TEST REPORT

FCC Sub6 n5 Test for TM19FNNAHD2
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2412-FC030

DATE OF ISSUE
December 13, 2024

Tested by
Jung Ki Lim

Technical Manager
Jong Seok Lee

HCT CO., LTD.
BongJai Huh / CEO

HCT CO., LTD. 2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea Tel. +82 31 645 6300 Fax. +82 31 645 6401

HCT CO.,LTD.
2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Tel. +82 31 645 6300 Fax. +82 31 645 6401

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Applicant	**LG Electronics Inc.** 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
Product Name Model Name	Telematics TM19FNNAHD2
Date of Test	September 30, 2024 ~ December 10, 2024
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 ID	BEJTM19FNNAHD2
FCC Classification	PCS Licensed Transmitter (PCB)
Test Standard Used	FCC Rule Part(s) : § 22
Test Results	PASS

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	December 13, 2024	Initial Release

Notice

Content
The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)
The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s).
The laboratory is not accredited for the test results marked *. Information provided by the applicant is marked **. Test results provided by external providers are marked ***.
When confirmation of authenticity of this test report is required, please contact www.hct.co.kr
The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

CONTENTS

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
FCC ID:	BEJTM19FNNAHD2
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 22
EUT Type:	Telematics
Model(s):	TM19FNNAHD2
SCS(kHz):	15
Bandwidth(MHz):	5, 10, 15, 20
Waveform:	CP-OFDM, DFT-S-OFDM
Modulation:	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
Tx Frequency:	826.5 MHz – 846.5 MHz : 5 MHz 829.0 MHz – 844.0 MHz : 10 MHz 831.5 MHz – 841.5 MHz : 15 MHz 834.0 MHz – 839.0 MHz : 20 MHz
Date(s) of Tests:	September 30, 2024 ~ December 10, 2024
EUT Serial number:	Radiated : Honda MY26 #02 Conducted : Honda MY26 #01
Antenna Information	Please refer to the Antenna Approval Specification document.

1.1. MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Conducted Output Power	
				Max. Power (W)	Max. Power (dBm)
Sub6 n5 (5)	826.5 – 846.5	4M50G7D	PI/2 BPSK	0.233	23.67
		4M50G7D	QPSK	0.231	23.64
		4M50W7D	16QAM	0.181	22.57
		4M50W7D	64QAM	0.131	21.17
		4M50W7D	256QAM	0.086	19.33
Sub6 n5 (10)	829.0 – 844.0	8M97G7D	PI/2 BPSK	0.233	23.67
		9M98G7D	QPSK	0.230	23.61
		8M95W7D	16QAM	0.186	22.70
		8M96W7D	64QAM	0.130	21.14
		8M99W7D	256QAