64.385	-36.409	
	15	1717.5	3.7289	27.976	-64.078	-36.102	
		1745.0	3.4796	27.976	-63.700	-35.724	
		1772.5	3.7189	27.976	-64.314	-36.338	
	20	1720.0	6.5205	28.591	-64.488	-35.897	
		1745.0	6.6202	28.591	-64.312	-35.721	
		1770.0	7.2383	28.591	-65.075	-36.484	

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

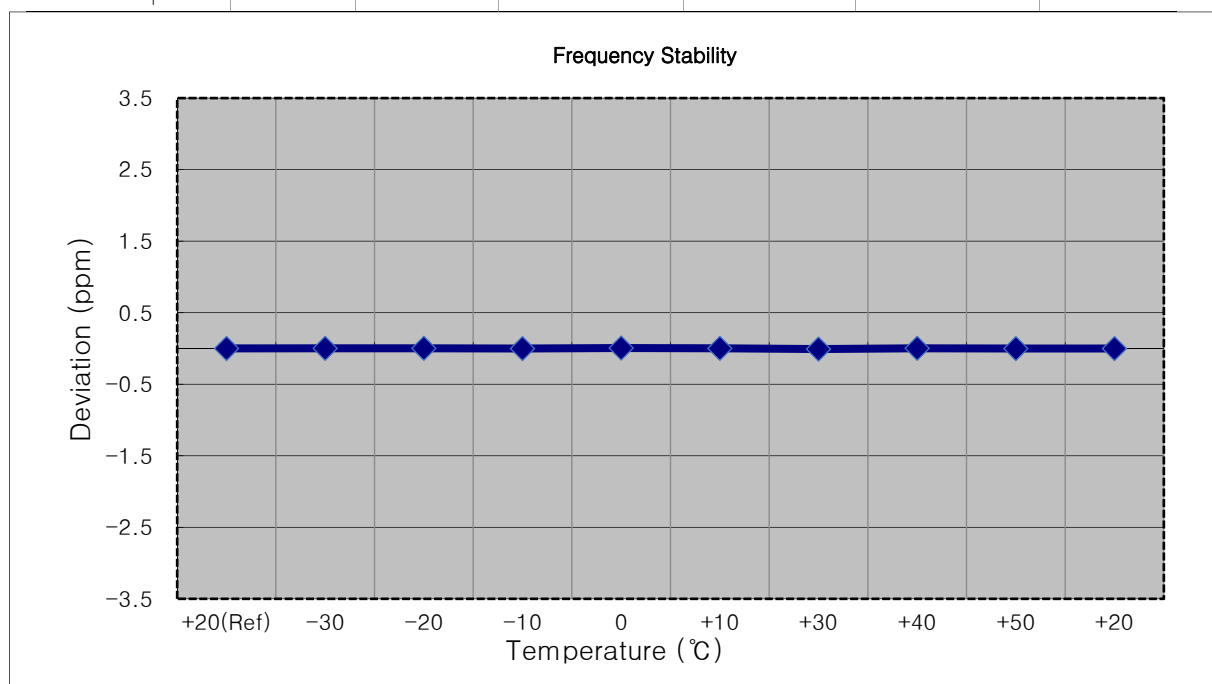
9.6 BAND EDGE

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

9.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

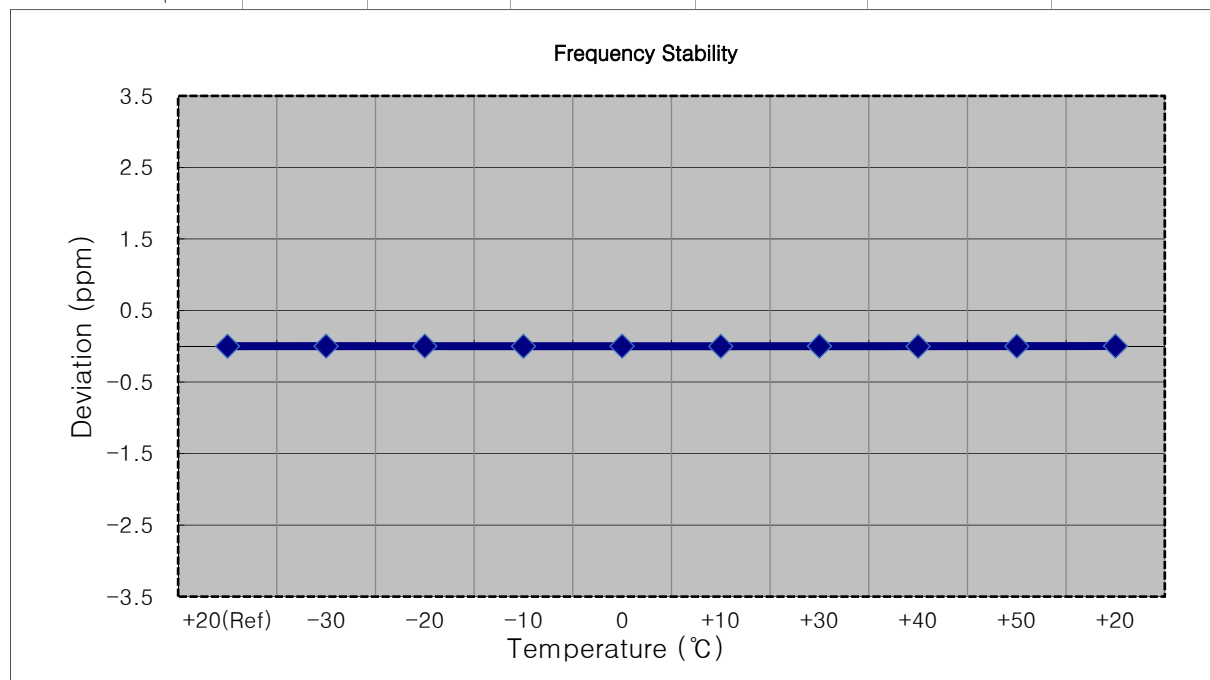
MODE:	<u>LTE 66</u>
OPERATING FREQUENCY:	<u>1710,700,000 Hz</u>
CHANNEL:	<u>131979 (1.4 MHz)</u>
REFERENCE VOLTAGE:	<u>3.880 VDC</u>
DEVIATION LIMIT:	<u>Emission must remain in band</u>

Voltage	Power	Temp.	Frequency	Frequency	Deviation	ppm
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	
100 %	3.880	+20(Ref)	1710 700 005	0.0	0.000 000	0.000
100 %		-30	1710 700 008	3.0	0.000 000	0.002
100 %		-20	1710 700 009	3.8	0.000 000	0.002
100 %		-10	1710 700 003	-2.4	0.000 000	-0.001
100 %		0	1710 700 015	9.6	0.000 001	0.006
100 %		+10	1710 700 008	3.0	0.000 000	0.002
100 %		+30	1710 699 991	-14.5	-0.000 001	-0.008
100 %		+40	1710 700 009	3.5	0.000 000	0.002
100 %		+50	1710 700 003	-2.3	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1710 700 003	-2.5	0.000 000	-0.001



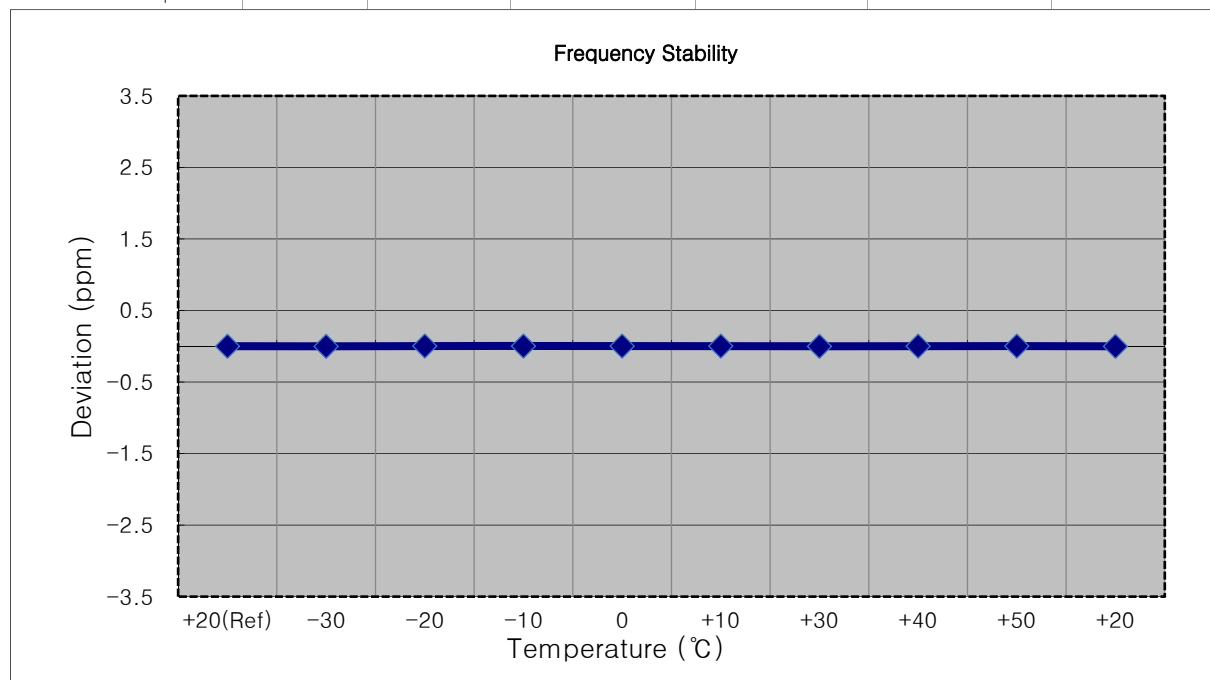
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1711,500,000 Hz
 ■ CHANNEL: 131987 (3 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1711 500 003	0.0	0.000 000	0.000
100 %		-30	1711 500 005	2.2	0.000 000	0.001
100 %		-20	1711 500 007	3.9	0.000 000	0.002
100 %		-10	1711 500 002	-1.5	0.000 000	-0.001
100 %		0	1711 500 006	2.5	0.000 000	0.001
100 %		+10	1711 500 002	-1.7	0.000 000	-0.001
100 %		+30	1711 500 006	2.4	0.000 000	0.001
100 %		+40	1711 500 001	-2.7	0.000 000	-0.002
100 %		+50	1711 500 006	2.3	0.000 000	0.001
Batt. Endpoint	3.300	+20	1711 500 008	4.5	0.000 000	0.003



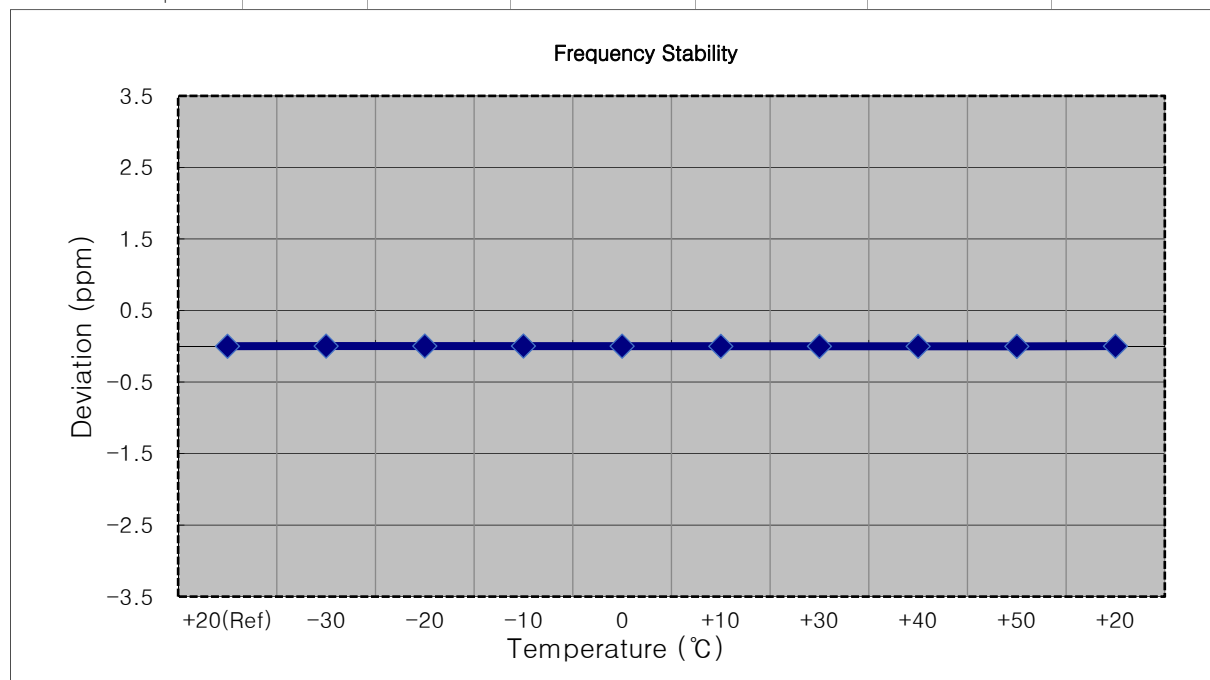
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1712,500,000 Hz
- ▣ CHANNEL: 131997 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1712 500 004	0.0	0.000 000	0.000
100 %		-30	1712 500 001	-2.4	0.000 000	-0.001
100 %		-20	1712 500 009	4.7	0.000 000	0.003
100 %		-10	1712 500 007	3.4	0.000 000	0.002
100 %		0	1712 500 008	4.2	0.000 000	0.002
100 %		+10	1712 500 008	4.3	0.000 000	0.003
100 %		+30	1712 500 001	-3.1	0.000 000	-0.002
100 %		+40	1712 500 006	2.4	0.000 000	0.001
100 %		+50	1712 500 008	3.8	0.000 000	0.002
Batt. Endpoint	3.300	+20	1712 500 002	-2.1	0.000 000	-0.001



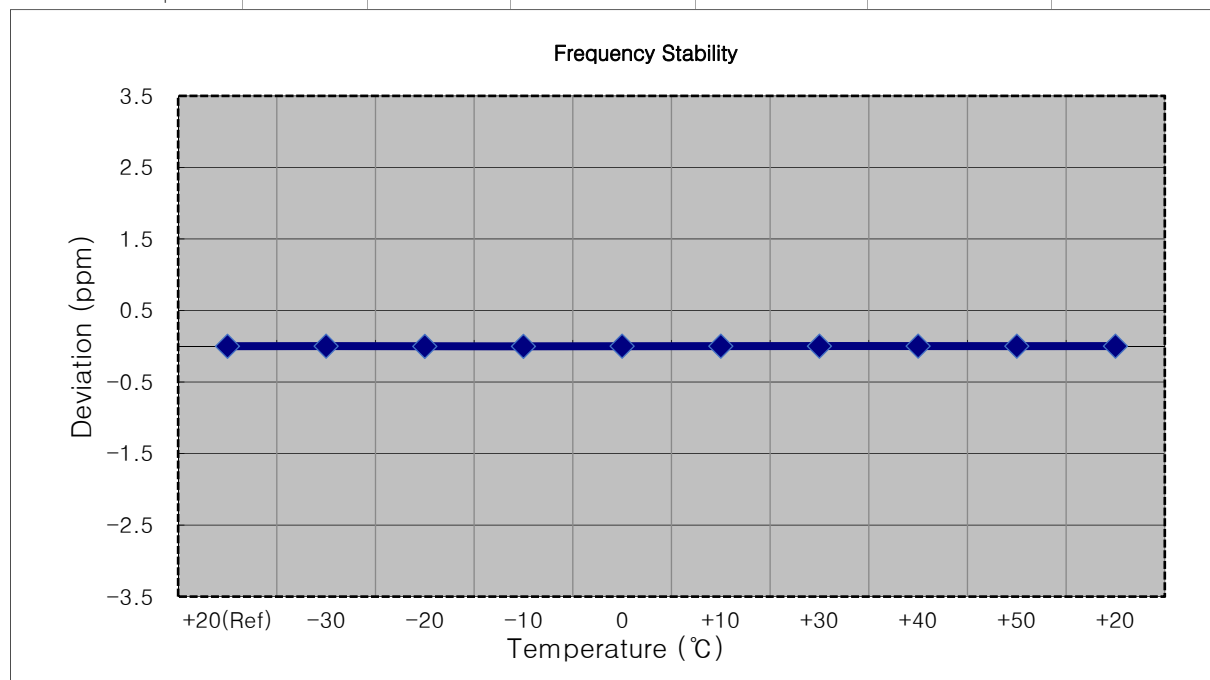
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1715,000,000 Hz
 ■ CHANNEL: 132022 (10 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1715 000 007	0.0	0.000 000	0.000
100 %		-30	1715 000 011	4.3	0.000 000	0.003
100 %		-20	1715 000 012	5.2	0.000 000	0.003
100 %		-10	1715 000 012	5.4	0.000 000	0.003
100 %		0	1715 000 009	2.5	0.000 000	0.001
100 %		+10	1715 000 005	-1.7	0.000 000	-0.001
100 %		+30	1715 000 005	-1.9	0.000 000	-0.001
100 %		+40	1715 000 005	-1.8	0.000 000	-0.001
100 %		+50	1715 000 004	-2.6	0.000 000	-0.002
Batt. Endpoint	3.300	+20	1715 000 009	2.7	0.000 000	0.002



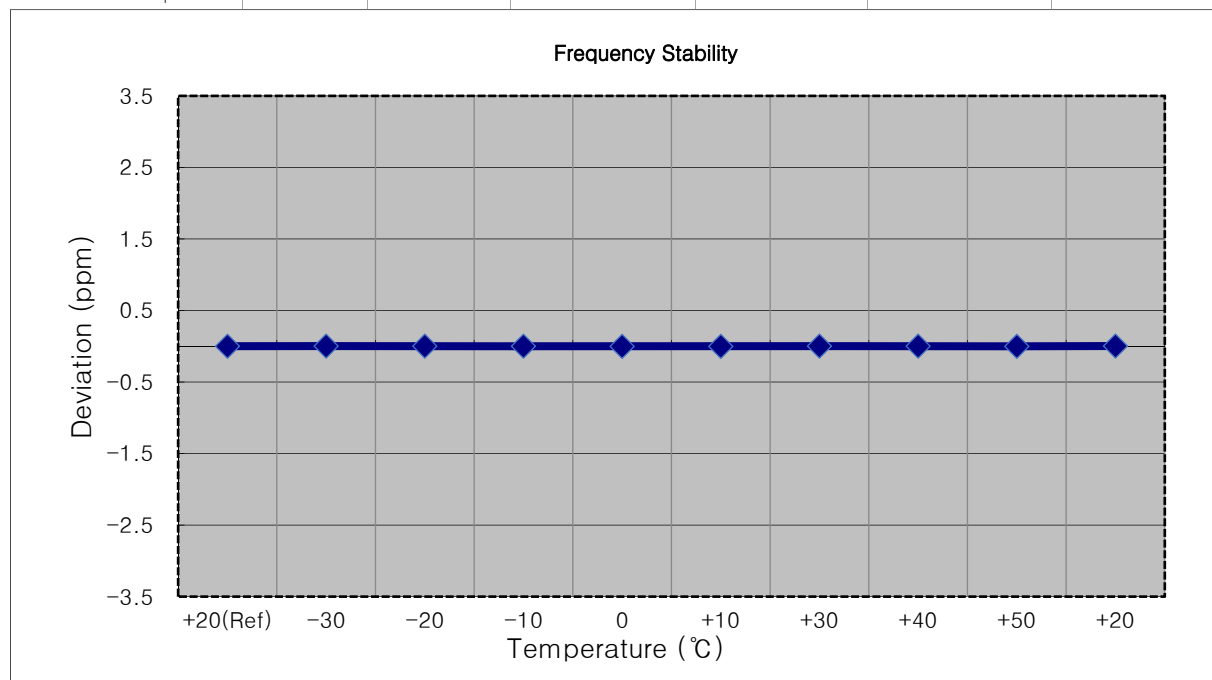
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1717,500,000 Hz
 ■ CHANNEL: 132047 (15 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1717 500 003	0.0	0.000 000	0.000
100 %		-30	1717 500 006	2.7	0.000 000	0.002
100 %		-20	1717 500 001	-2.3	0.000 000	-0.001
100 %		-10	1717 500 001	-2.0	0.000 000	-0.001
100 %		0	1717 500 005	2.2	0.000 000	0.001
100 %		+10	1717 500 006	2.6	0.000 000	0.002
100 %		+30	1717 500 006	2.4	0.000 000	0.001
100 %		+40	1717 500 007	3.6	0.000 000	0.002
100 %		+50	1717 500 005	2.2	0.000 000	0.001
Batt. Endpoint	3.300	+20	1717 500 006	2.9	0.000 000	0.002



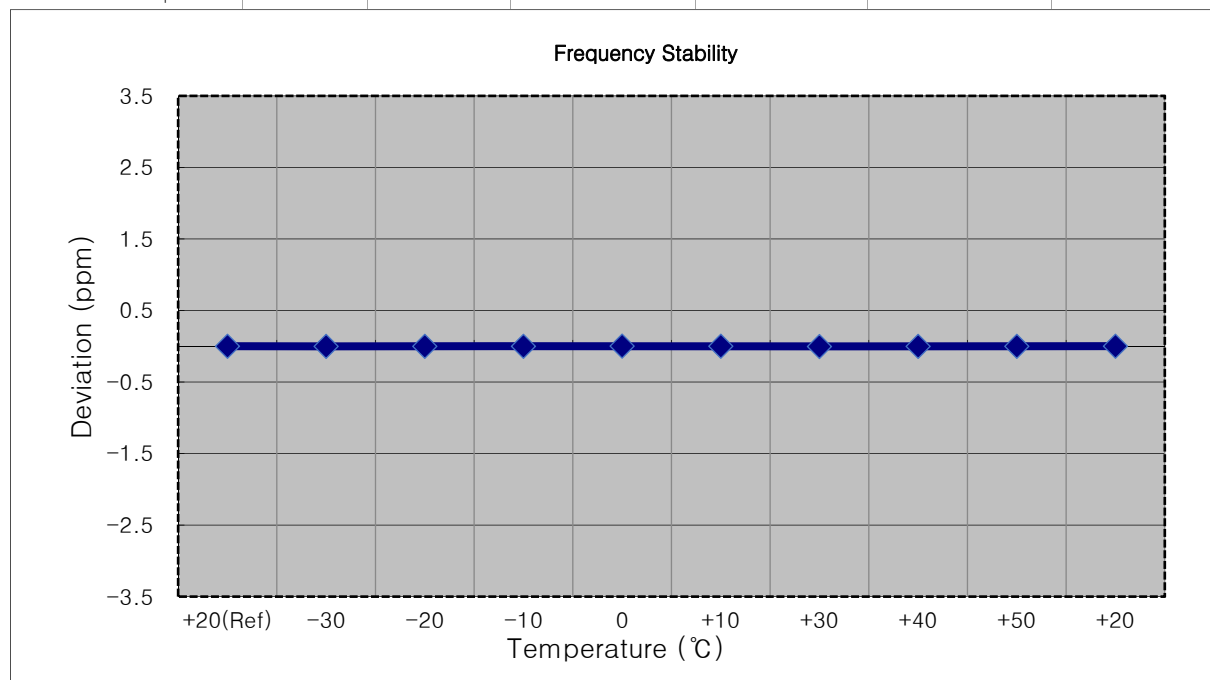
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1720,000,000 Hz
- ▣ CHANNEL: 132072 (20 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1720 000 002	0.0	0.000 000	0.000
100 %		-30	1720 000 006	3.5	0.000 000	0.002
100 %		-20	1720 000 005	2.9	0.000 000	0.002
100 %		-10	1720 000 004	1.4	0.000 000	0.001
100 %		0	1720 000 000	-2.4	0.000 000	-0.001
100 %		+10	1720 000 000	-2.0	0.000 000	-0.001
100 %		+30	1720 000 006	3.6	0.000 000	0.002
100 %		+40	1720 000 005	2.8	0.000 000	0.002
100 %		+50	1720 000 000	-2.1	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1720 000 007	4.6	0.000 000	0.003



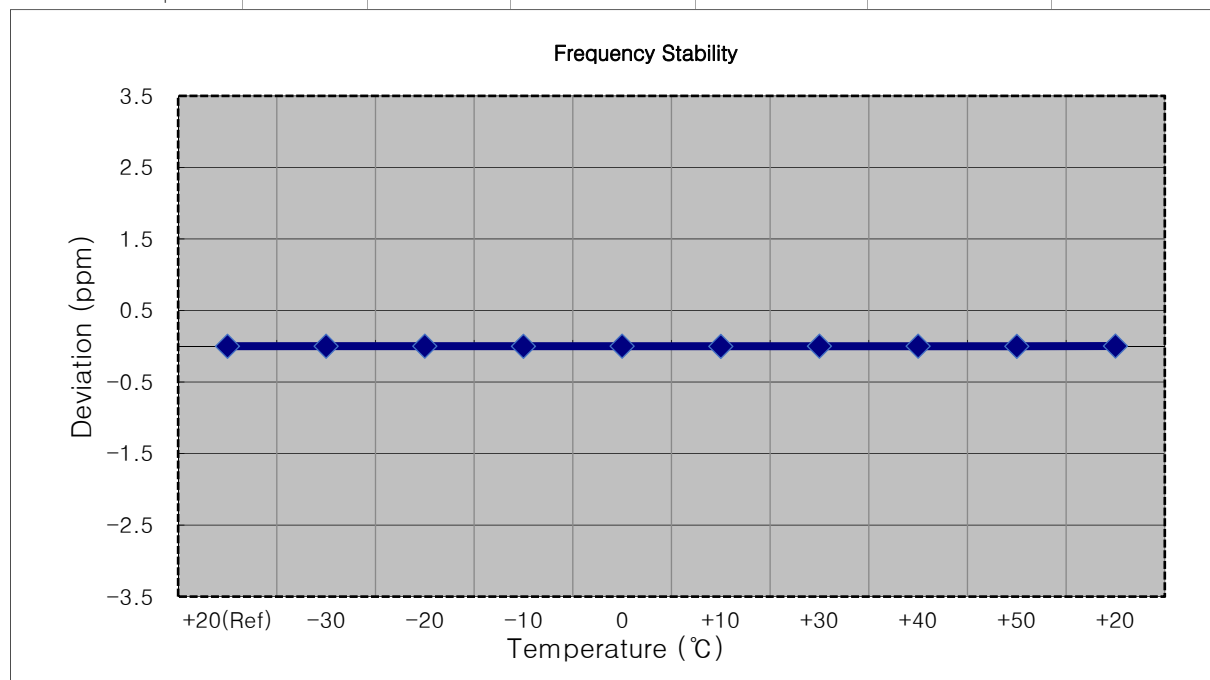
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1745,000,000 Hz
 ■ CHANNEL: 132322 (1.4 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 001	0.0	0.000 000	0.000
100 %		-30	1744 999 999	-2.7	0.000 000	-0.002
100 %		-20	1745 000 000	-1.4	0.000 000	-0.001
100 %		-10	1744 999 999	-1.9	0.000 000	-0.001
100 %		0	1745 000 005	3.4	0.000 000	0.002
100 %		+10	1745 000 003	1.3	0.000 000	0.001
100 %		+30	1744 999 994	-7.1	0.000 000	-0.004
100 %		+40	1744 999 999	-2.6	0.000 000	-0.001
100 %		+50	1745 000 000	-1.3	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1745 000 003	1.5	0.000 000	0.001



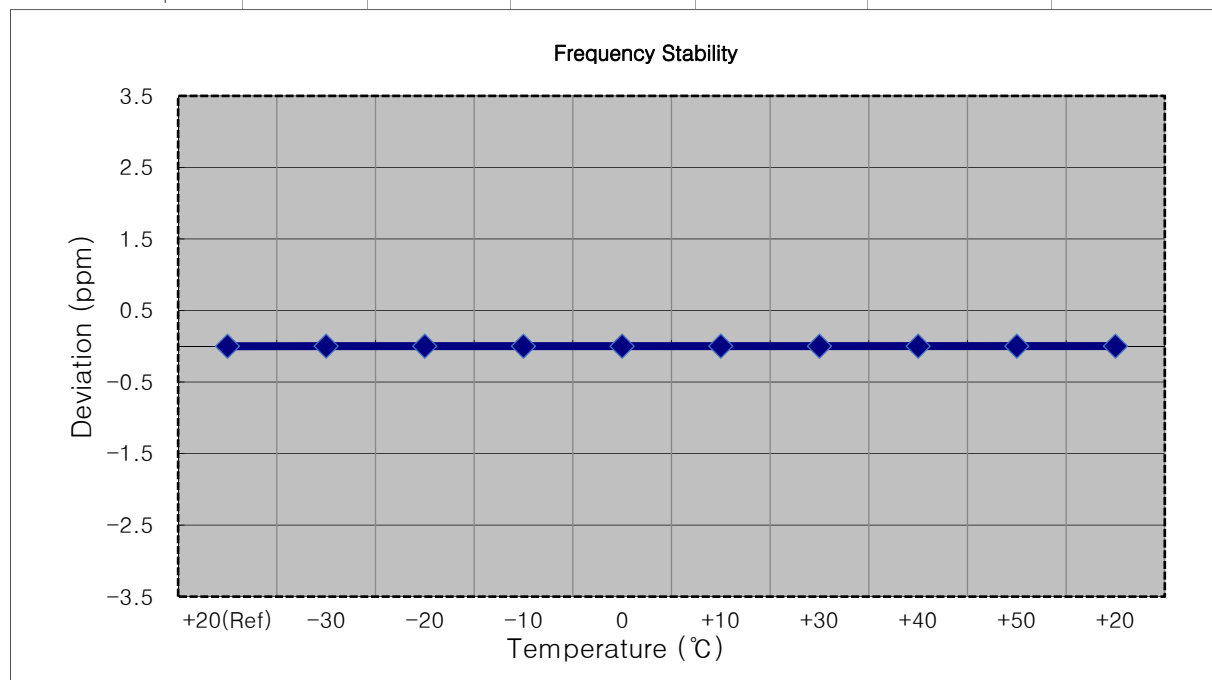
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1745,000,000 Hz
 ■ CHANNEL: 132322 (3 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1744 999 999	0.0	0.000 000	0.000
100 %		-30	1745 000 001	1.9	0.000 000	0.001
100 %		-20	1745 000 001	2.3	0.000 000	0.001
100 %		-10	1744 999 997	-1.8	0.000 000	-0.001
100 %		0	1745 000 001	2.3	0.000 000	0.001
100 %		+10	1744 999 996	-2.4	0.000 000	-0.001
100 %		+30	1745 000 001	2.0	0.000 000	0.001
100 %		+40	1745 000 002	2.8	0.000 000	0.002
100 %		+50	1744 999 998	-1.2	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1745 000 004	4.8	0.000 000	0.003



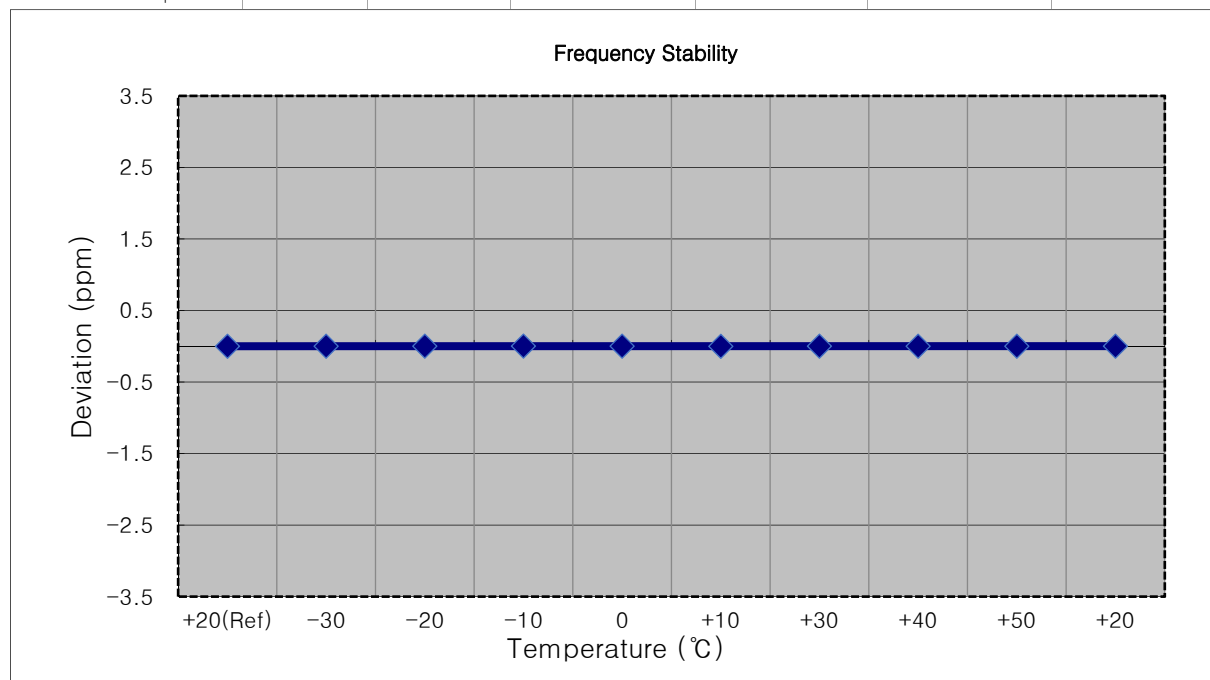
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (5 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 002	0.0	0.000 000	0.000
100 %		-30	1745 000 004	2.3	0.000 000	0.001
100 %		-20	1745 000 005	2.6	0.000 000	0.001
100 %		-10	1745 000 004	1.9	0.000 000	0.001
100 %		0	1745 000 004	1.9	0.000 000	0.001
100 %		+10	1745 000 005	3.4	0.000 000	0.002
100 %		+30	1745 000 005	2.6	0.000 000	0.001
100 %		+40	1745 000 004	1.8	0.000 000	0.001
100 %		+50	1745 000 005	2.9	0.000 000	0.002
Batt. Endpoint	3.300	+20	1745 000 005	3.2	0.000 000	0.002



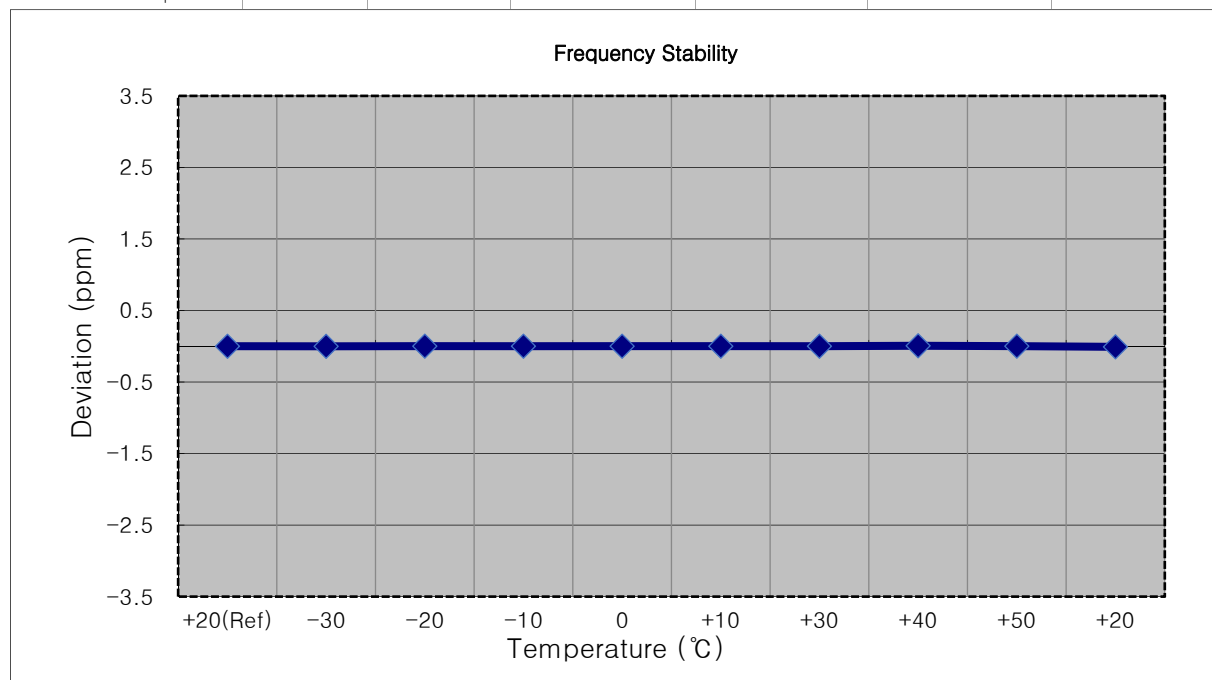
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 002	0.0	0.000 000	0.000
100 %		-30	1745 000 003	1.3	0.000 000	0.001
100 %		-20	1745 000 004	2.4	0.000 000	0.001
100 %		-10	1745 000 006	4.1	0.000 000	0.002
100 %		0	1745 000 004	2.6	0.000 000	0.001
100 %		+10	1745 000 000	-1.3	0.000 000	-0.001
100 %		+30	1745 000 004	2.5	0.000 000	0.001
100 %		+40	1745 000 003	1.8	0.000 000	0.001
100 %		+50	1745 000 003	1.6	0.000 000	0.001
Batt. Endpoint	3.300	+20	1745 000 004	2.1	0.000 000	0.001



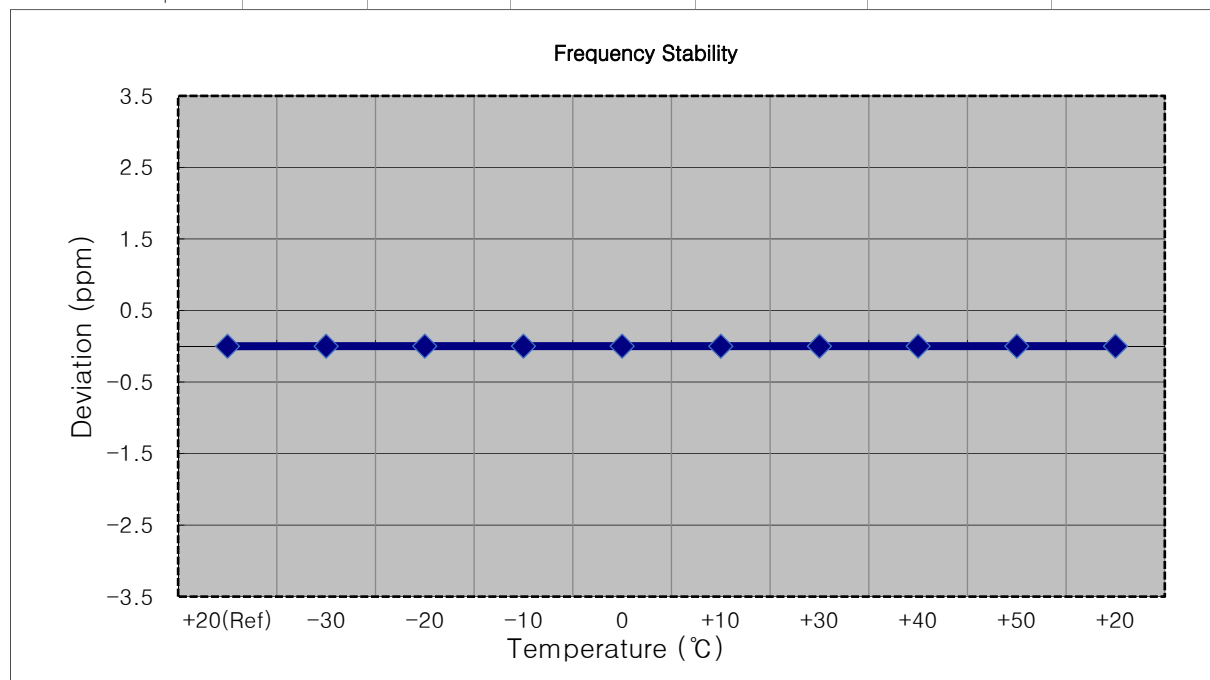
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1745,000,000 Hz
- ▣ CHANNEL: 132322 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 001	0.0	0.000 000	0.000
100 %		-30	1745 000 000	-1.4	0.000 000	-0.001
100 %		-20	1745 000 003	2.4	0.000 000	0.001
100 %		-10	1745 000 002	1.3	0.000 000	0.001
100 %		0	1745 000 003	1.6	0.000 000	0.001
100 %		+10	1745 000 003	1.9	0.000 000	0.001
100 %		+30	1745 000 002	1.2	0.000 000	0.001
100 %		+40	1745 000 013	12.3	0.000 001	0.007
100 %		+50	1745 000 003	2.4	0.000 000	0.001
Batt. Endpoint	3.300	+20	1744 999 987	-14.3	-0.000 001	-0.008



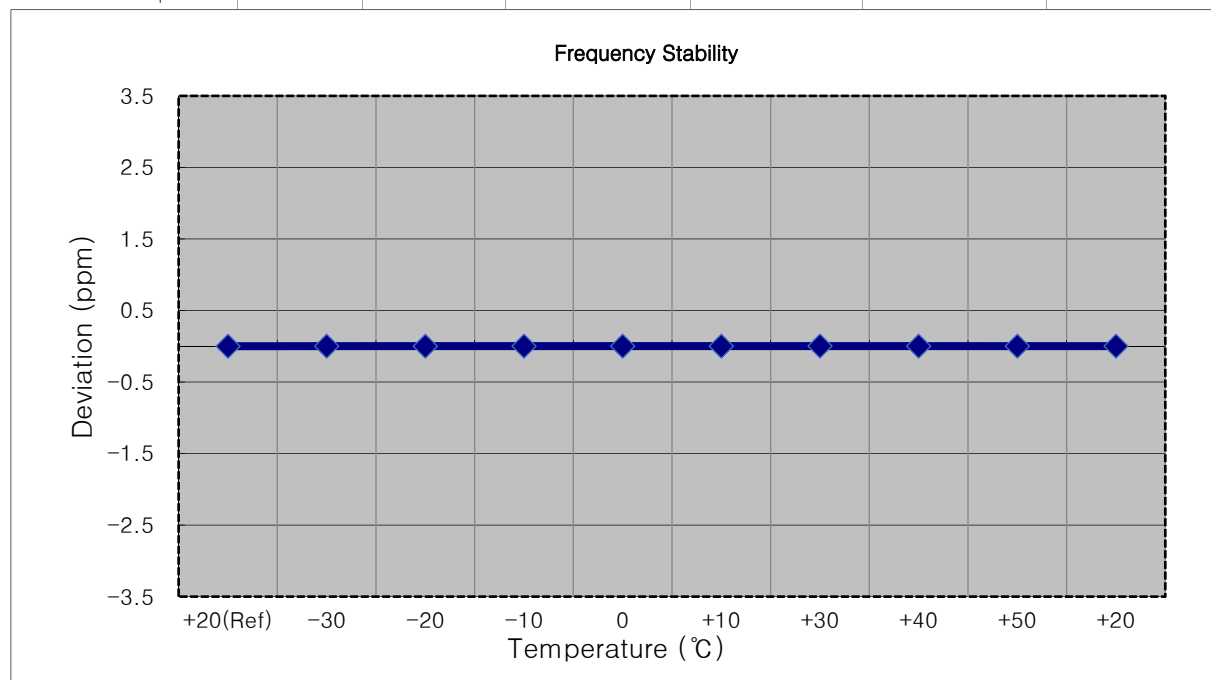
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1745,000,000 Hz
 ■ CHANNEL: 132322 (20 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1745 000 002	0.0	0.000 000	0.000
100 %		-30	1745 000 004	1.9	0.000 000	0.001
100 %		-20	1745 000 004	2.0	0.000 000	0.001
100 %		-10	1745 000 004	2.4	0.000 000	0.001
100 %		0	1745 000 004	2.2	0.000 000	0.001
100 %		+10	1745 000 003	1.7	0.000 000	0.001
100 %		+30	1745 000 003	1.8	0.000 000	0.001
100 %		+40	1745 000 004	2.8	0.000 000	0.002
100 %		+50	1745 000 004	2.4	0.000 000	0.001
Batt. Endpoint	3.300	+20	1745 000 003	1.7	0.000 000	0.001



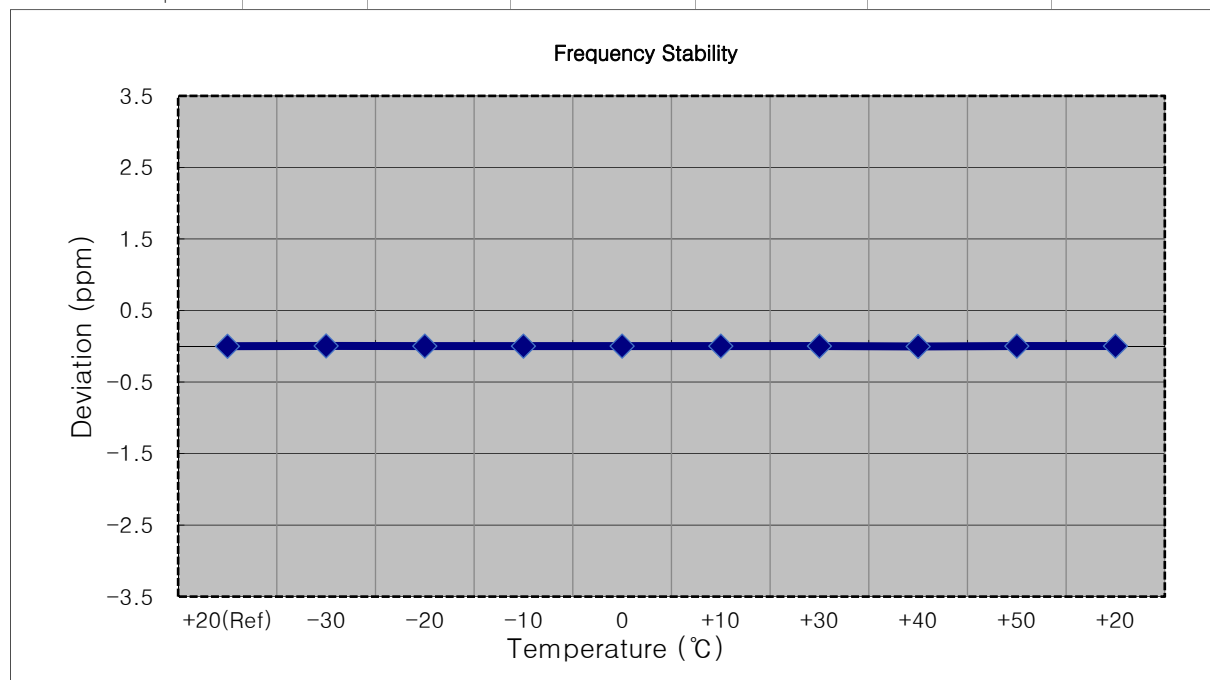
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1779,300,000 Hz
- ▣ CHANNEL: 132665 (1.4 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1779 300 002	0.0	0.000 000	0.000
100 %		-30	1779 300 004	2.2	0.000 000	0.001
100 %		-20	1779 300 003	1.1	0.000 000	0.001
100 %		-10	1779 300 004	2.5	0.000 000	0.001
100 %		0	1779 300 005	2.8	0.000 000	0.002
100 %		+10	1779 300 004	2.5	0.000 000	0.001
100 %		+30	1779 300 006	4.7	0.000 000	0.003
100 %		+40	1779 300 004	2.3	0.000 000	0.001
100 %		+50	1779 300 004	2.4	0.000 000	0.001
Batt. Endpoint	3.300	+20	1779 300 004	2.1	0.000 000	0.001



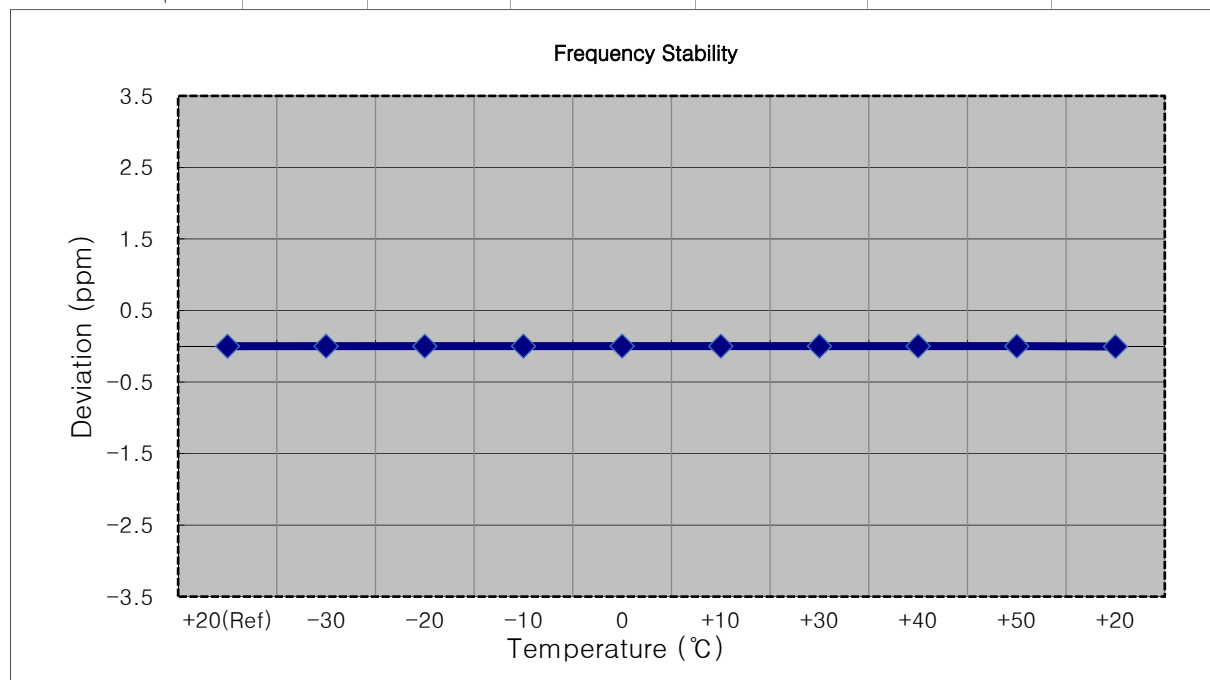
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1778,500,000 Hz
- ▣ CHANNEL: 132657 (3 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1778 500 003	0.0	0.000 000	0.000
100 %		-30	1778 500 011	7.5	0.000 000	0.004
100 %		-20	1778 500 007	3.8	0.000 000	0.002
100 %		-10	1778 500 007	3.2	0.000 000	0.002
100 %		0	1778 500 007	3.6	0.000 000	0.002
100 %		+10	1778 500 007	3.8	0.000 000	0.002
100 %		+30	1778 500 008	4.3	0.000 000	0.002
100 %		+40	1778 499 999	-4.9	0.000 000	-0.003
100 %		+50	1778 500 008	4.1	0.000 000	0.002
Batt. Endpoint	3.300	+20	1778 500 009	5.2	0.000 000	0.003



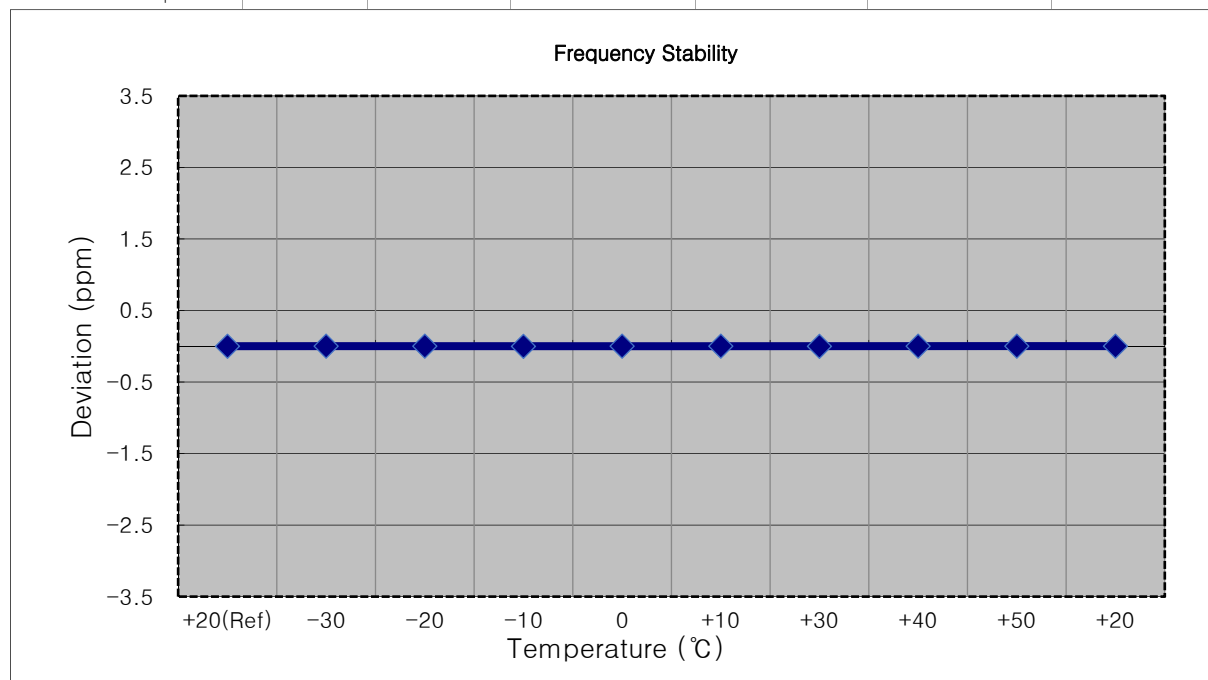
■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1777,500,000 Hz
 ■ CHANNEL: 132647 (5 MHz)
 ■ REFERENCE VOLTAGE: 3.880 VDC
 ■ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1777 500 002	0.0	0.000 000	0.000
100 %		-30	1777 500 003	1.8	0.000 000	0.001
100 %		-20	1777 500 004	1.9	0.000 000	0.001
100 %		-10	1777 500 004	2.6	0.000 000	0.001
100 %		0	1777 500 005	3.7	0.000 000	0.002
100 %		+10	1777 500 005	3.0	0.000 000	0.002
100 %		+30	1777 500 005	2.9	0.000 000	0.002
100 %		+40	1777 500 005	3.5	0.000 000	0.002
100 %		+50	1777 500 004	2.8	0.000 000	0.002
Batt. Endpoint	3.300	+20	1777 499 994	-7.2	0.000 000	-0.004



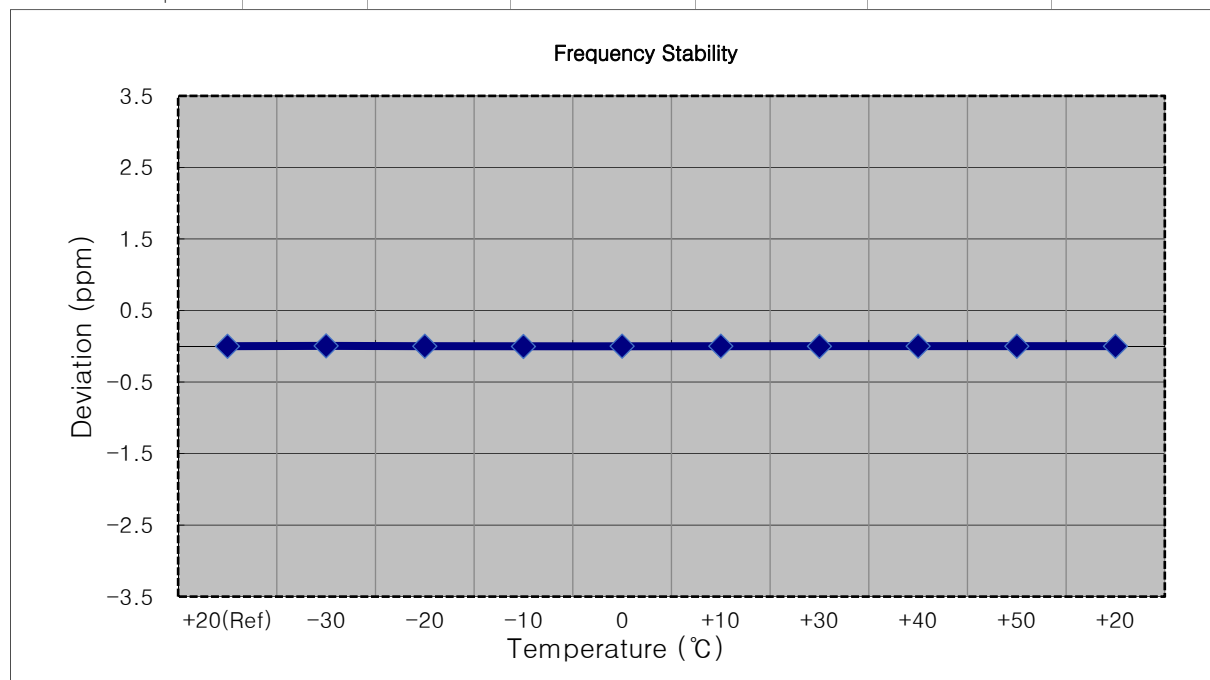
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1775,000,000 Hz
- ▣ CHANNEL: 132622 (10 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1774 999 998	0.0	0.000 000	0.000
100 %		-30	1775 000 000	2.4	0.000 000	0.001
100 %		-20	1775 000 001	3.0	0.000 000	0.002
100 %		-10	1774 999 996	-2.1	0.000 000	-0.001
100 %		0	1775 000 001	2.7	0.000 000	0.002
100 %		+10	1775 000 000	2.5	0.000 000	0.001
100 %		+30	1774 999 997	-1.1	0.000 000	-0.001
100 %		+40	1775 000 001	2.9	0.000 000	0.002
100 %		+50	1775 000 001	2.9	0.000 000	0.002
Batt. Endpoint	3.300	+20	1775 000 000	2.5	0.000 000	0.001



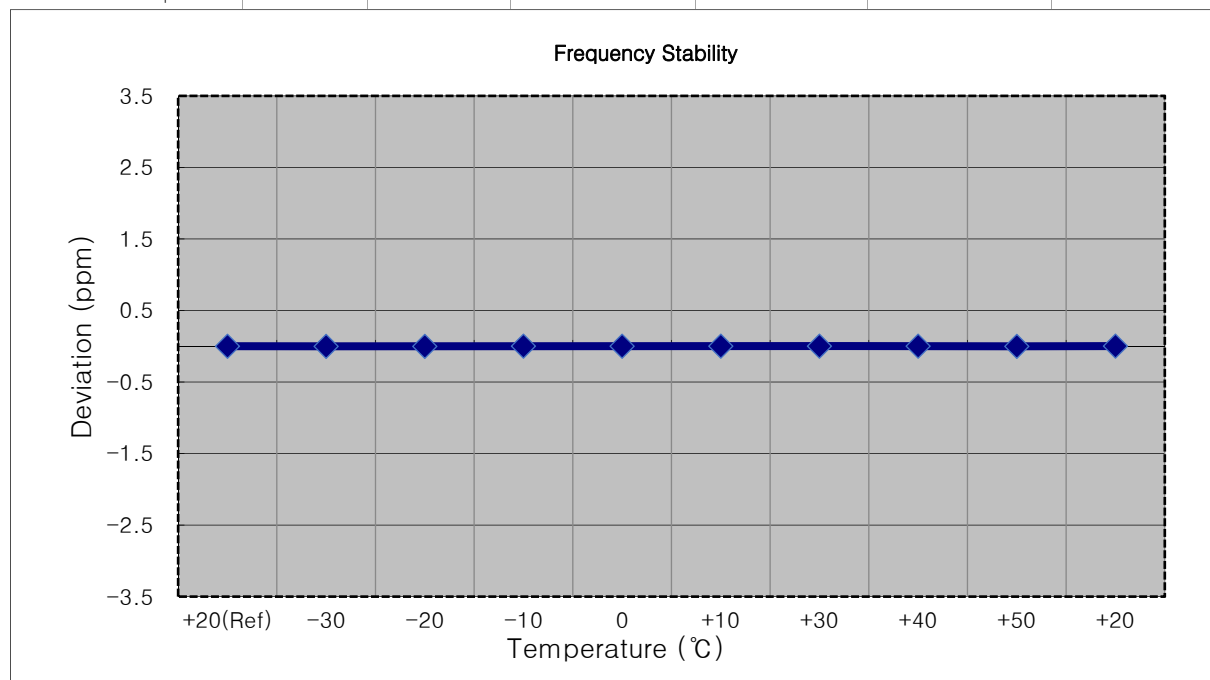
- ▣ MODE: LTE 66
- ▣ OPERATING FREQUENCY: 1772,500,000 Hz
- ▣ CHANNEL: 132597 (15 MHz)
- ▣ REFERENCE VOLTAGE: 3.880 VDC
- ▣ DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100 %	3.880	+20(Ref)	1772 499 998	0.0	0.000 000	0.000
100 %		-30	1772 500 007	8.8	0.000 000	0.005
100 %		-20	1772 500 000	1.9	0.000 000	0.001
100 %		-10	1772 499 993	-5.0	0.000 000	-0.003
100 %		0	1772 500 001	2.1	0.000 000	0.001
100 %		+10	1772 500 001	2.2	0.000 000	0.001
100 %		+30	1772 499 997	-1.7	0.000 000	-0.001
100 %		+40	1772 500 002	3.3	0.000 000	0.002
100 %		+50	1772 500 000	1.8	0.000 000	0.001
Batt. Endpoint	3.300	+20	1772 500 000	1.6	0.000 000	0.001



■ MODE: LTE 66
 ■ OPERATING FREQUENCY: 1770,000,000 Hz
 ■ CHANNEL: 132572 (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)	1769 999 998	0.0	0.000 000	0.000
100 %		-30	1769 999 996	-2.0	0.000 000	-0.001
100 %		-20	1769 999 996	-2.1	0.000 000	-0.001
100 %		-10	1770 000 001	2.7	0.000 000	0.002
100 %		0	1770 000 000	1.5	0.000 000	0.001
100 %		+10	1770 000 001	2.4	0.000 000	0.001
100 %		+30	1770 000 001	3.1	0.000 000	0.002
100 %		+40	1770 000 001	2.9	0.000 000	0.002
100 %		+50	1769 999 996	-2.0	0.000 000	-0.001
Batt. Endpoint	3.300	+20	1770 000 002	4.1	0.000 000	0.002



10. TEST DATA

10.1 UPLINK CARRIER AGGREGATION

Test Note

- All tests were evaluated for the two bands using various combinations of RB size, RB offset, modulation, and channel bandwidth.
- All modes of operation were investigated and the worst case configuration results are reported in this section. Please refer to the table below.
- The worst case is reported with the modulations, RB sizes and offsets.
 - 5A(Main1)-66A(Sub2)
(PCC - Modulation: QPSK, RB: 1, RB Offset: 0, SCC - Modulation: QPSK, RB: 1, RB Offset: 0)
 - 12A(Main1)-66A(Sub2)
(PCC - Modulation: QPSK, RB: 1, RB Offset: 0, SCC - Modulation: QPSK, RB: 1, RB Offset: 0)

Radiated Spurious Emissions

PCC	SCC	PCC		SCC	
		BW(MHz)	Channel	BW(MHz)	Channel
5A(Main1)	66A(Sub2)	1.4	20643	15	132597
12A(Main1)	66A(Sub2)	10	23060	15	132597

10.1.1 RADIATED SPURIOUS EMISSIONS

5A(Main1)(PCC)-66A(Sub2)(SCC)

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
1 696.60	-42.79	9.73	-58.01	2.07	V	-50.35	-13.00
2 544.90	-31.97	10.25	-43.01	2.53	H	-35.29	-13.00
3 393.20	-42.79	11.20	-51.68	2.98	V	-43.46	-13.00

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 545.00	-42.42	12.34	-60.13	3.07	H	-50.86	-13.00
5 317.50	-42.79	13.08	-56.30	3.79	V	-47.01	-13.00
7 090.00	-44.05	10.91	-48.30	4.48	H	-41.87	-13.00

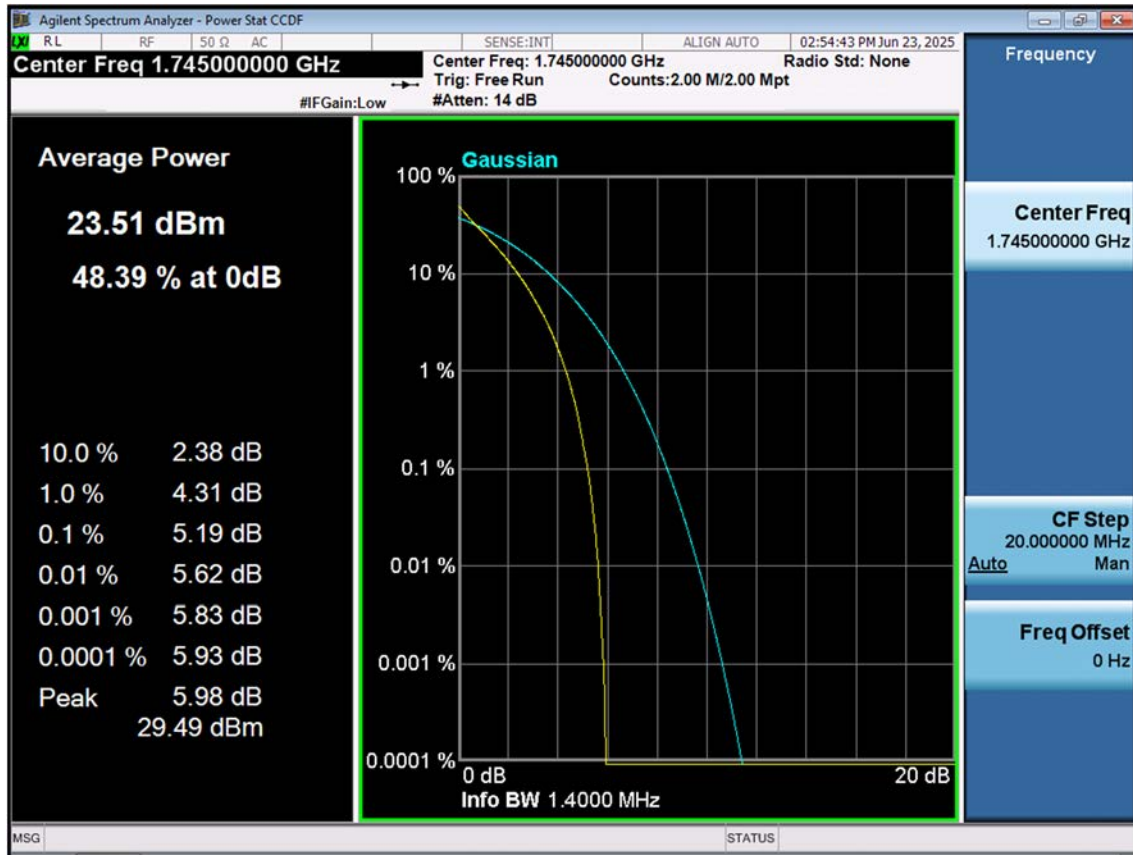
12A(Main1)(PCC)-66A(Sub2)(SCC)

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
1 408.00	-38.68	7.81	-51.74	1.87	H	-45.80	-13.00
2 112.00	-40.38	9.46	-51.84	2.34	V	-44.72	-13.00
2 816.00	-42.24	10.68	-52.54	2.69	H	-44.55	-13.00

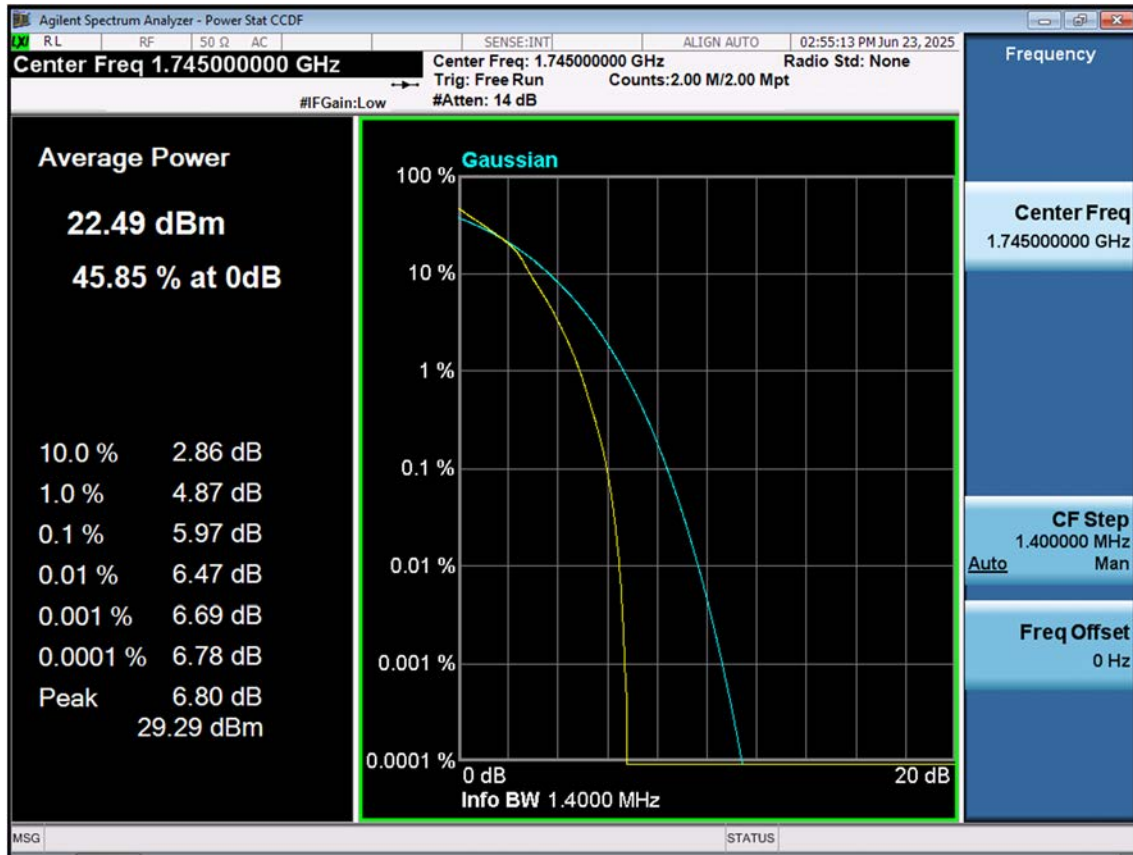
Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 545.00	-43.52	12.34	-61.23	3.07	V	-51.96	-13.00
5 317.50	-42.99	13.08	-56.50	3.79	V	-47.21	-13.00
7 090.00	-44.67	10.91	-48.92	4.48	V	-42.49	-13.00

11. TEST PLOTS(Main 1 ANT)

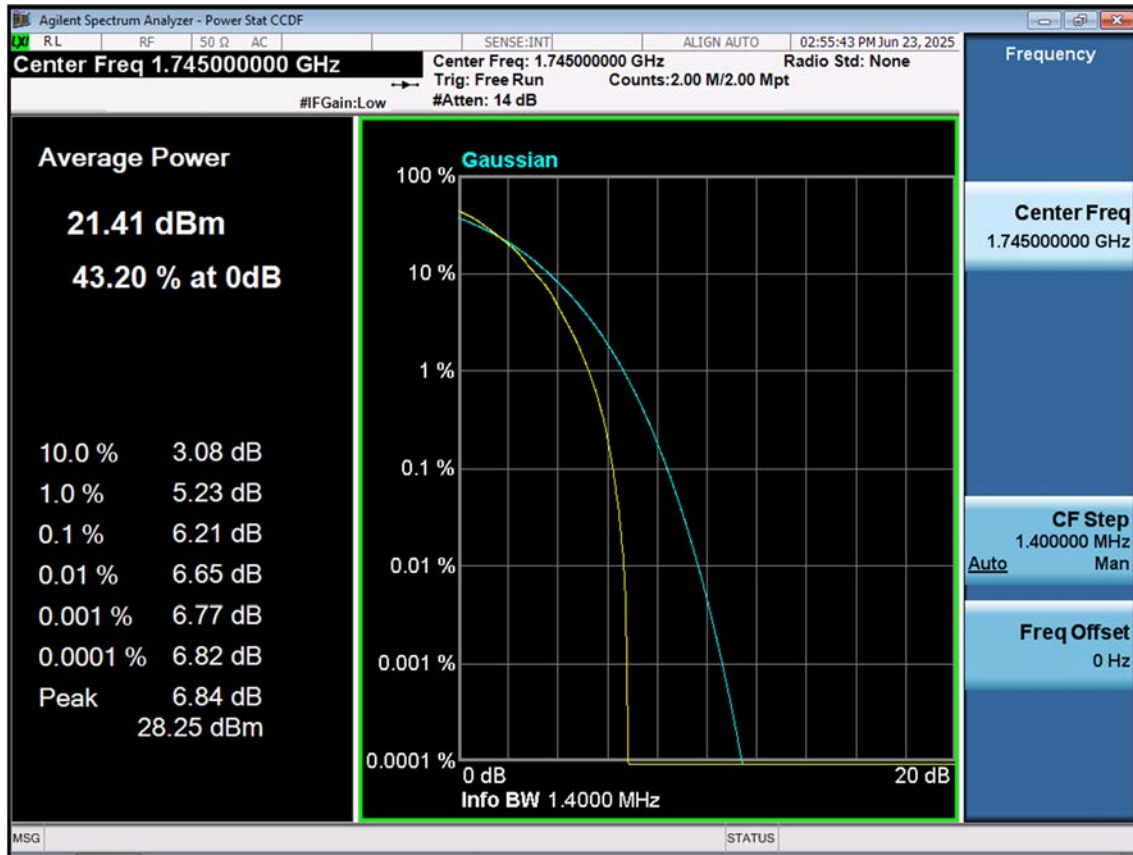
LTE B66_1.4M_PAR_Mid_QPSK_FullRB



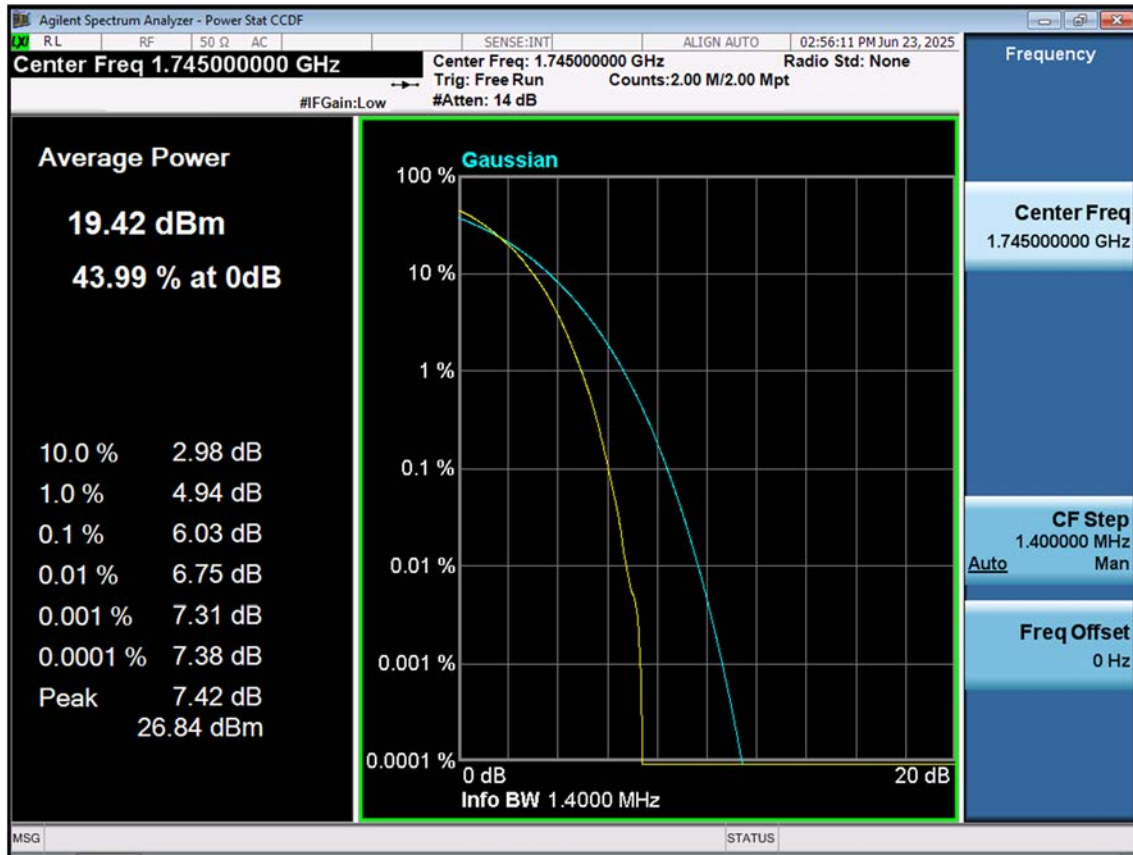
LTE B66_1.4M_PAR_Mid_16QAM_FullRB



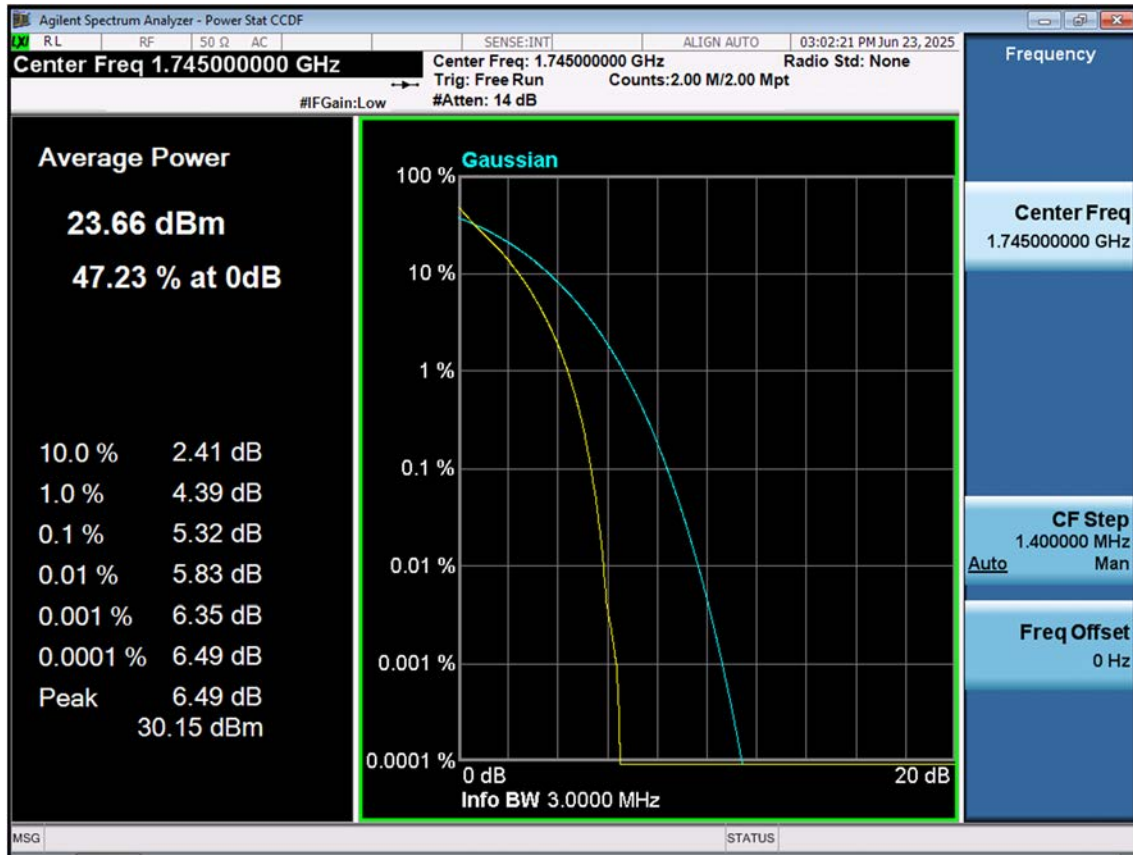
LTE B66_1.4M_PAR_Mid_64QAM_FullRB



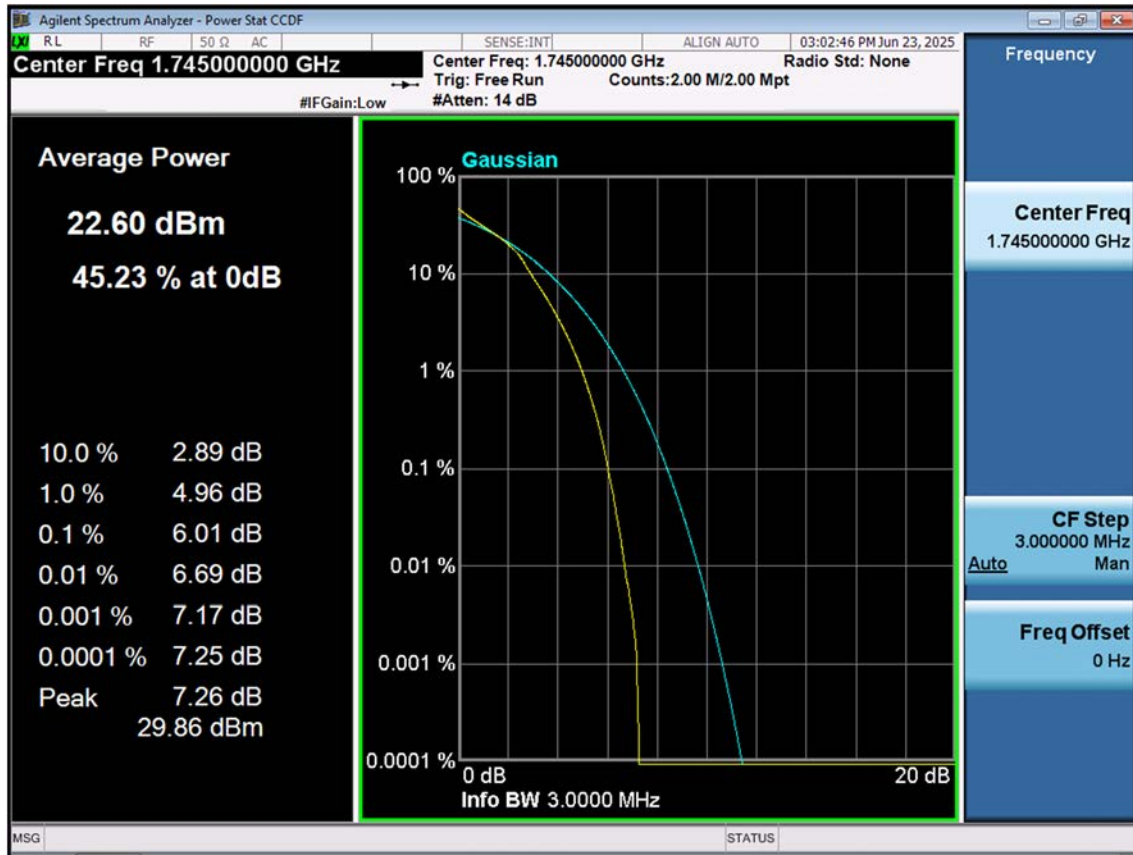
LTE B66_1.4M_PAR_Mid_256QAM_FullRB



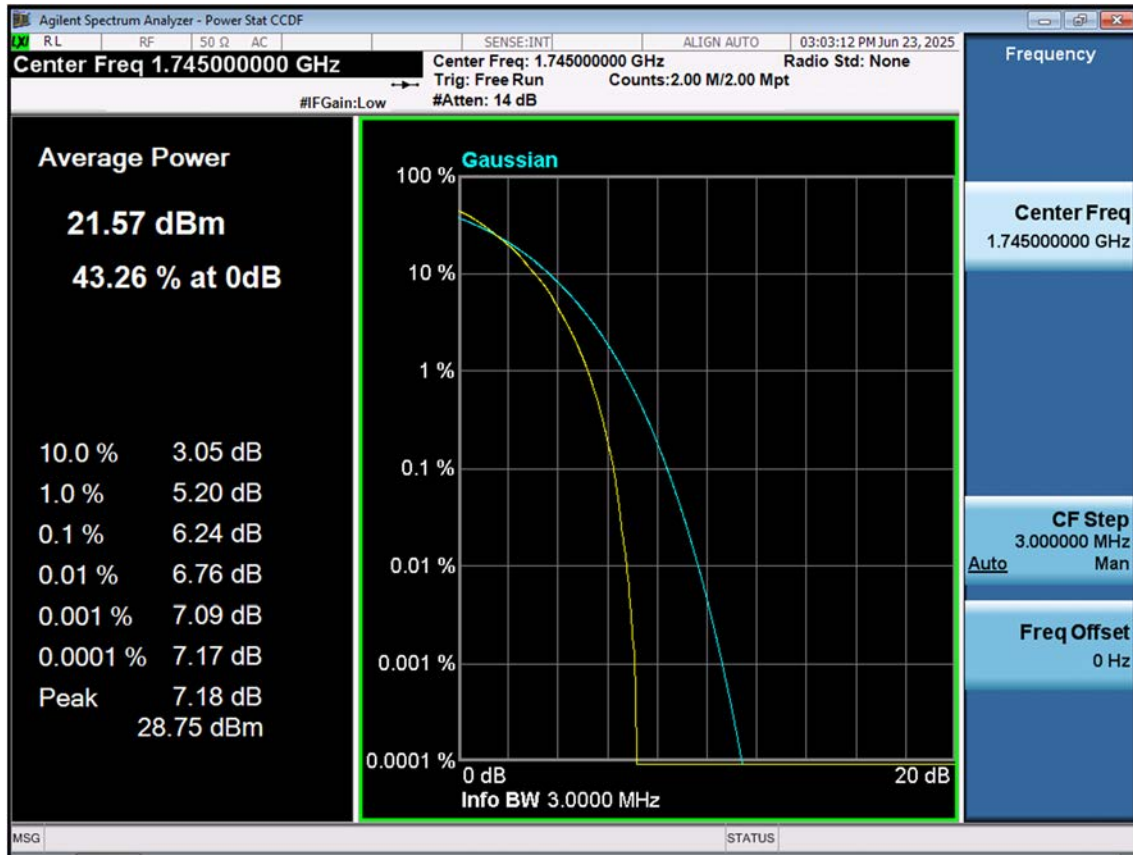
LTE B66_3 M_PAR_Mid_QPSK_FullRB



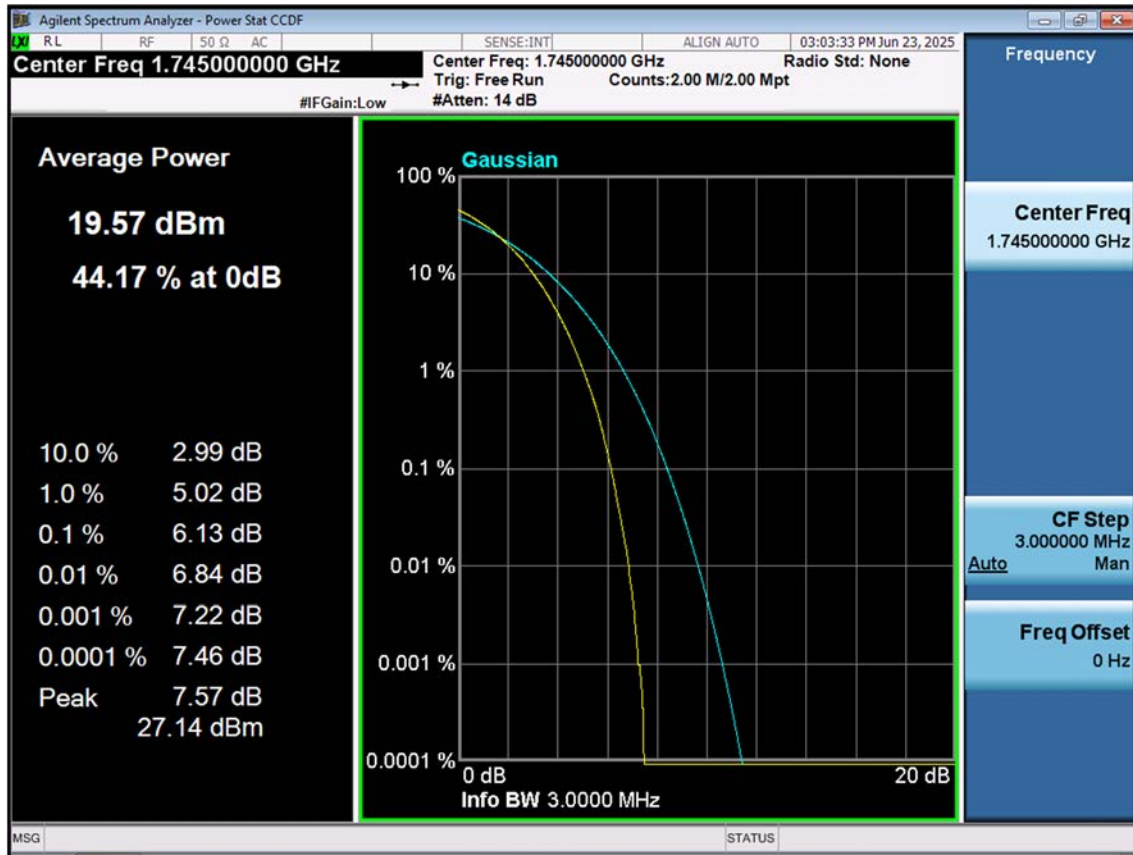
LTE B66_3 M_PAR_Mid_16QAM_FullRB



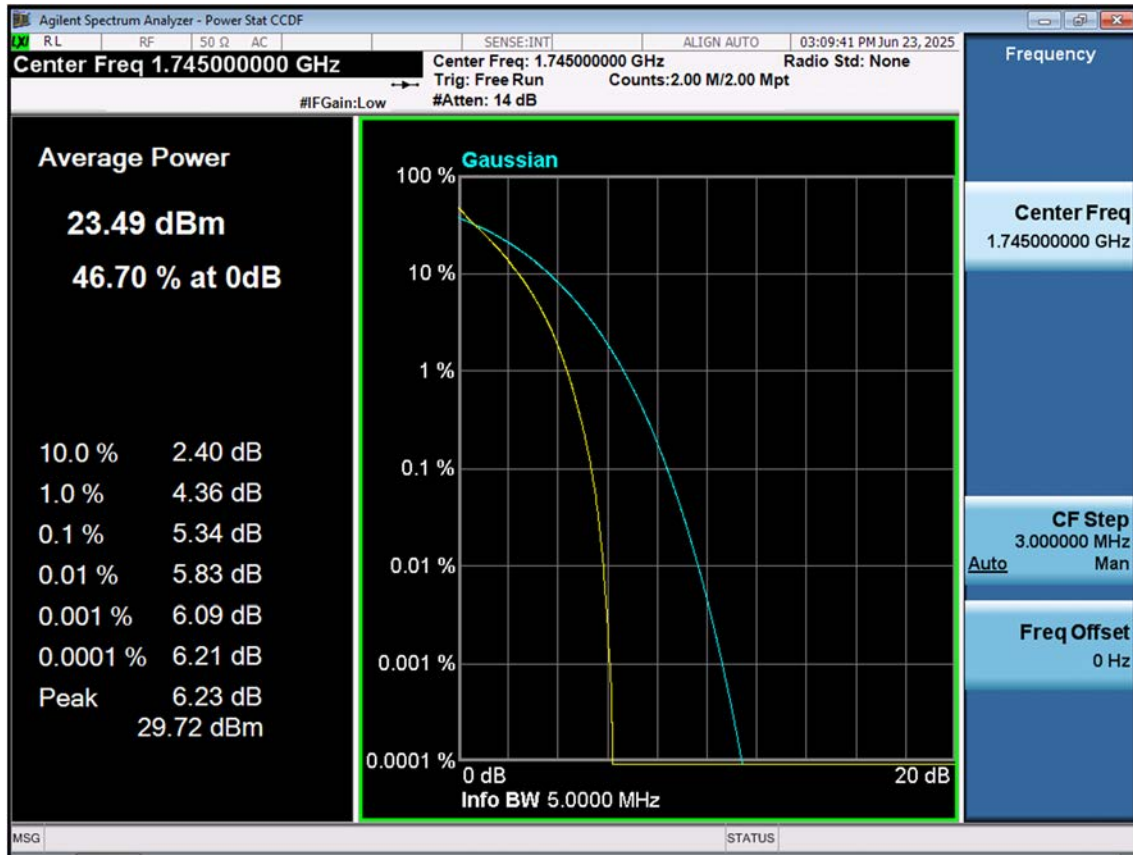
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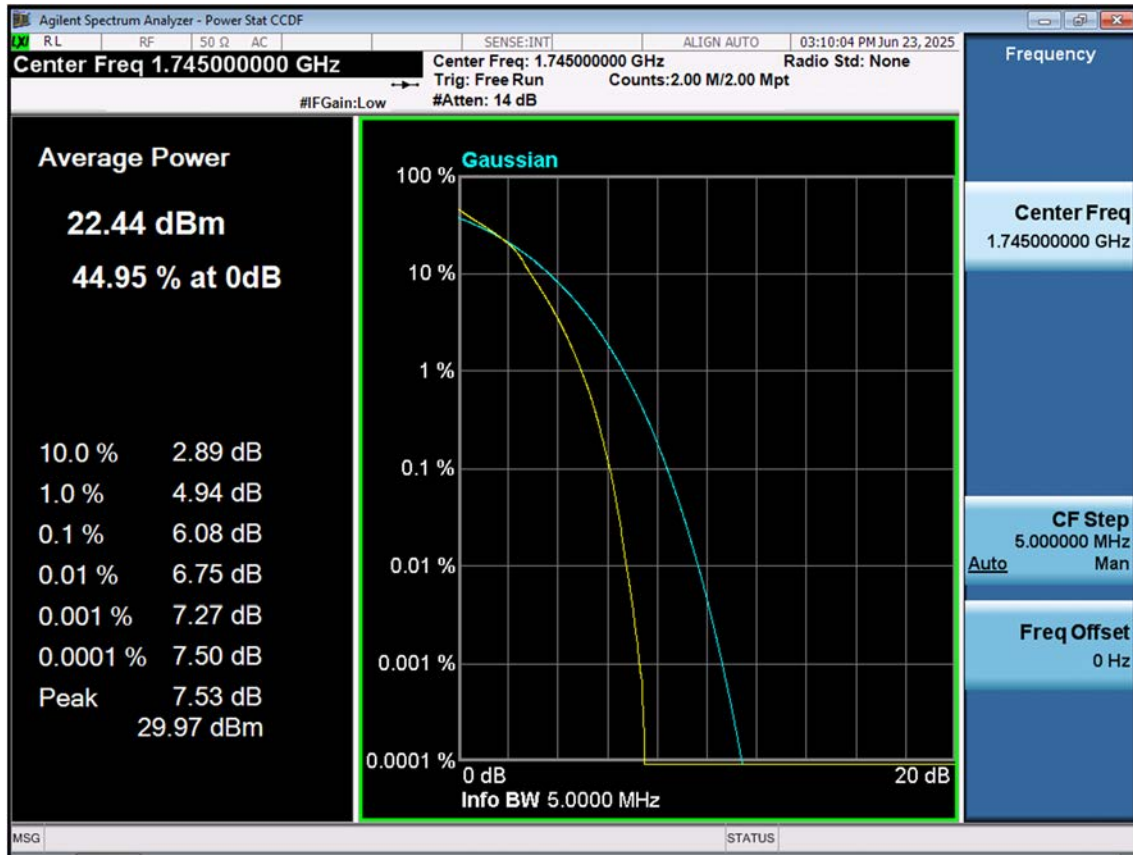
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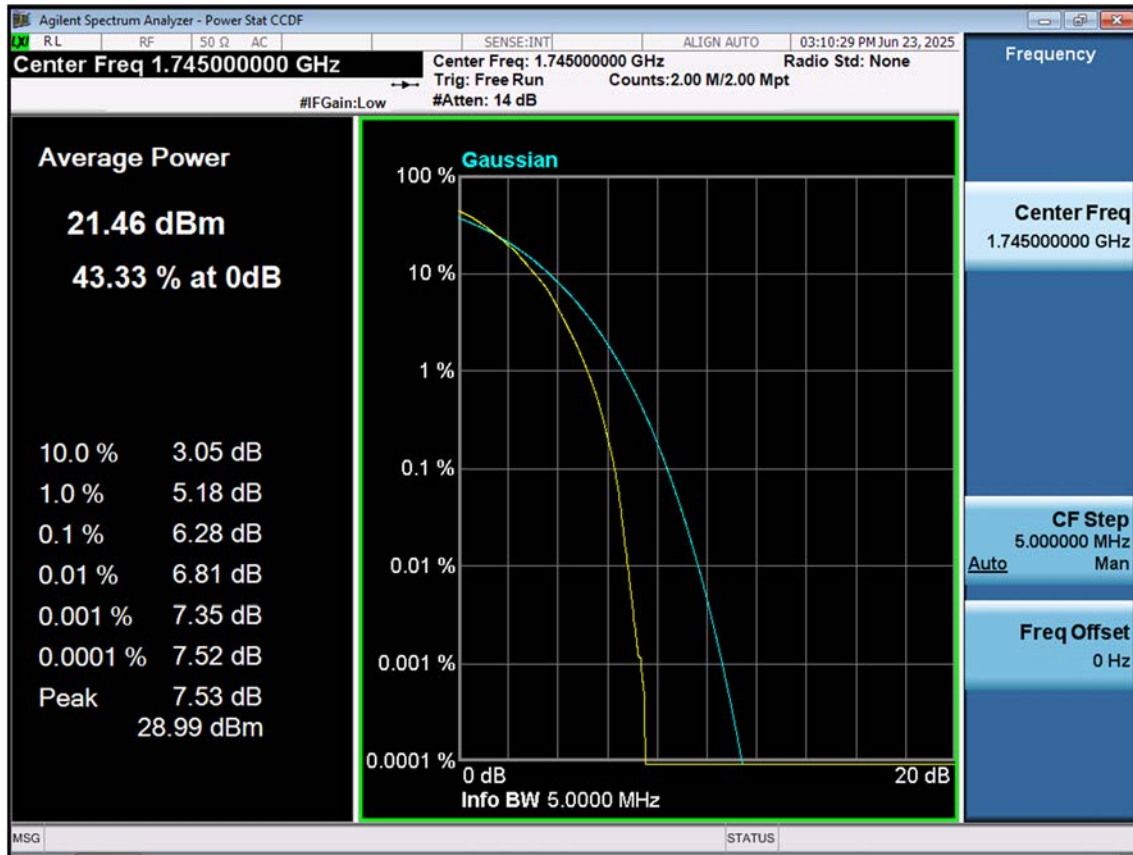
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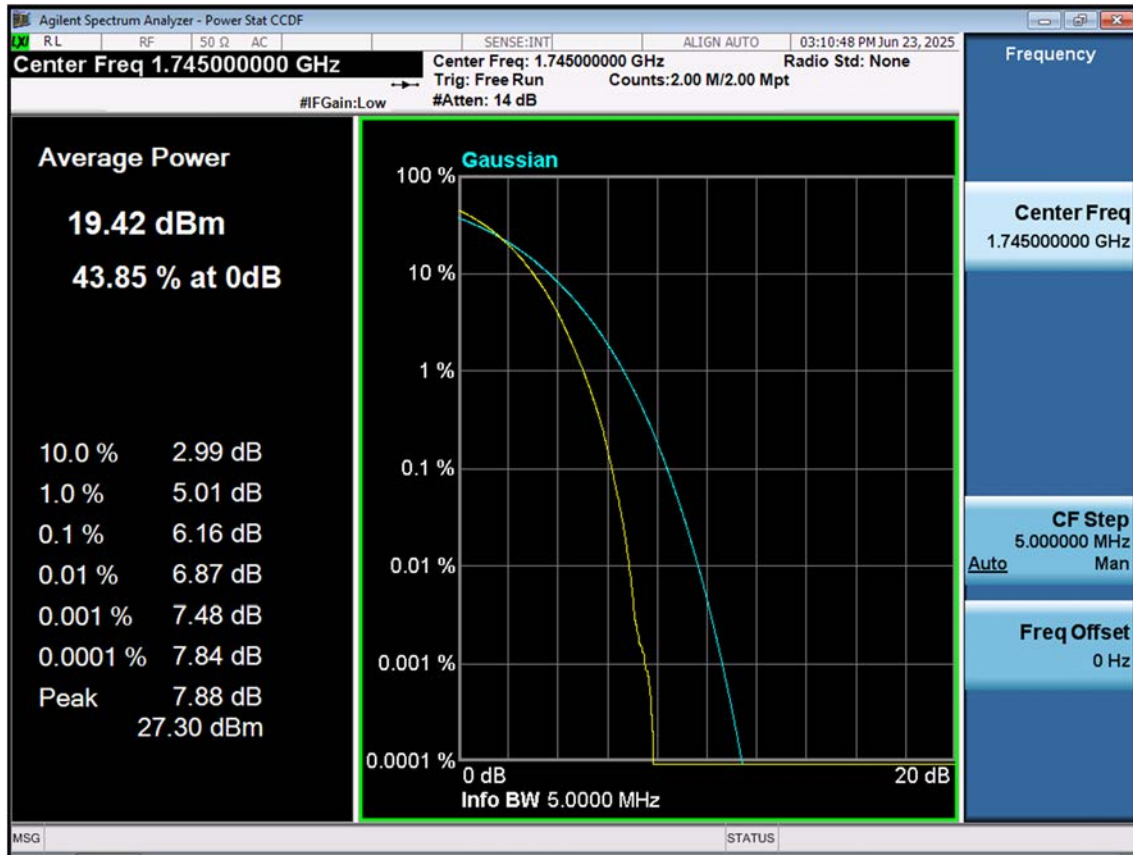
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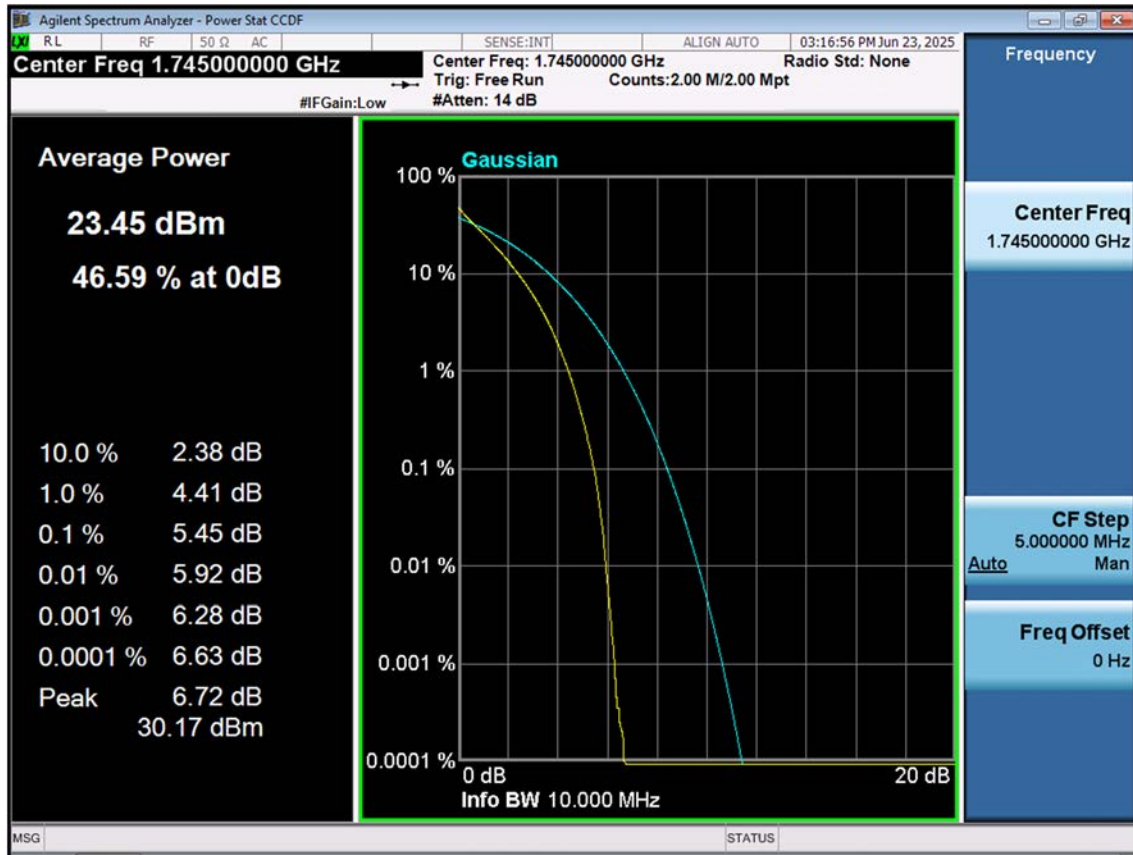
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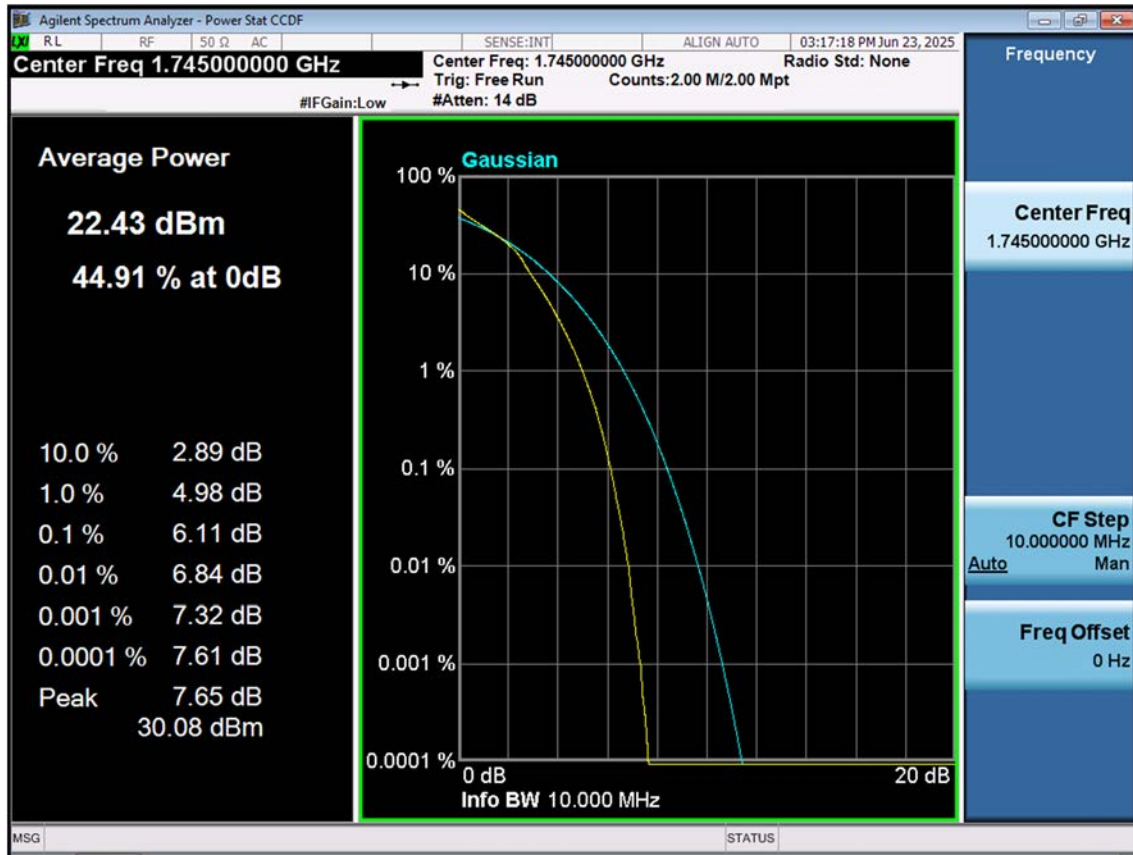
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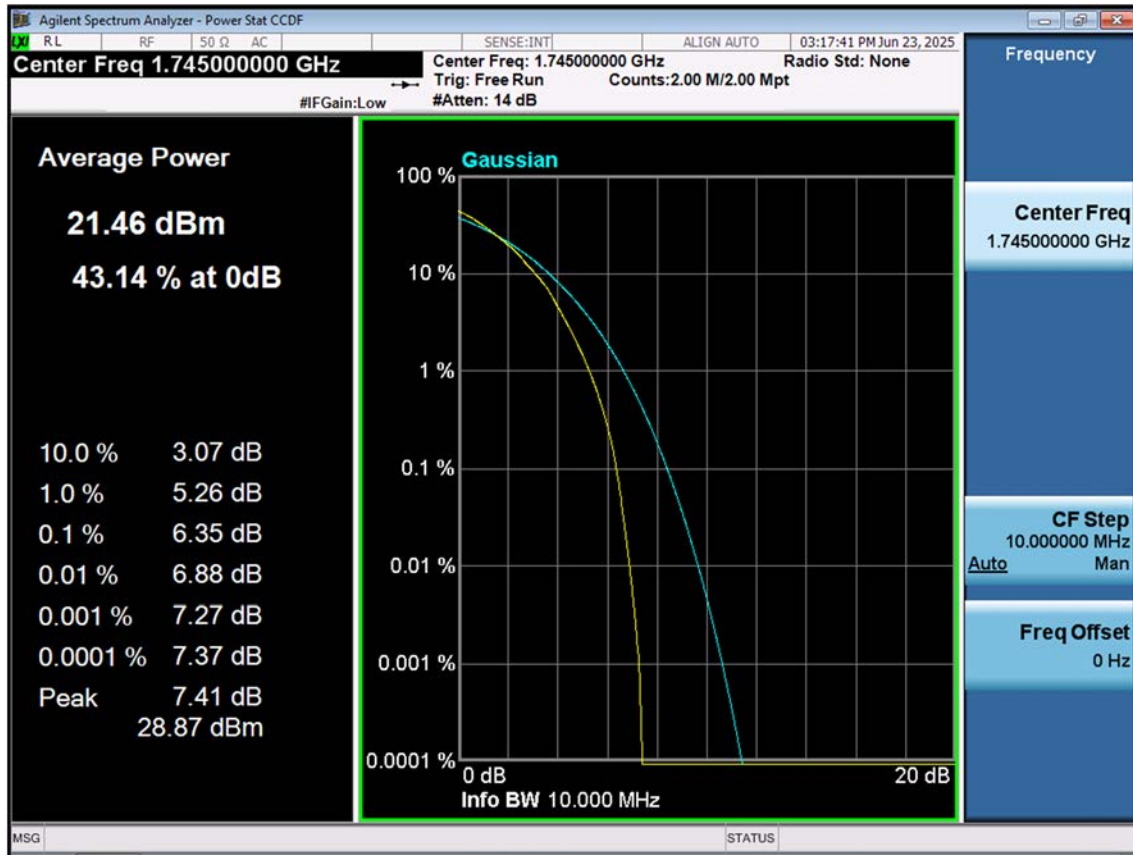
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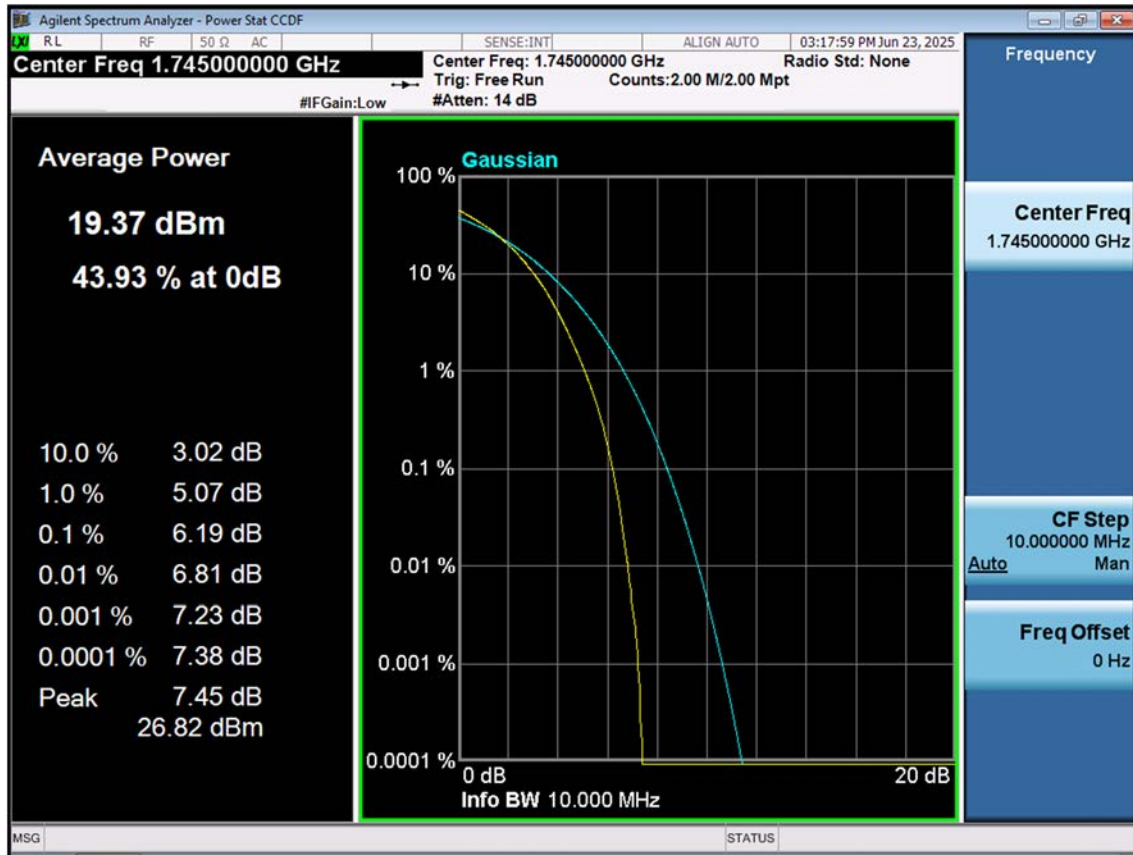
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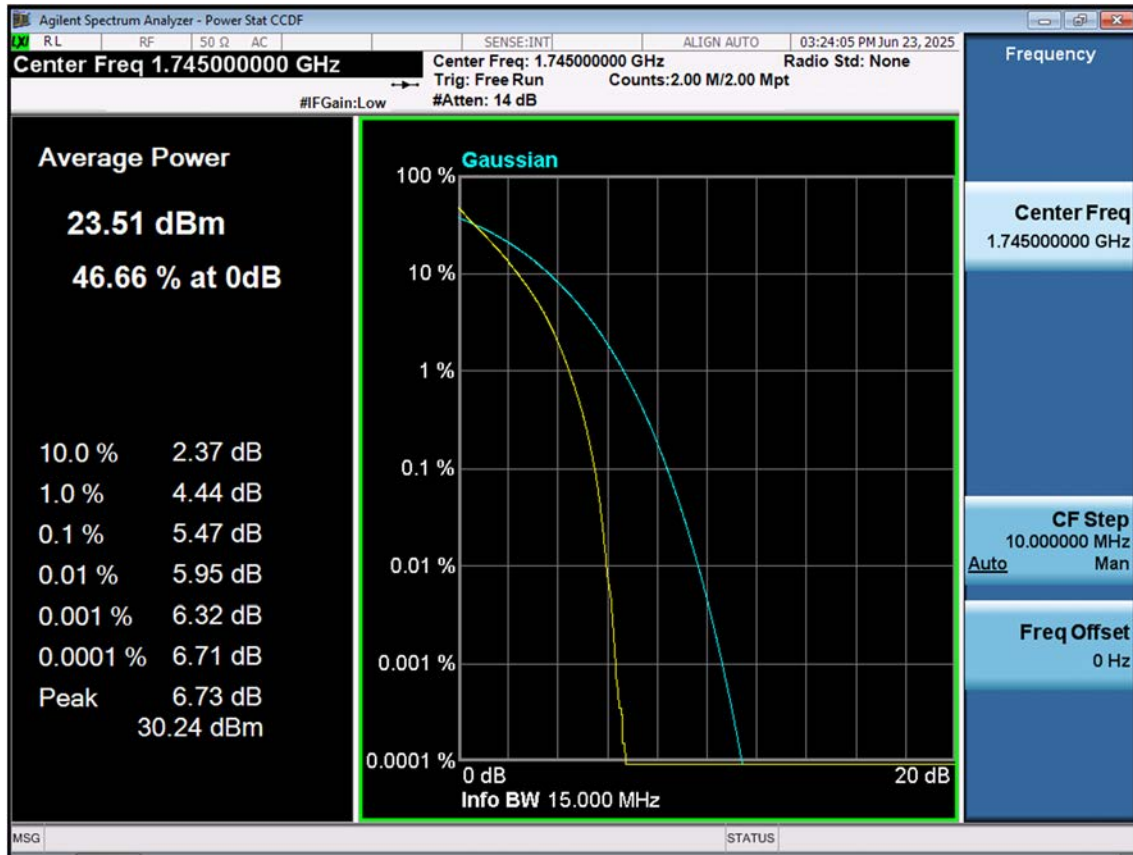
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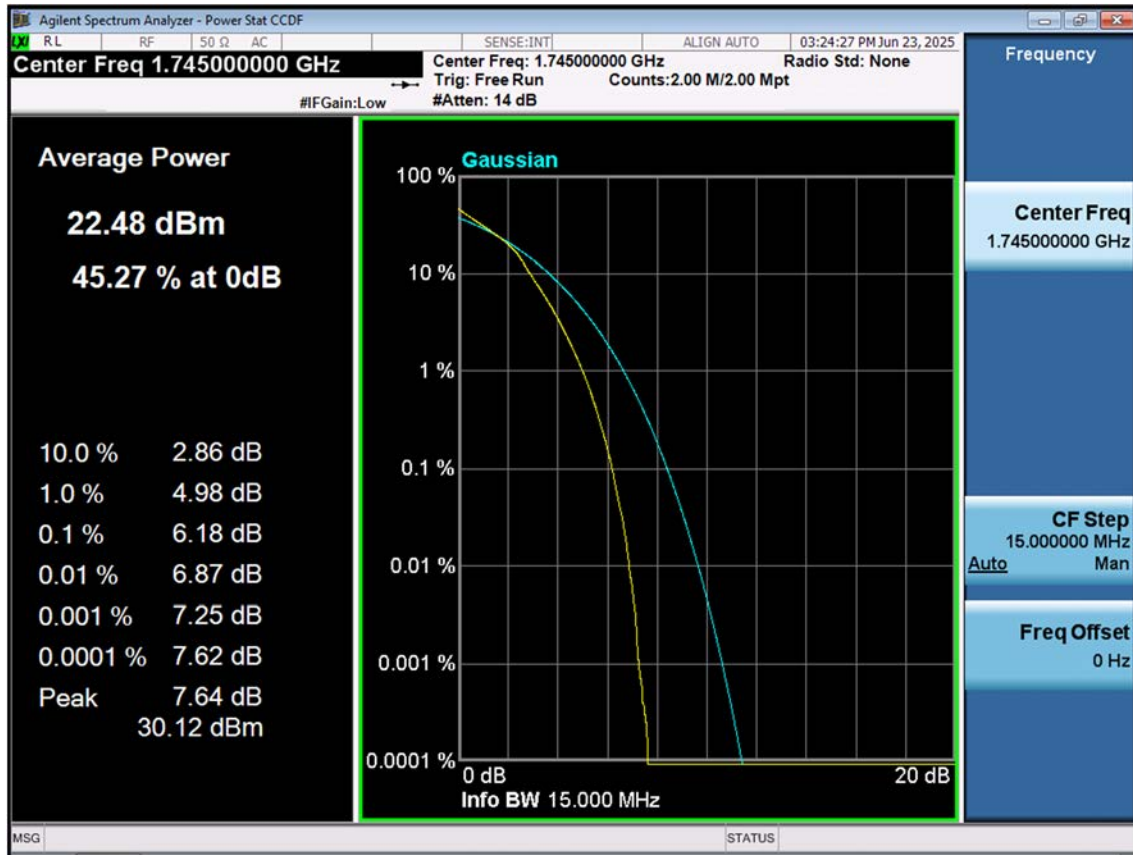
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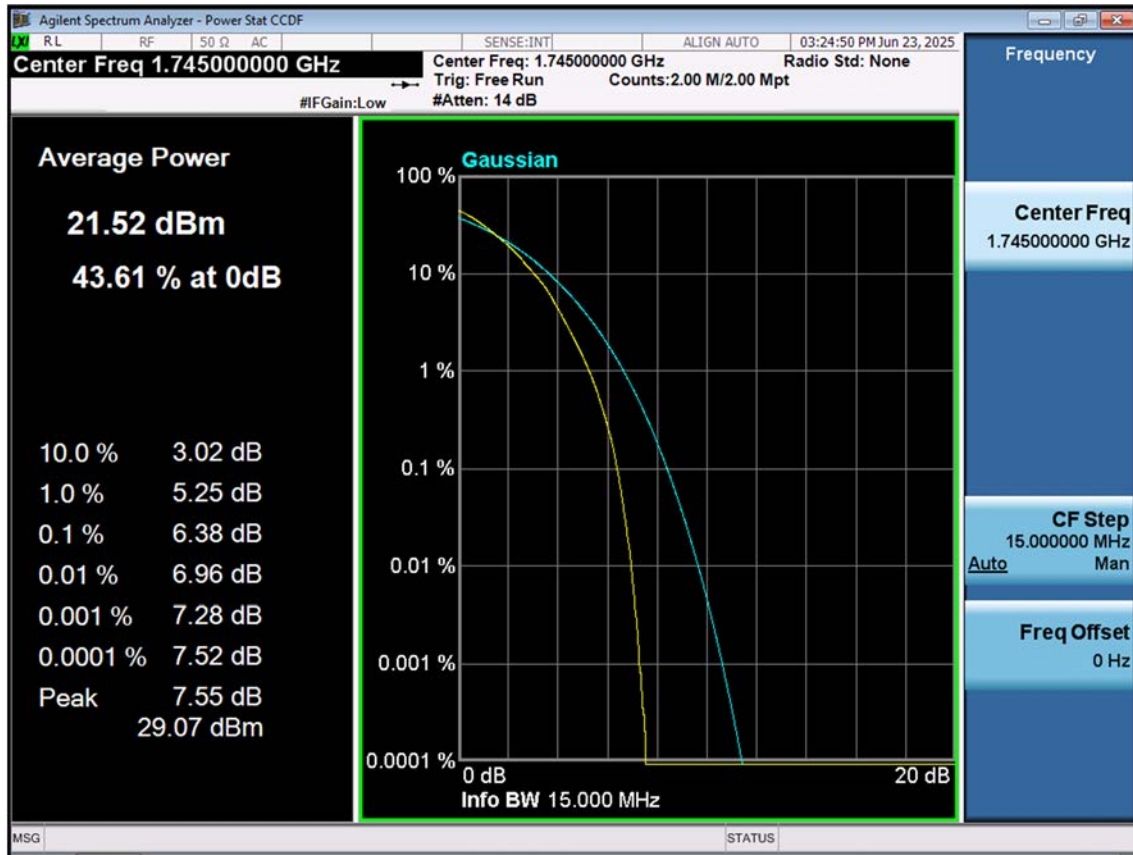
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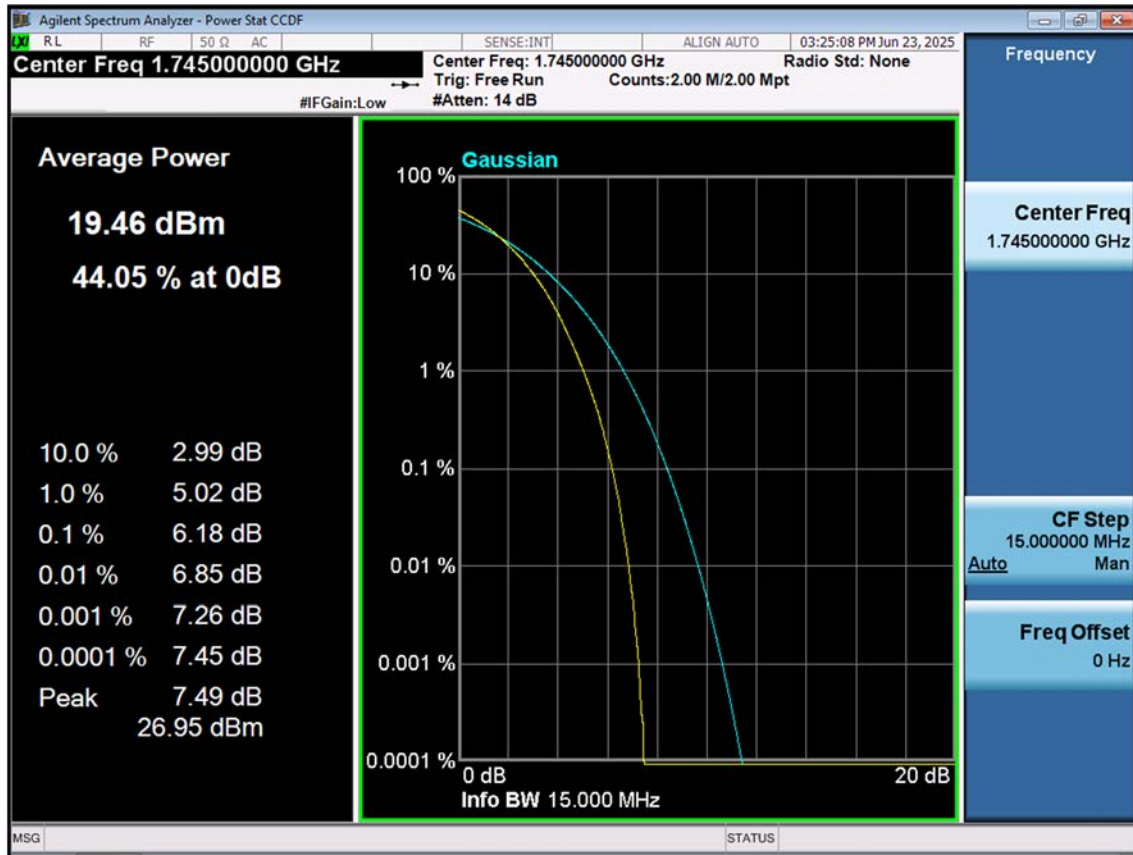
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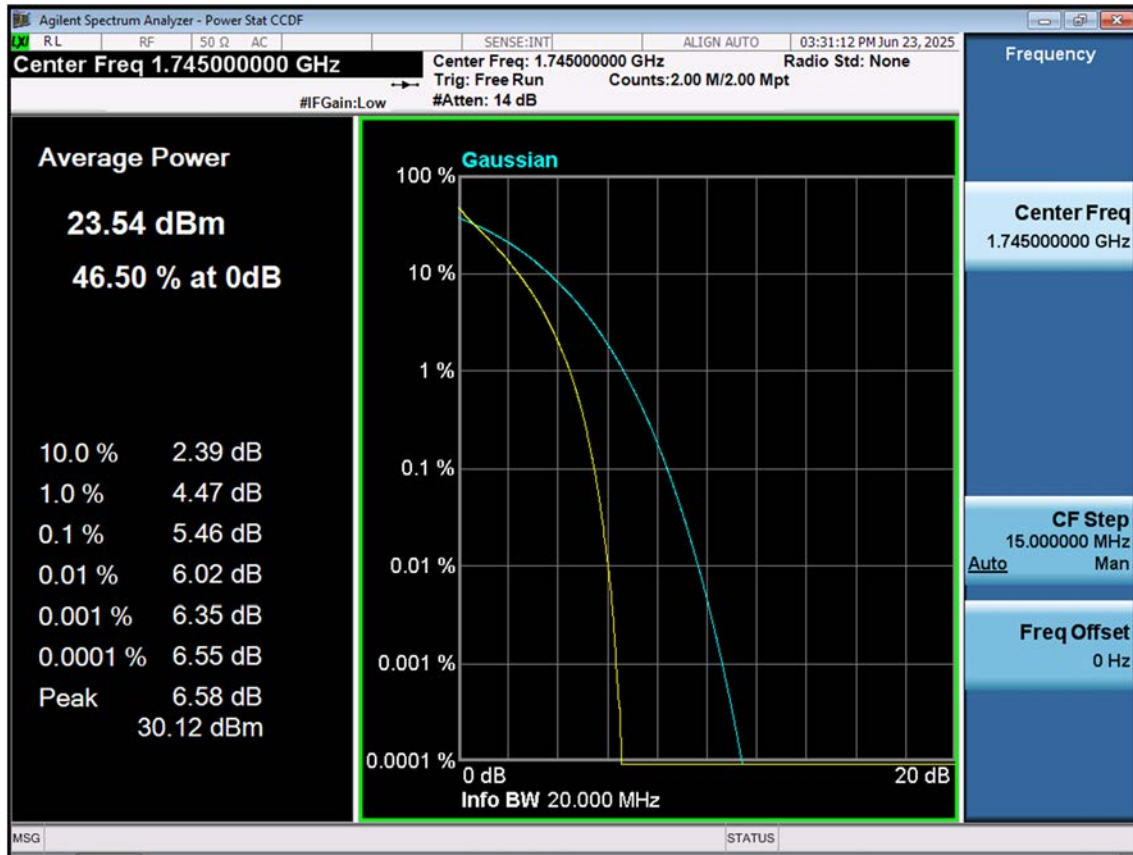
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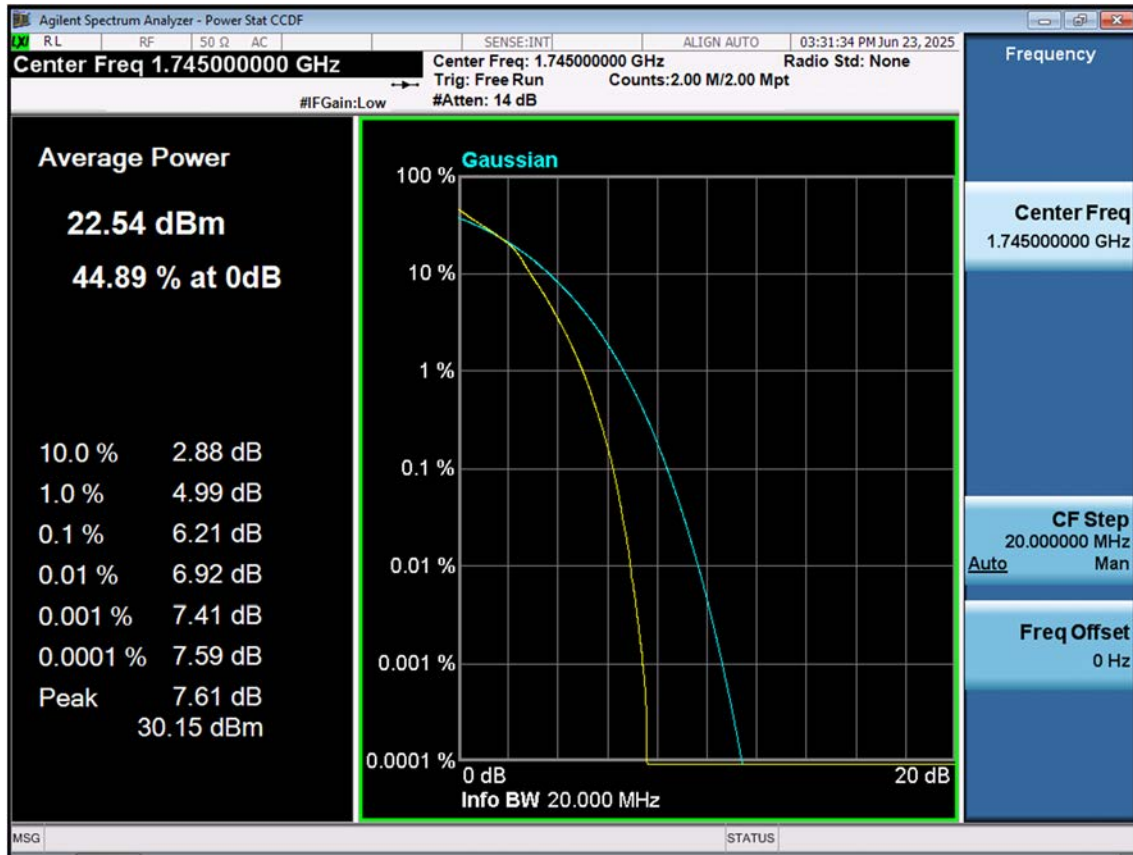
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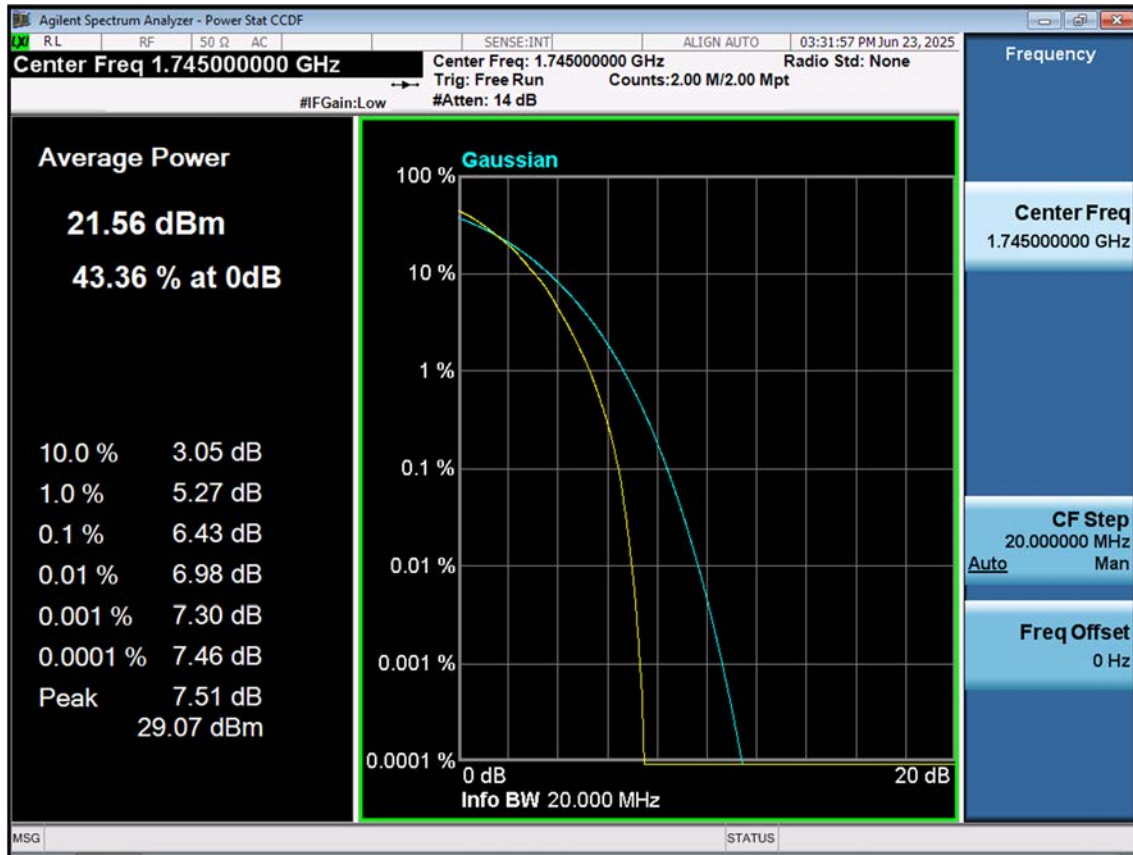
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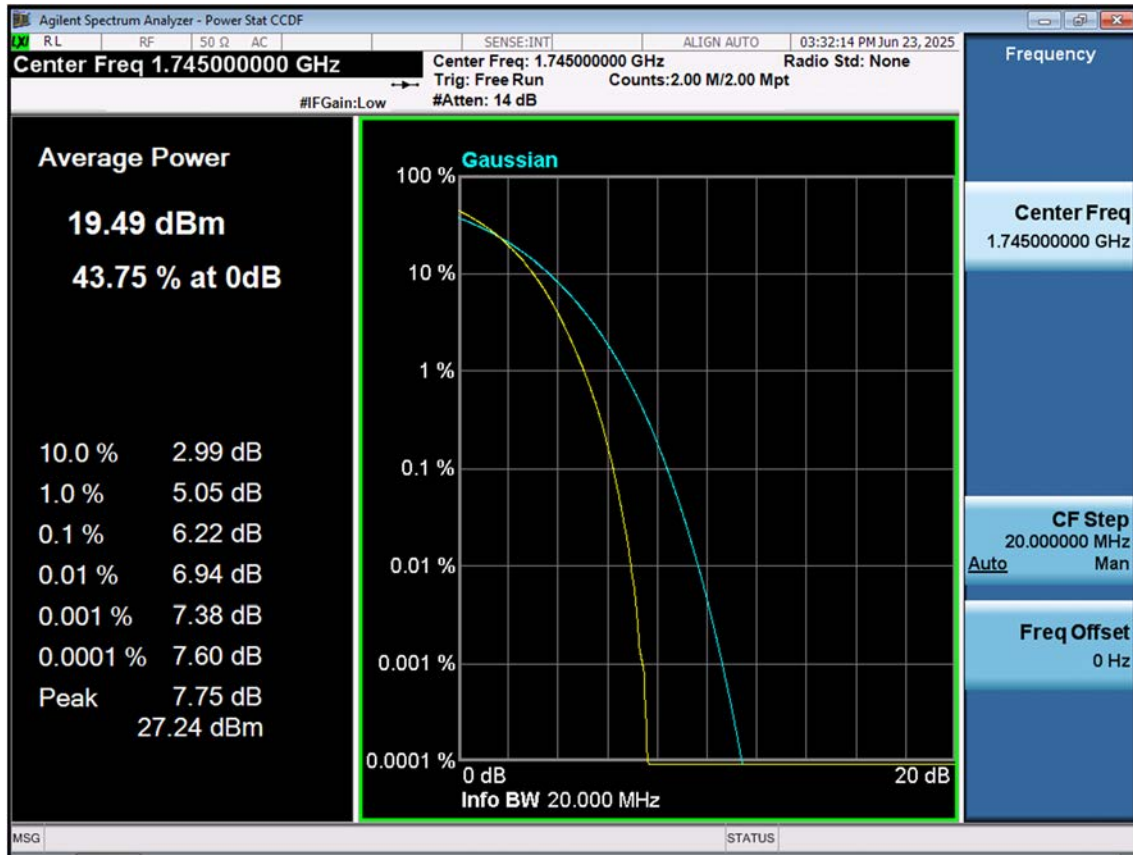
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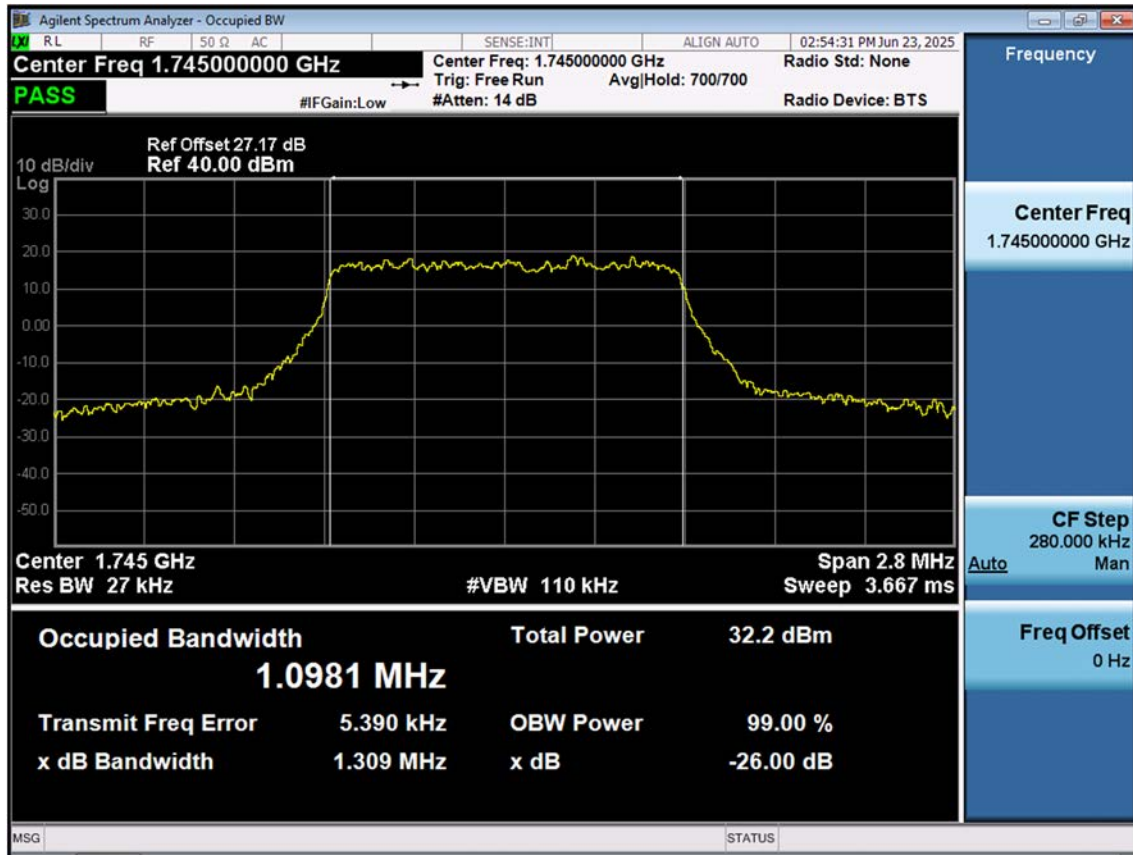
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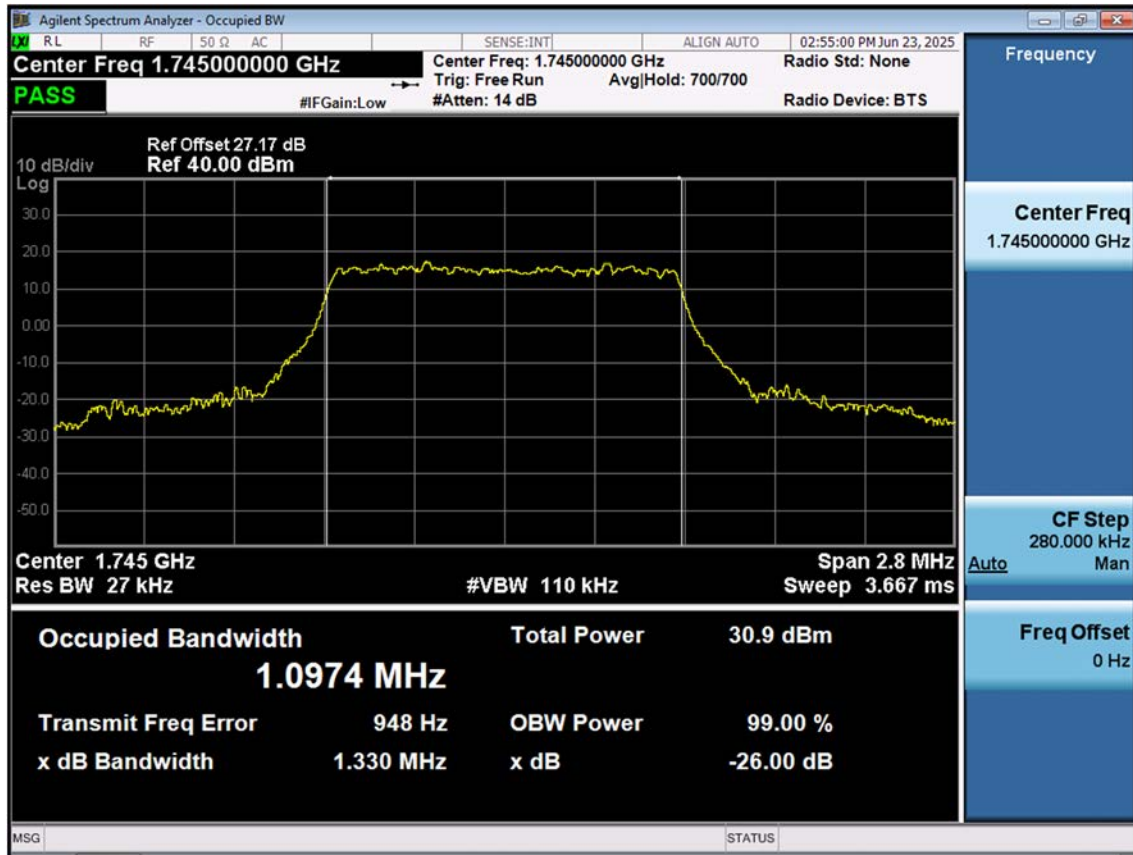
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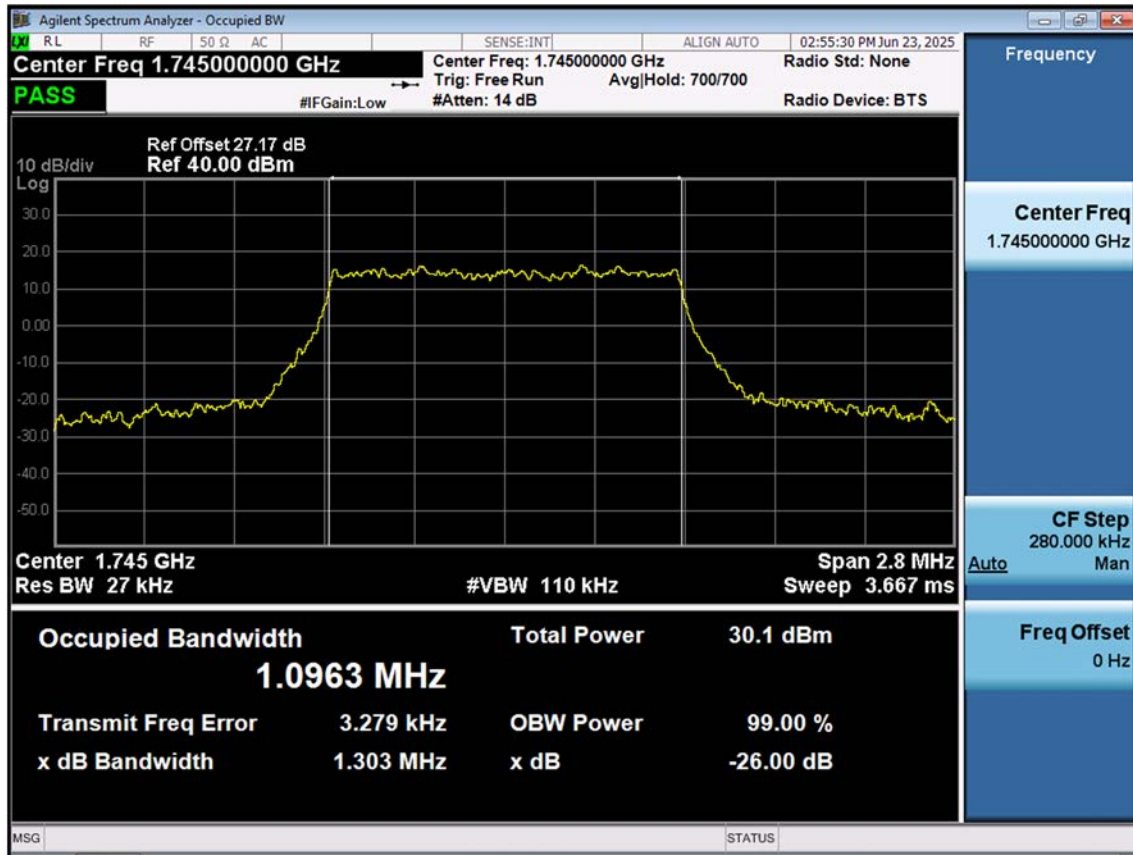
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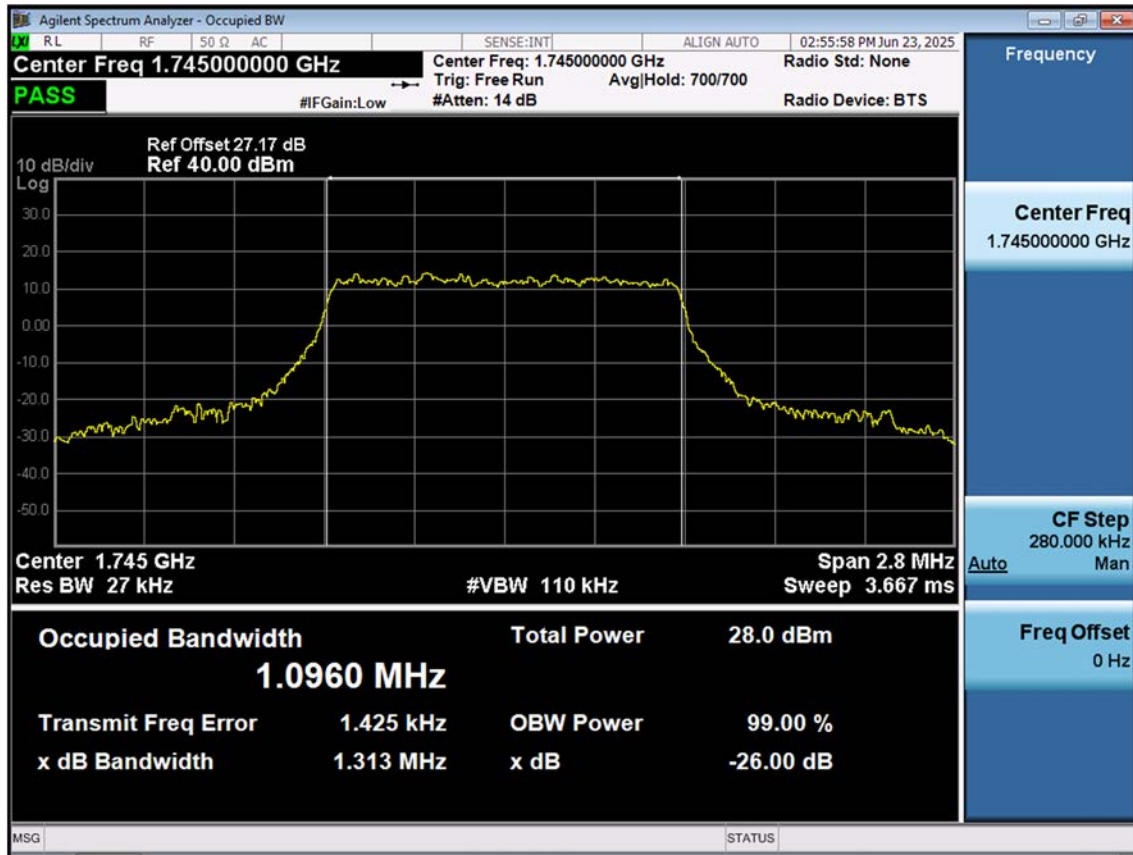
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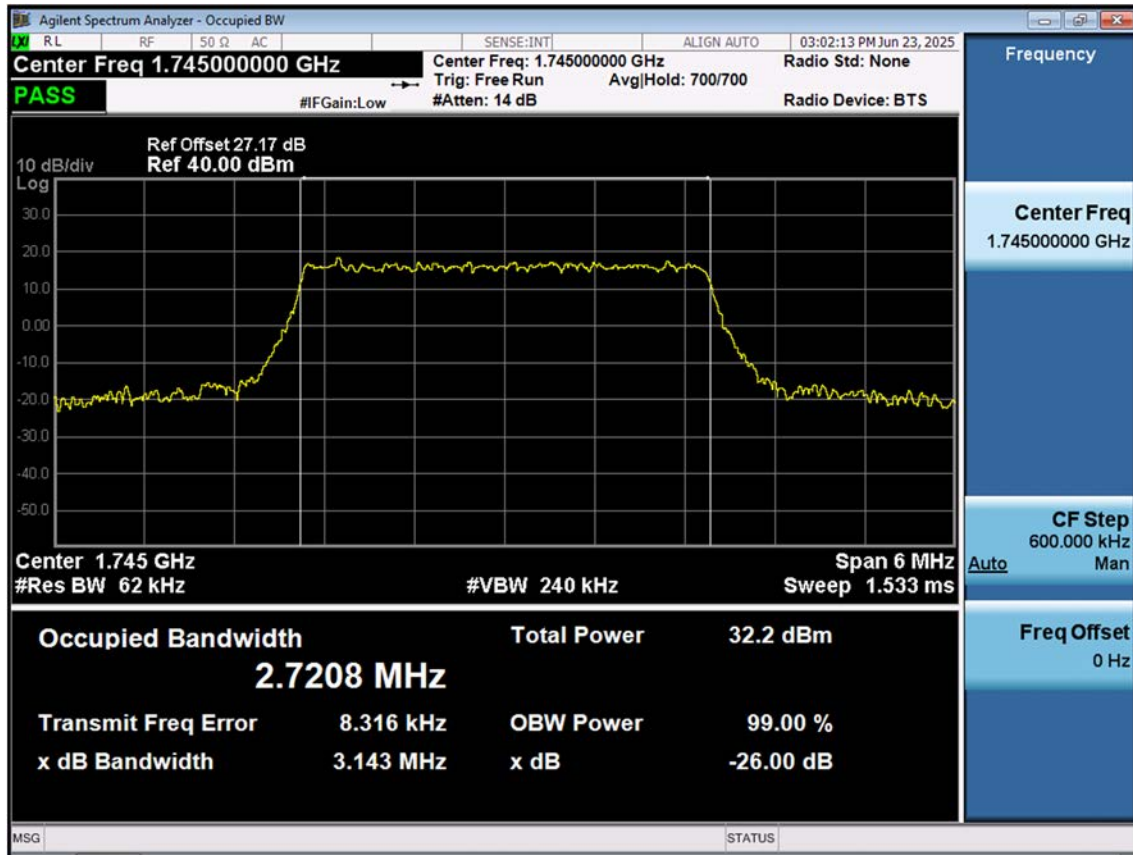
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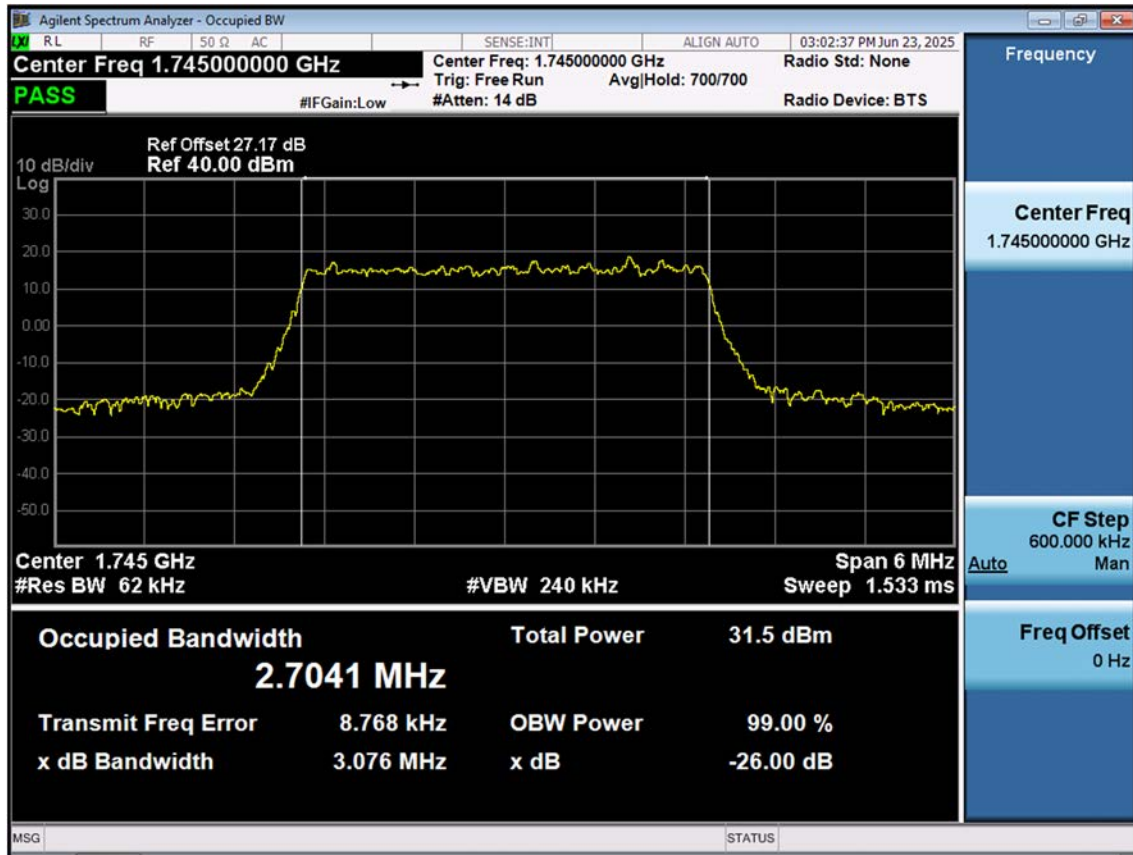
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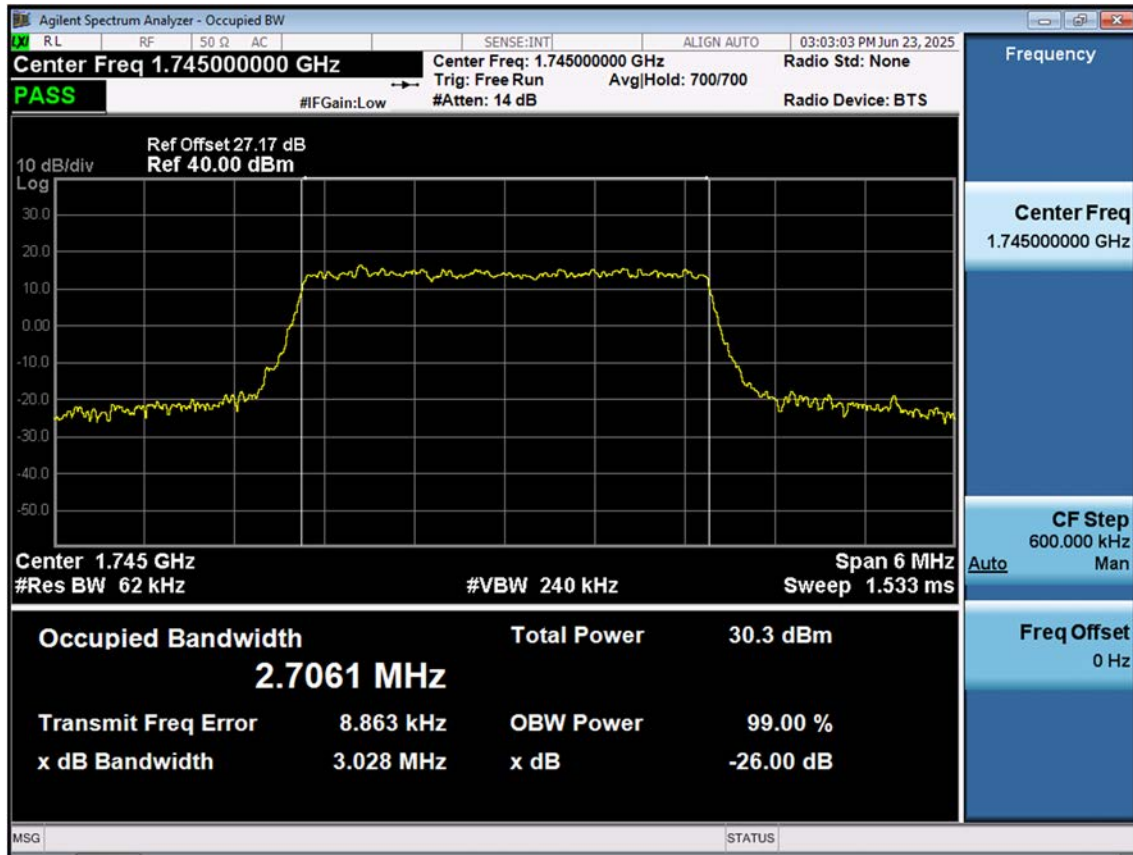
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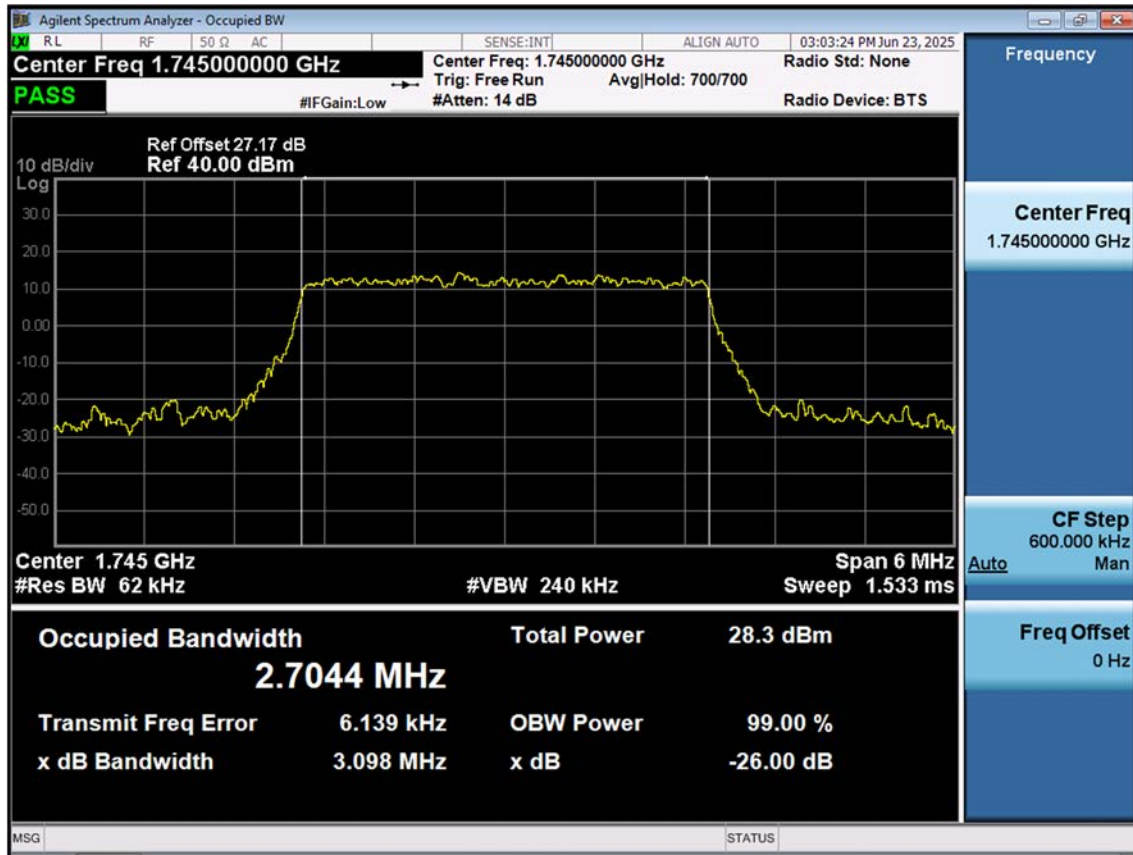
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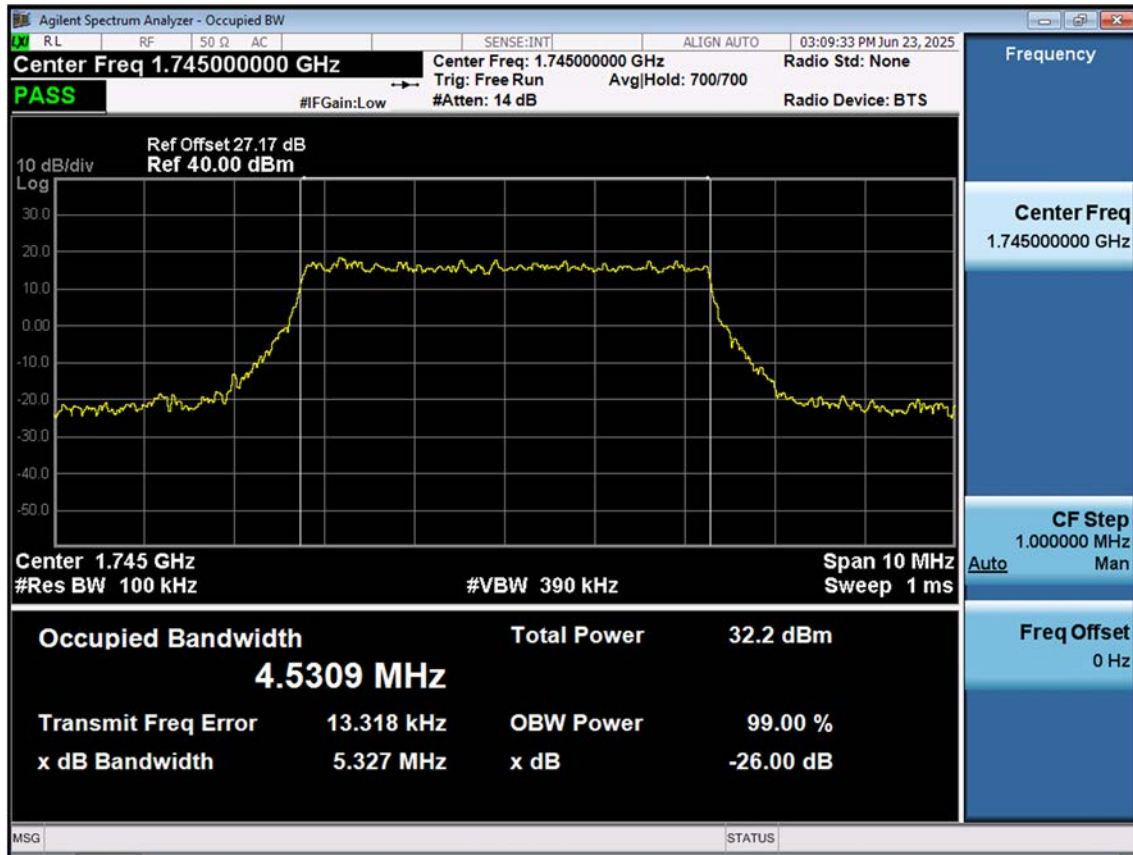
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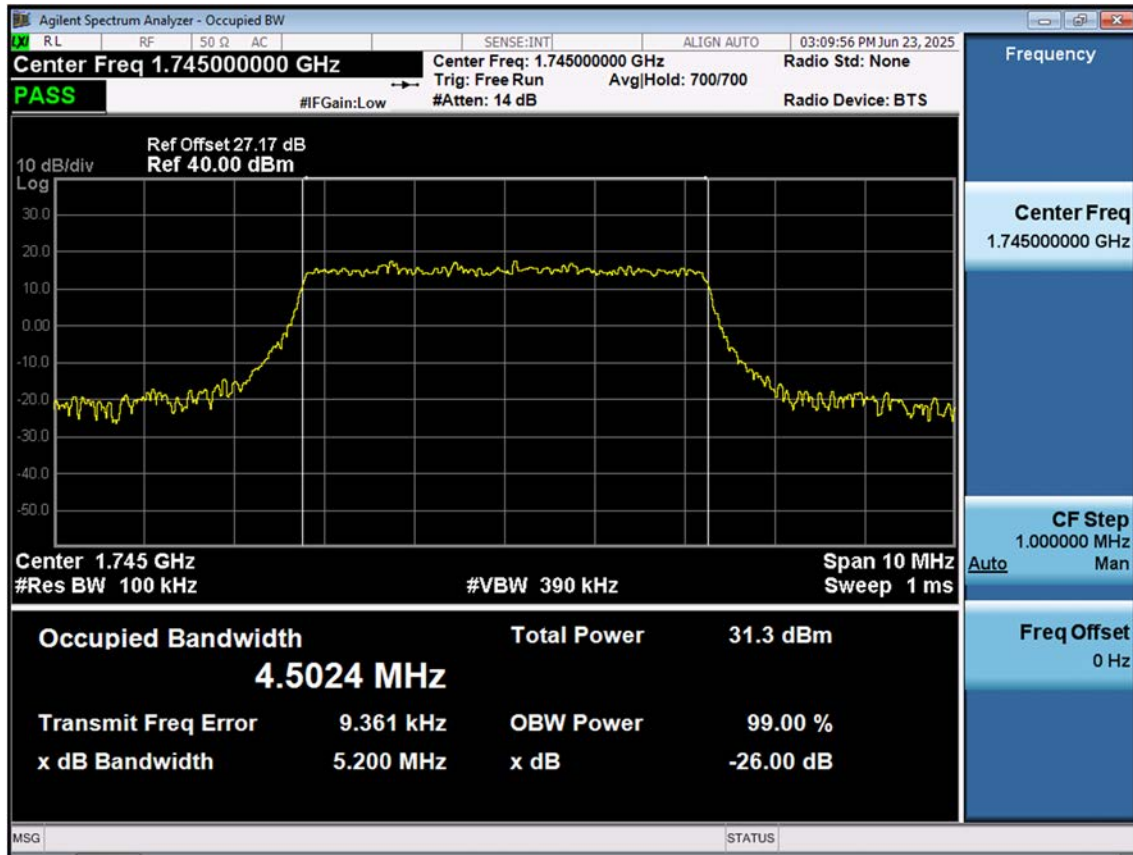
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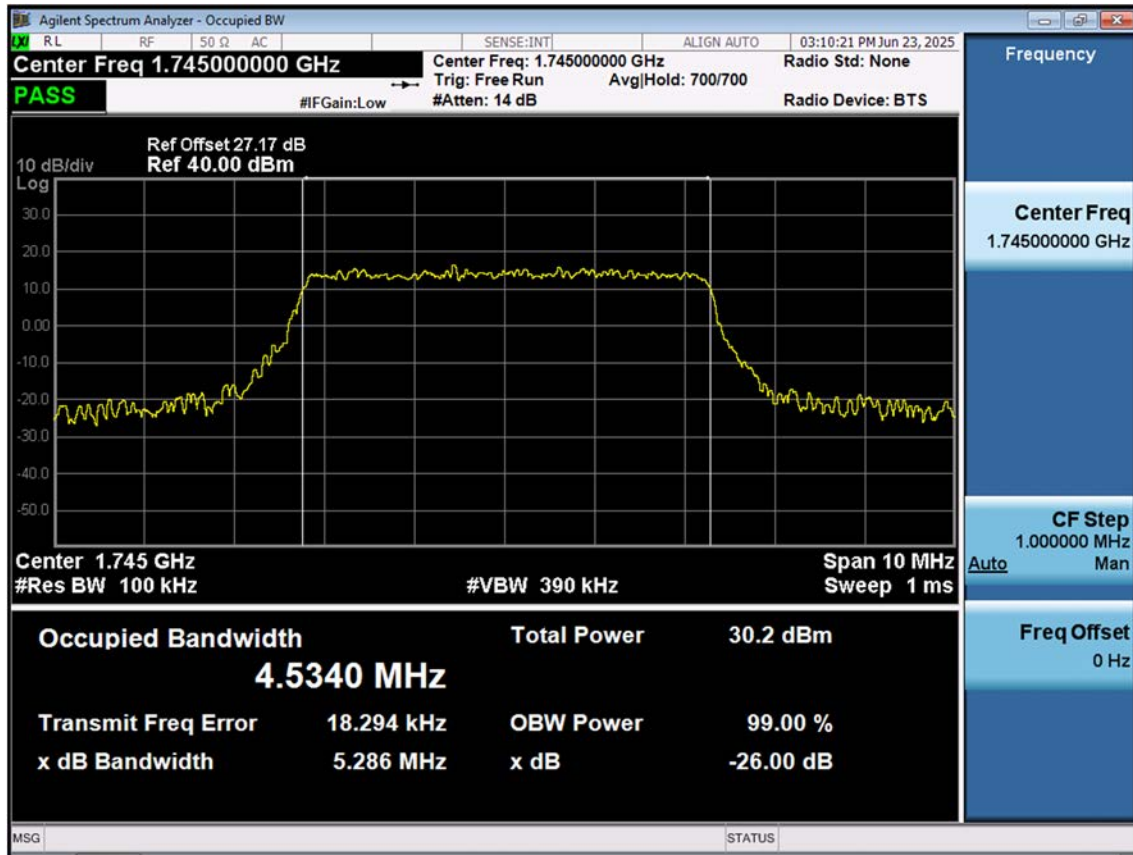
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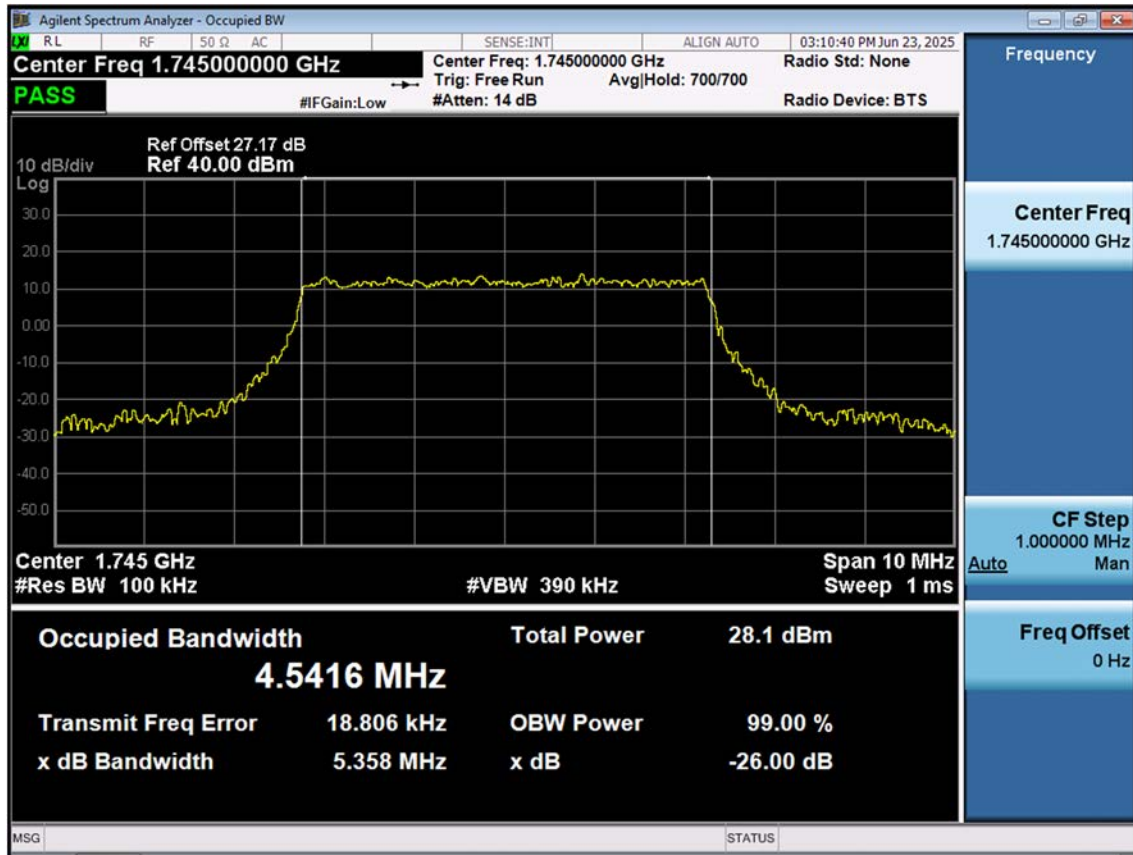
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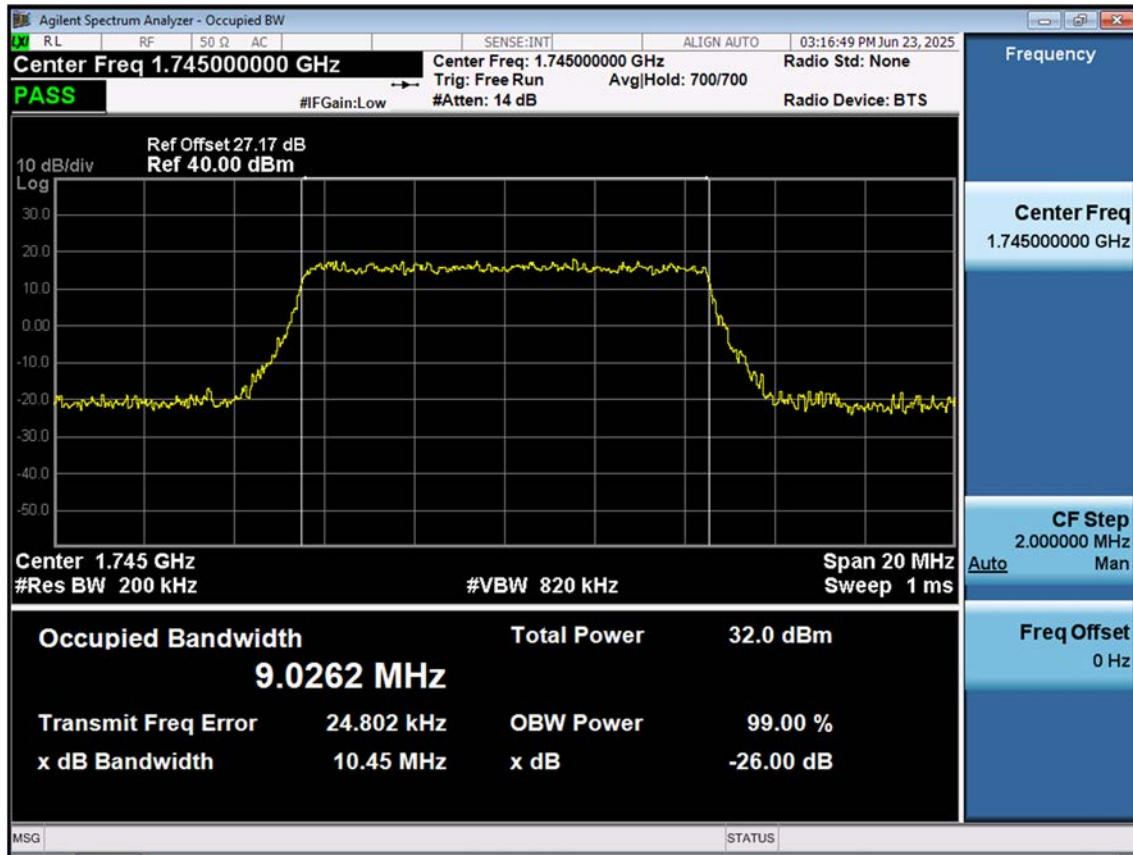
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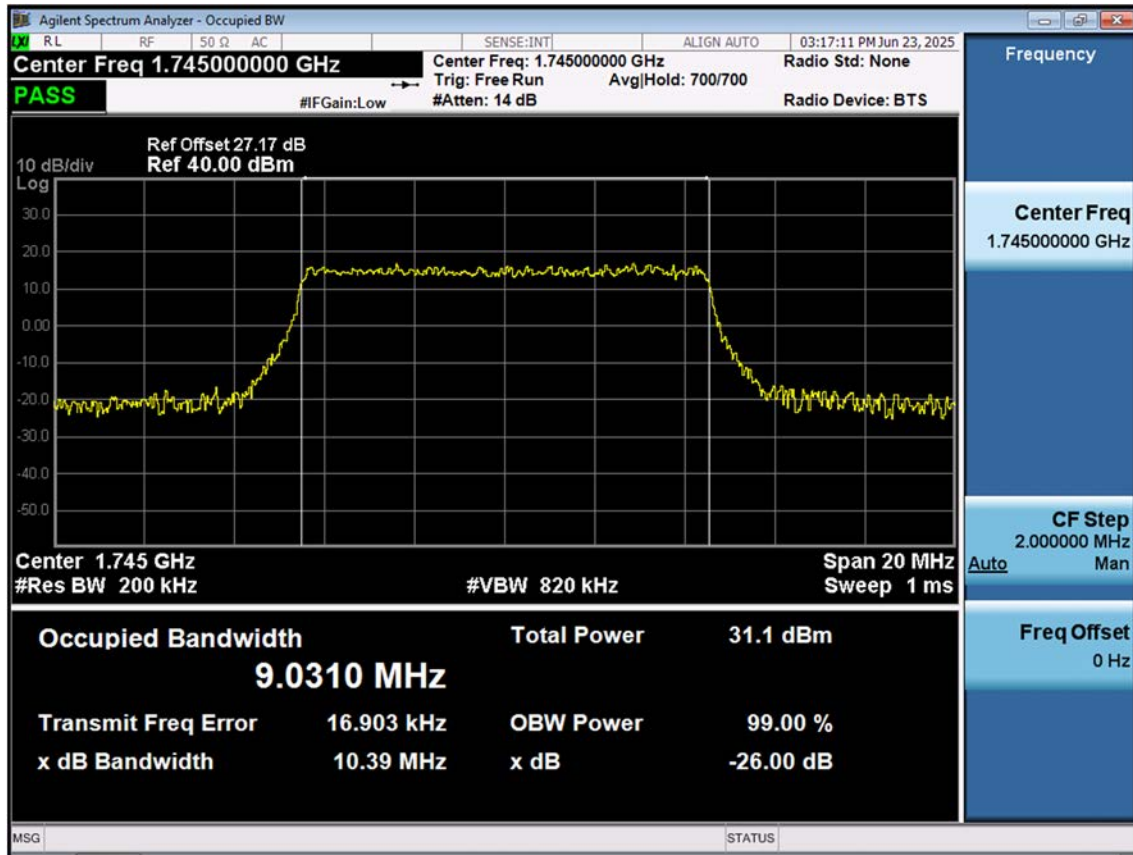
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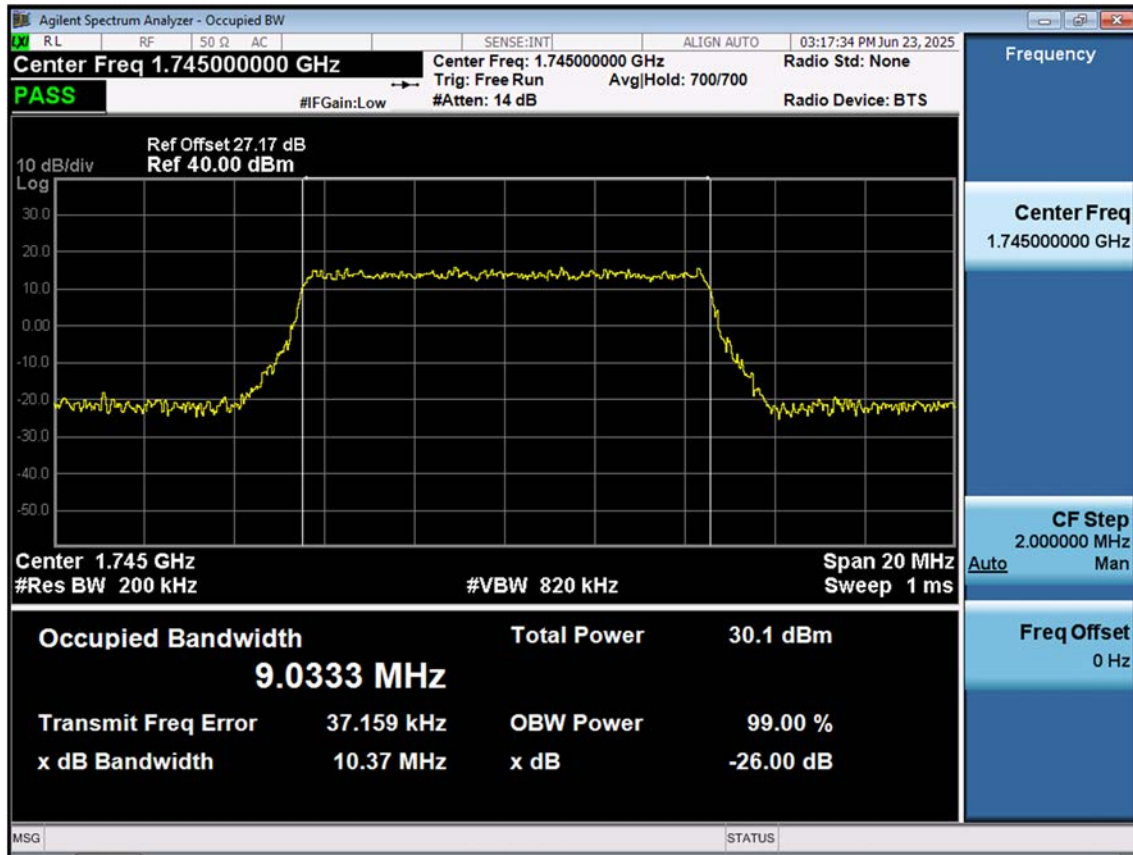
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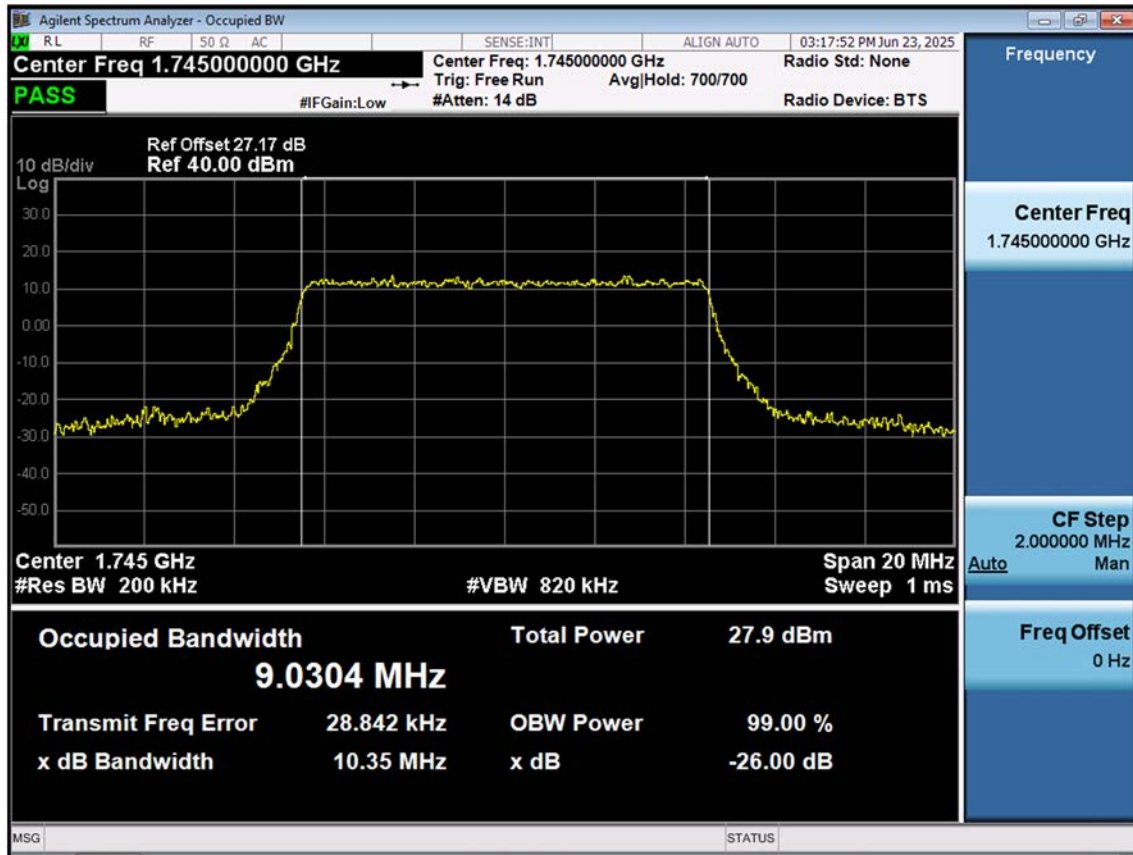
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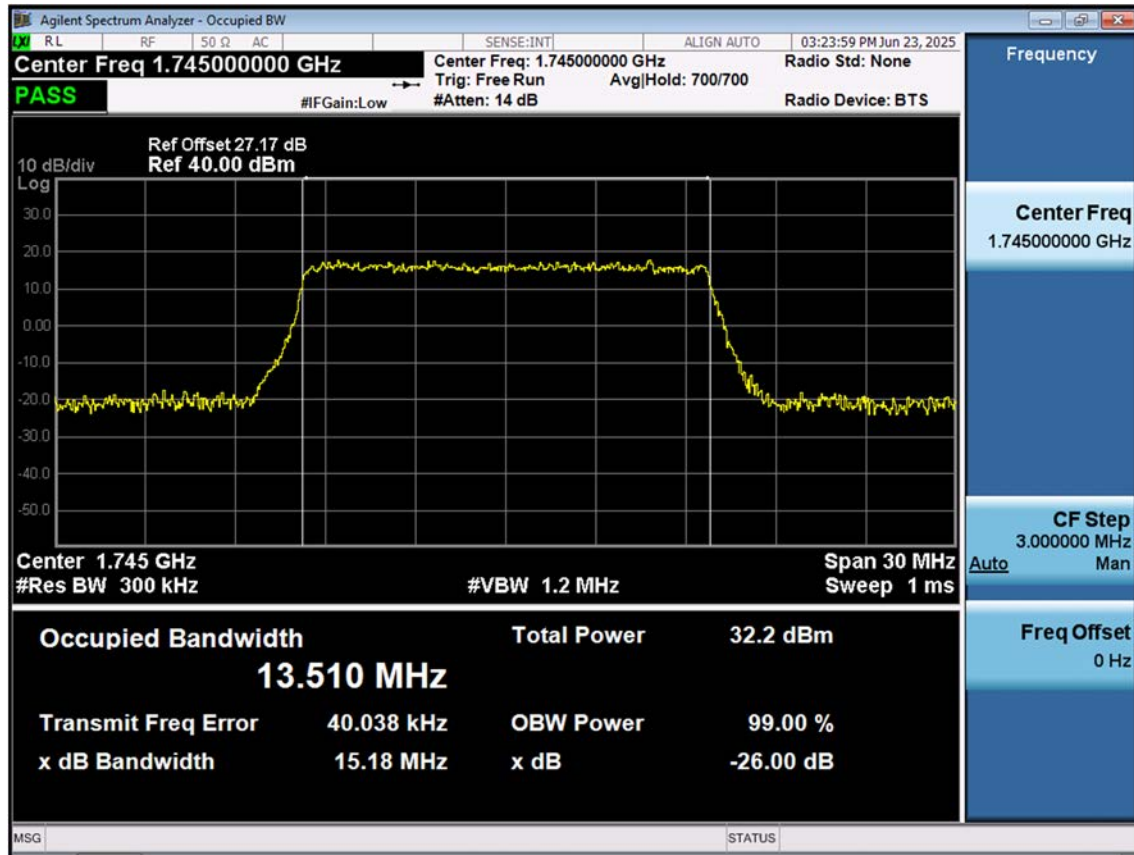
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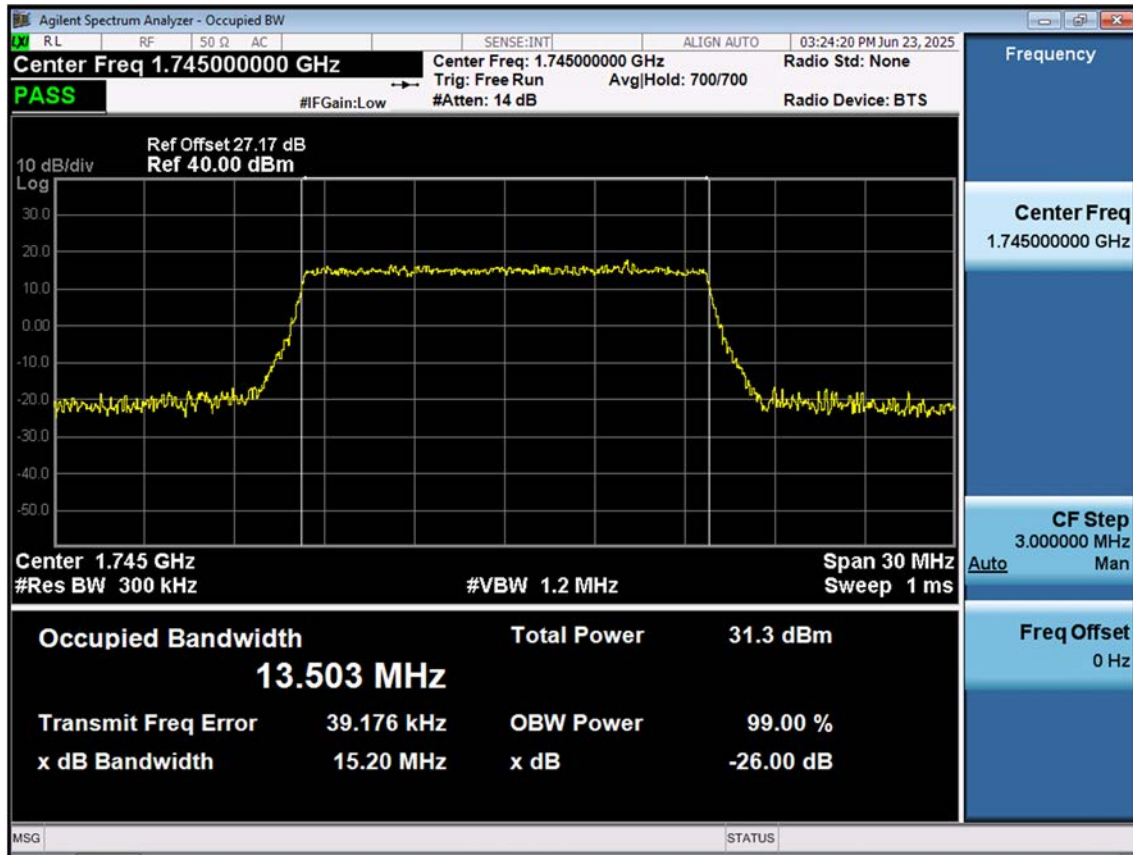
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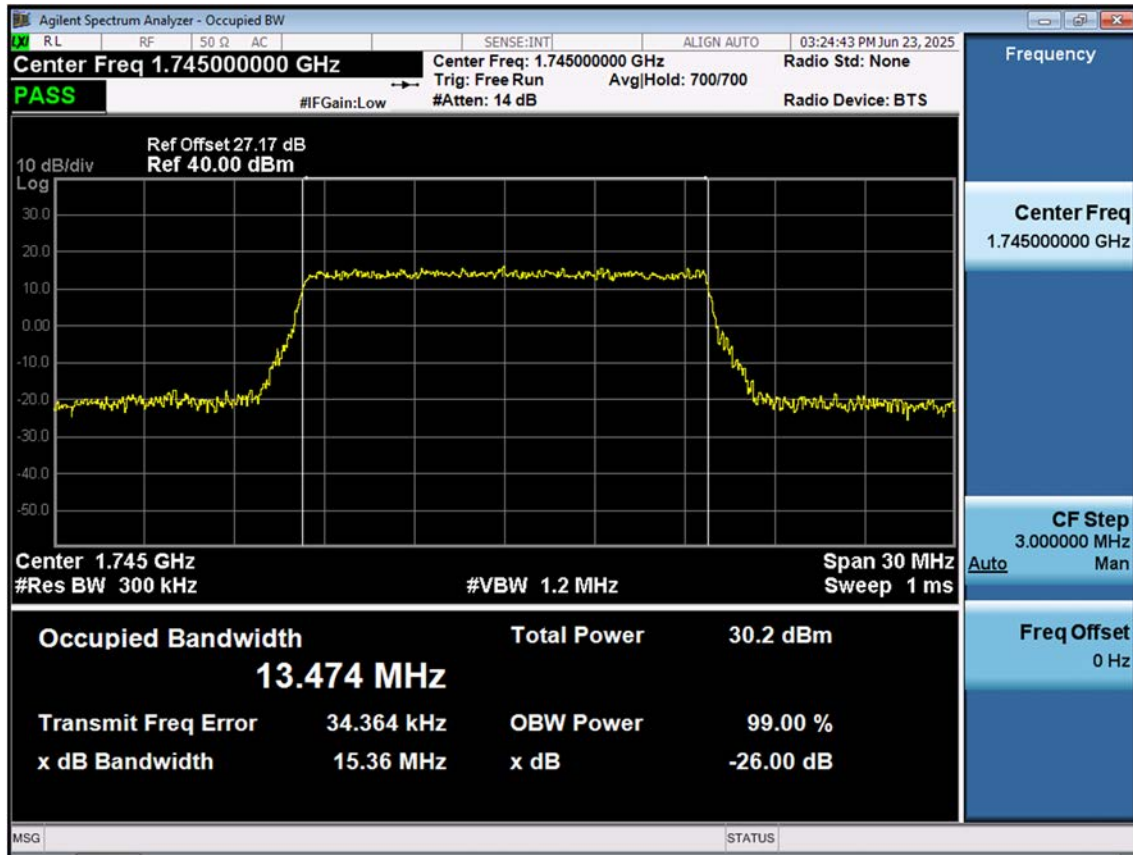
LTE B66_15 M_OBW_Mid_QPSK_FullRB



LTE B66_15 M_OBW_Mid_16QAM_FullRB



LTE B66_15 M_OBW_Mid_64QAM_FullRB



Agilent Spectrum Analyzer - Occupied BW

RL 50 Ω AC SENSE:INT ALIGN AUTO 03:25:01 PM Jun 23, 2025

Center Freq 1.745000000 GHz Radio Std: None
#FGain: Low #Atten: 14 dB Avg|Hold: 700/700 Radio Device: BTS

PASS

Ref Offset 27.17 dB
Ref 40.00 dBm

10 dB/div
Log

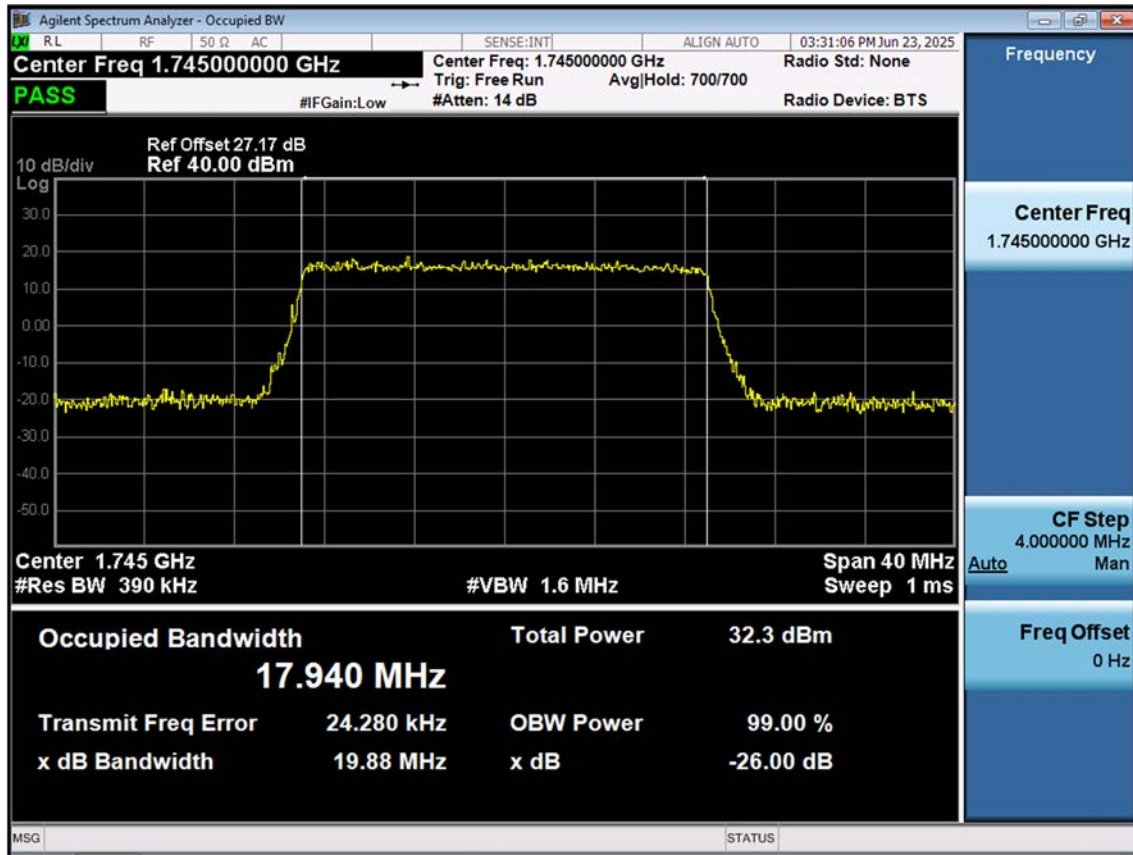
Center 1.745 GHz
#Res BW 300 kHz
#VBW 1.2 MHz
Span 30 MHz
Sweep 1 ms

Occupied Bandwidth		Total Power	
13.521 MHz		28.4 dBm	
Transmit Freq Error	9.978 kHz	OBW Power	99.00 %
x dB Bandwidth	15.02 MHz	x dB	-26.00 dB

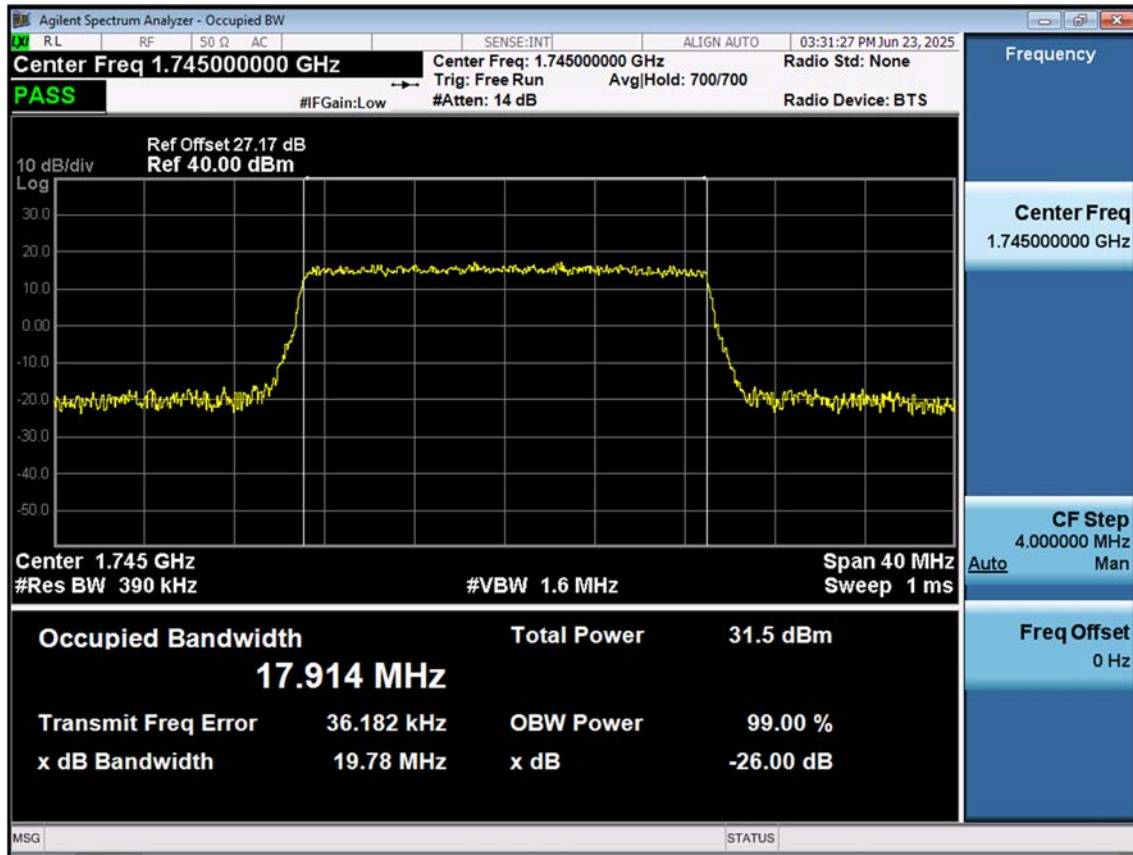
MSG STATUS

Frequency
Center Freq
1.745000000 GHz
CF Step
3.000000 MHz
Man
Auto
Freq Offset
0 Hz

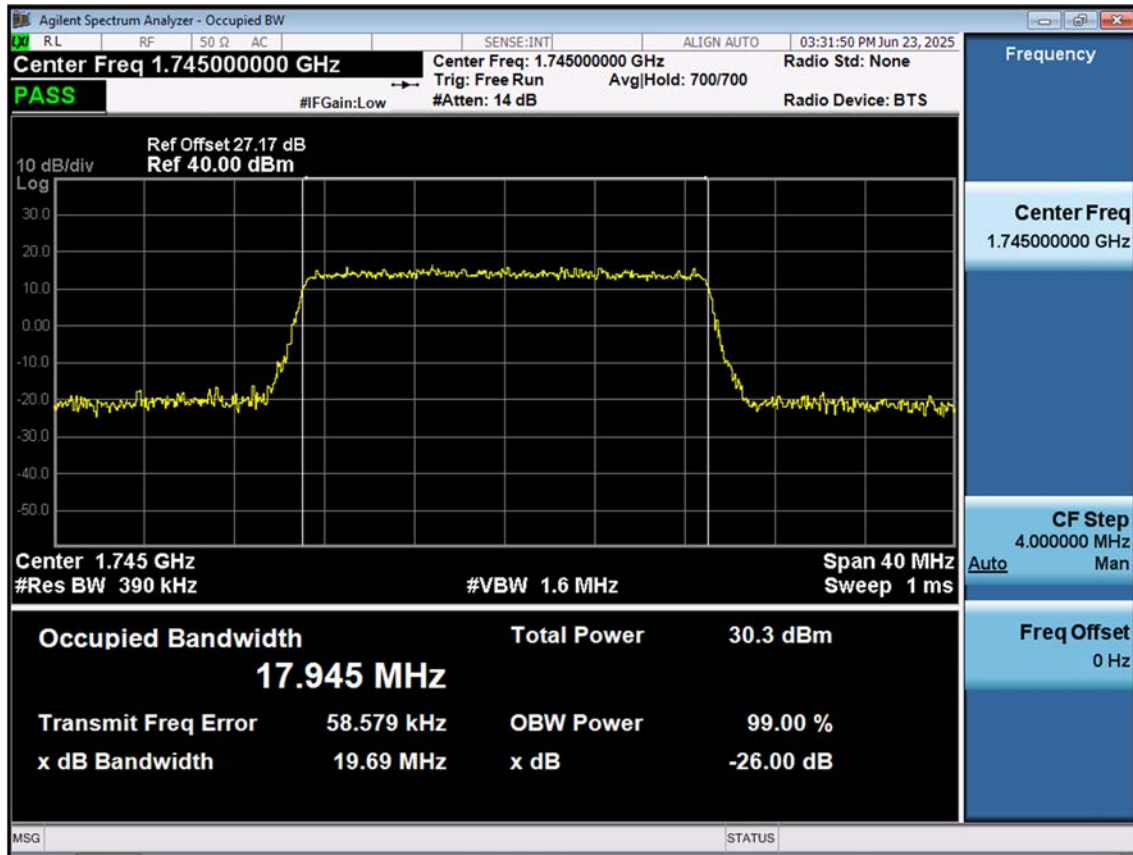
LTE B66_20 M_OBW_Mid_QPSK_FullRB



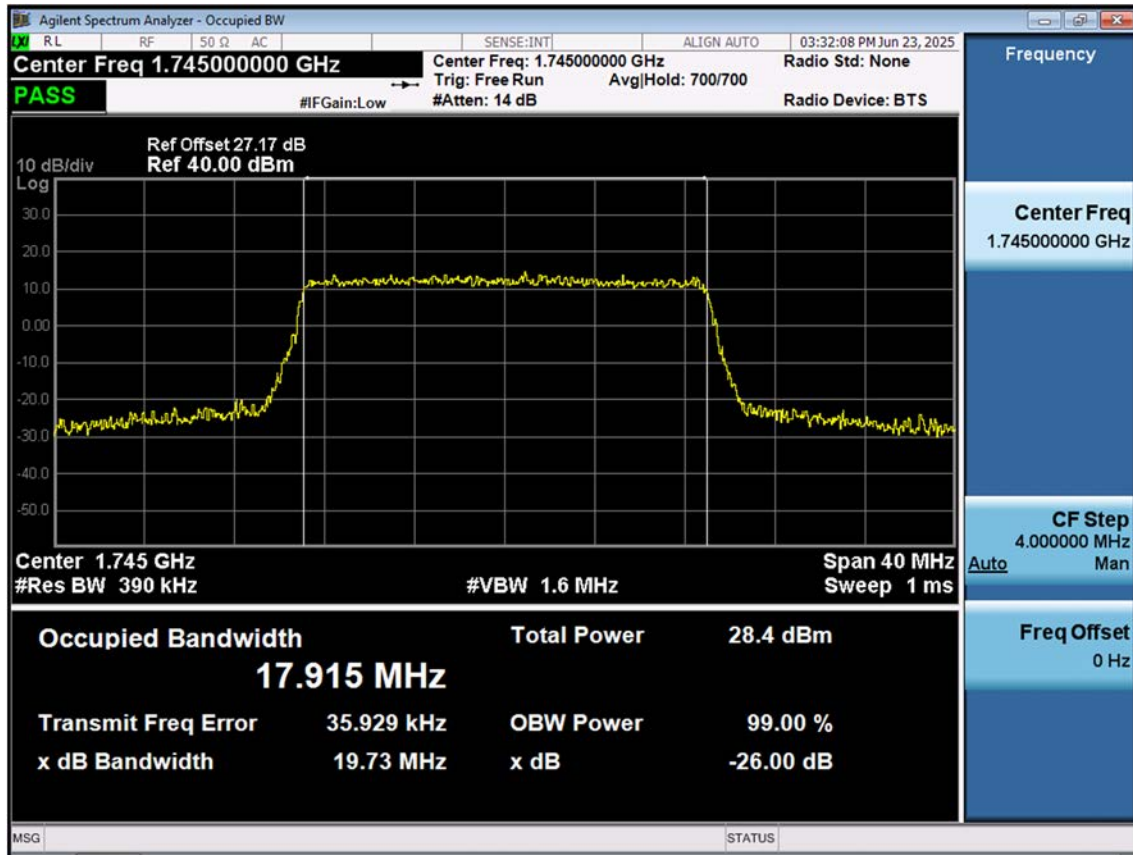
LTE B66_20 M_OBW_Mid_16QAM_FullRB



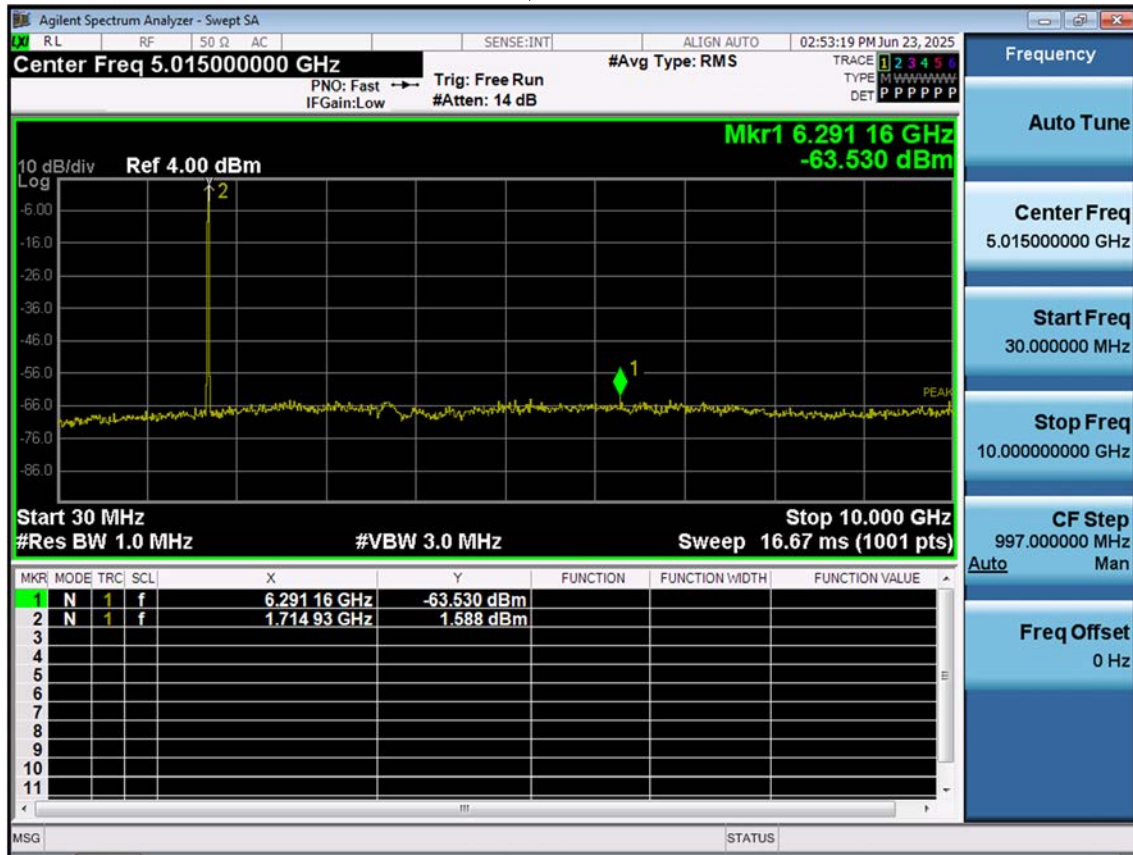
LTE B66_20 M_OBW_Mid_64QAM_FullRB



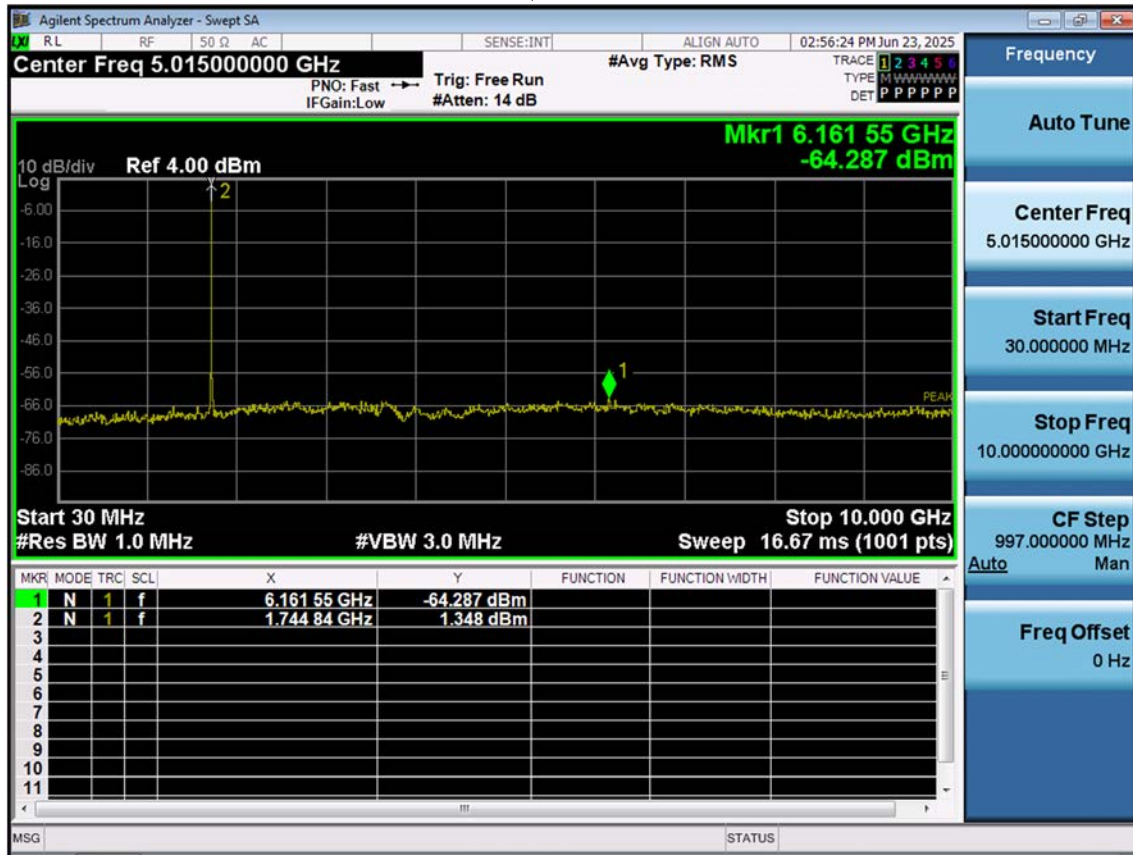
LTE B66_20 M_OBW_Mid_256QAM_FullRB



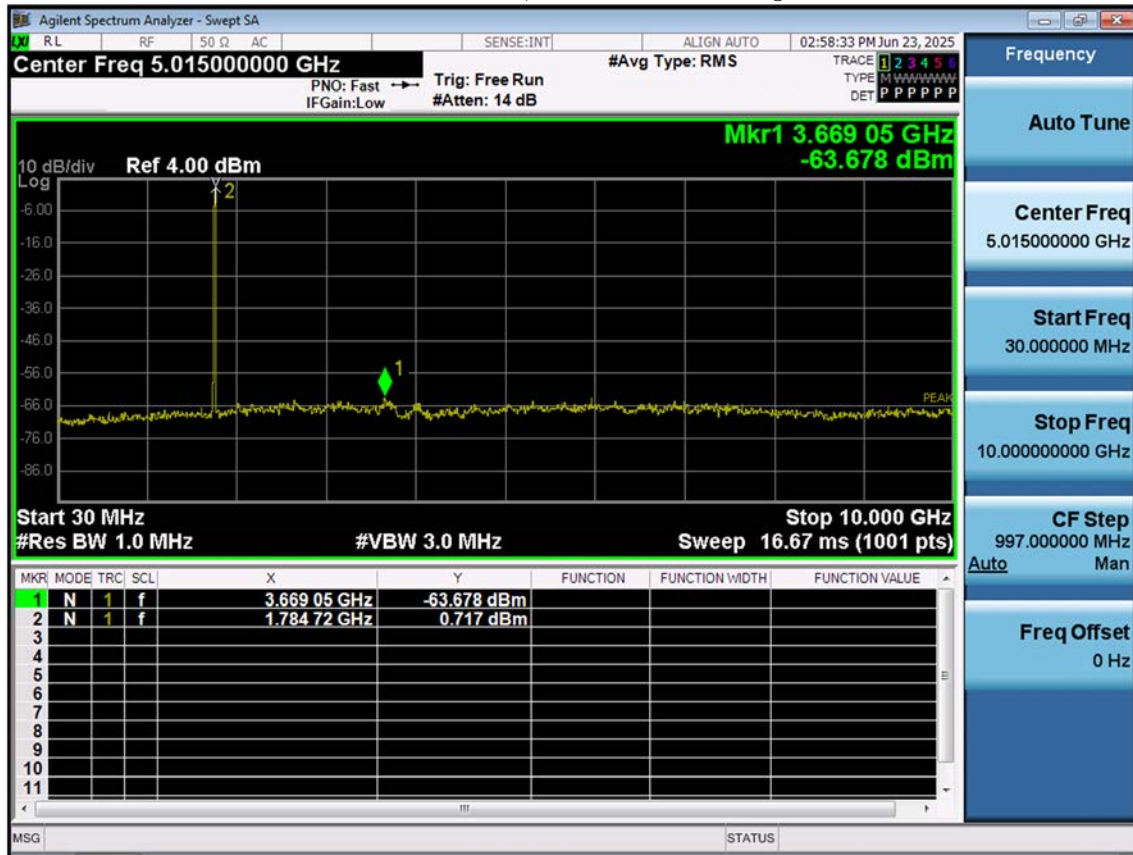
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



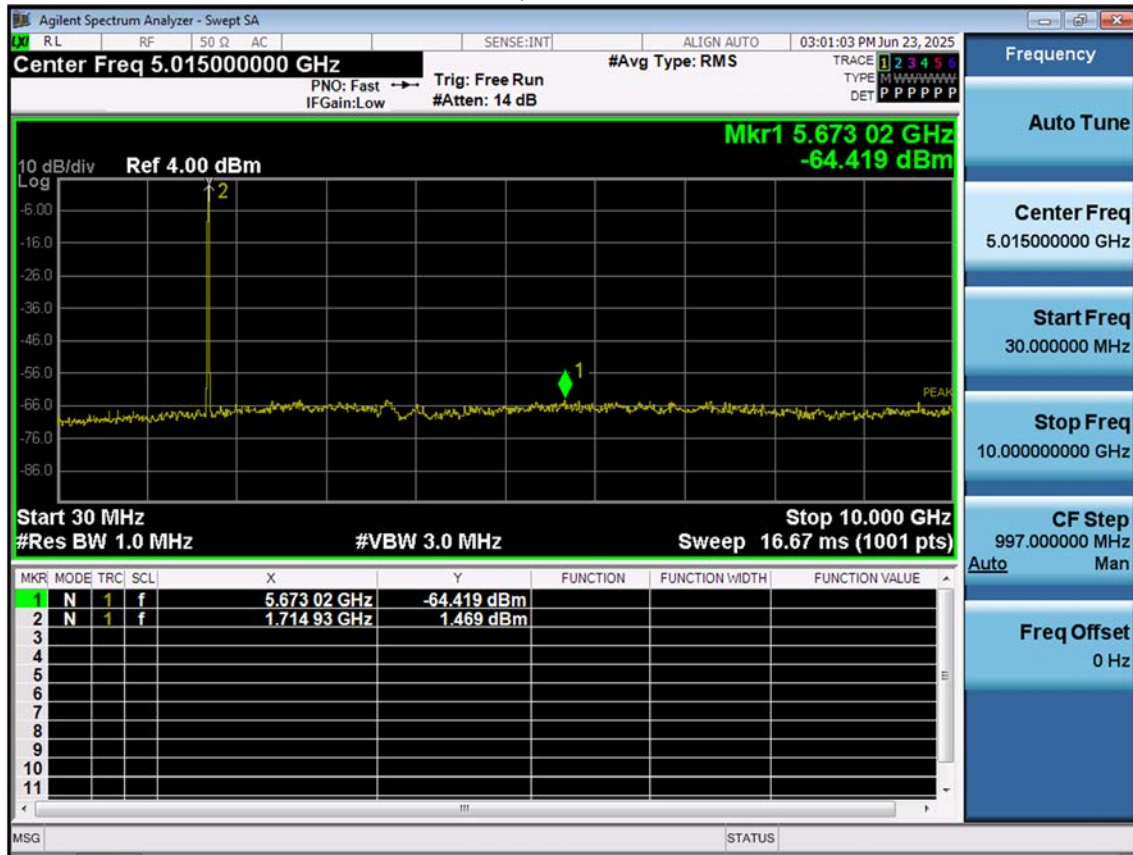
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



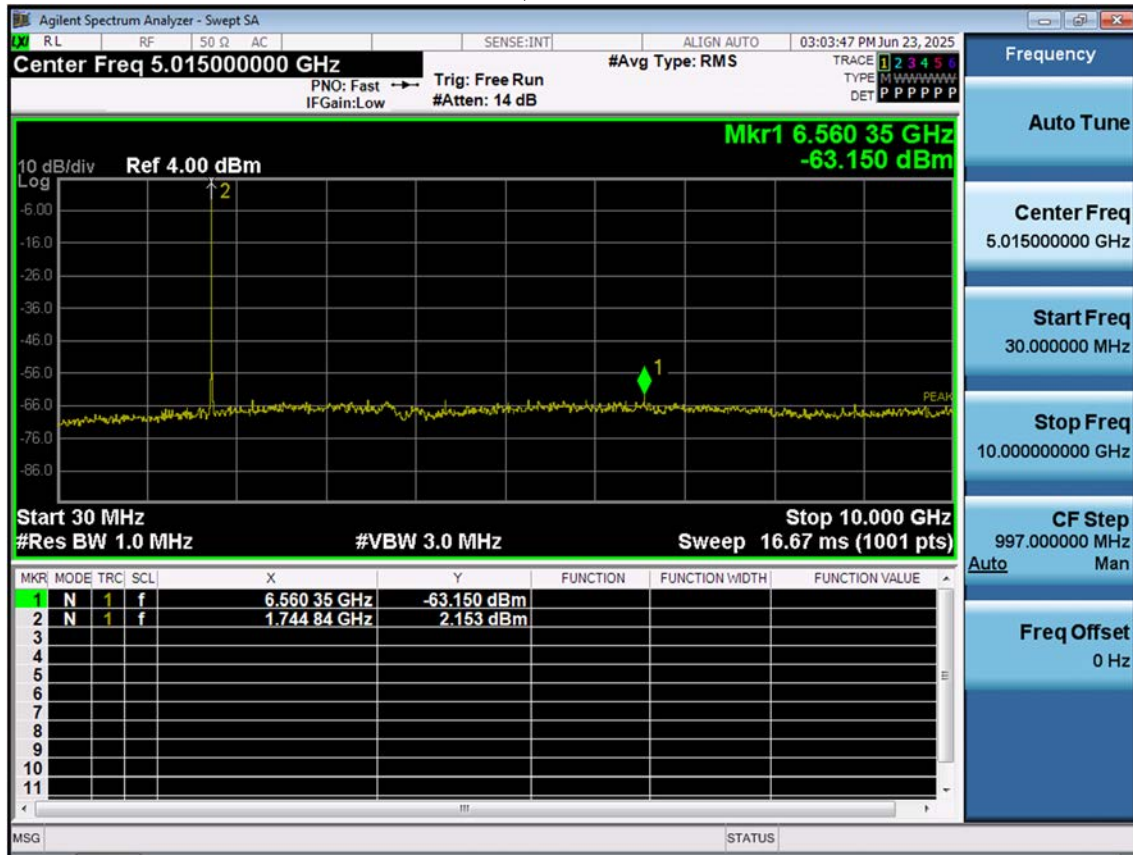
LTE B66_1.4M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



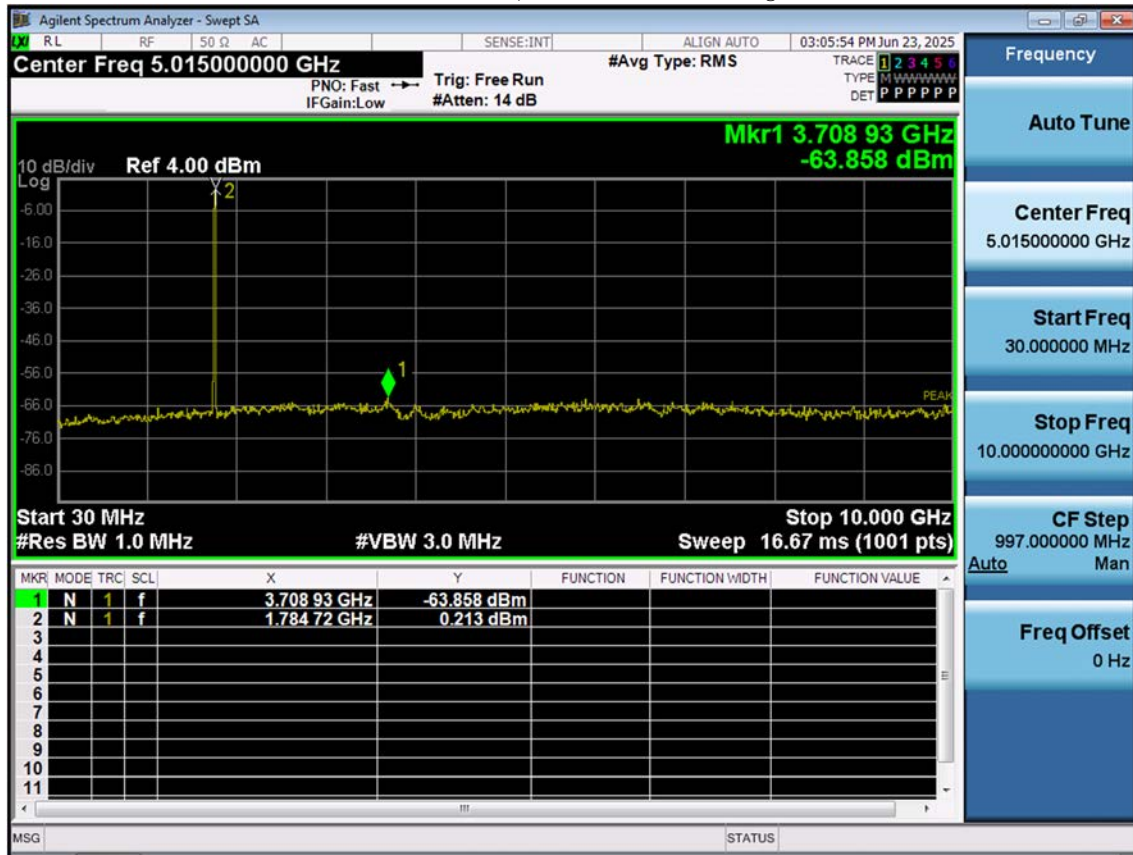
LTE B66_3 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



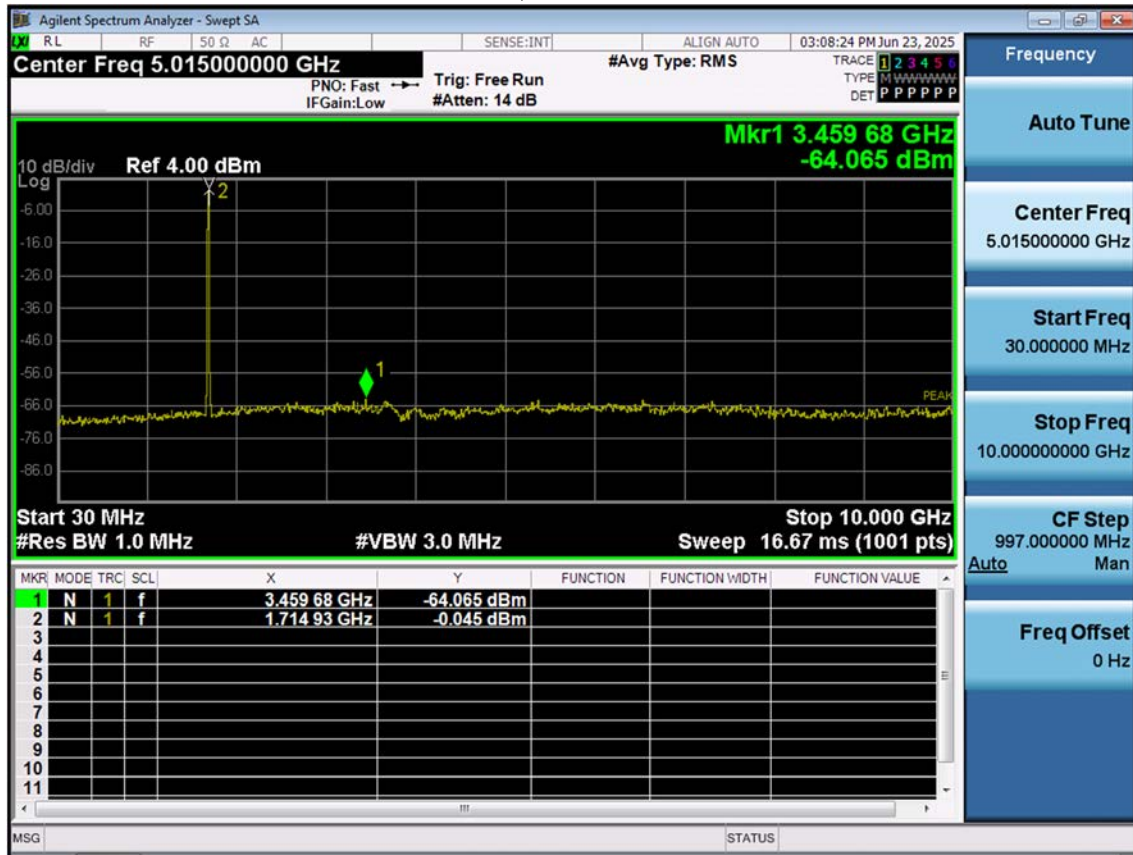
LTE B66_3 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



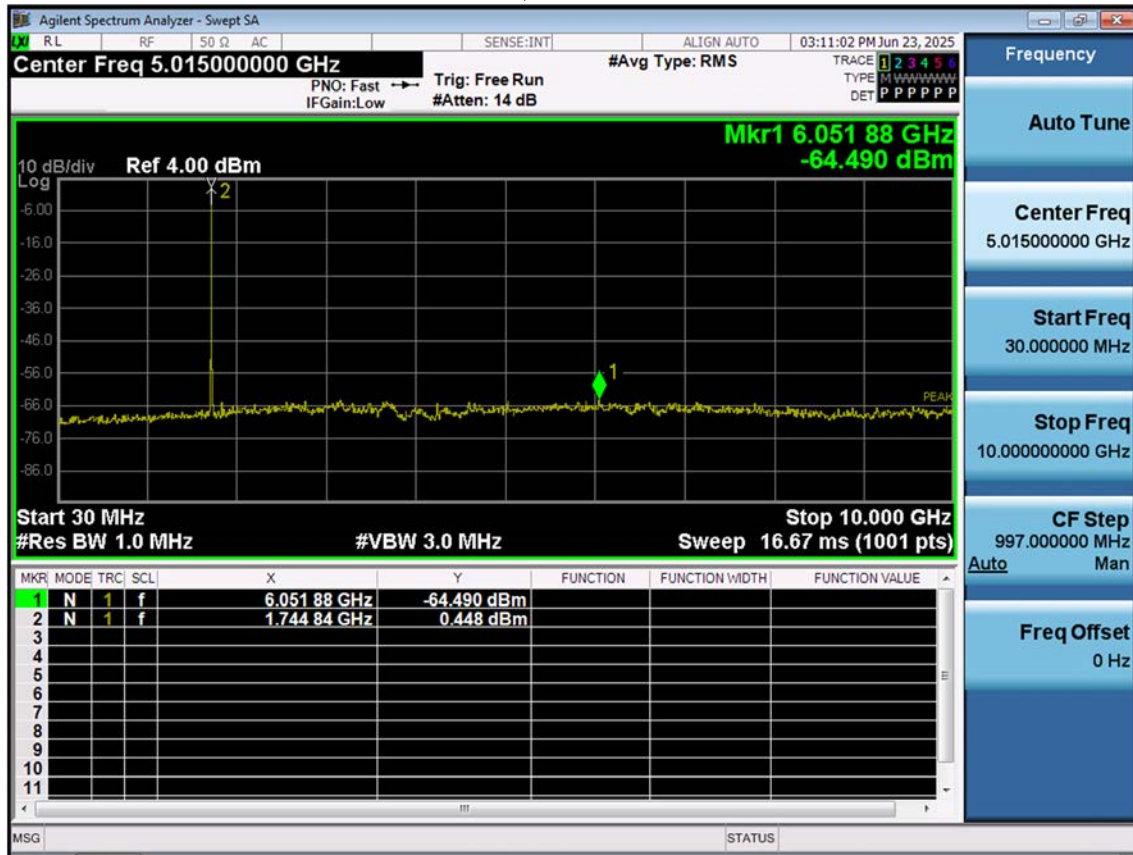
LTE B66_3 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



LTE B66_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



LTE B66_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



LTE B66_5 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB

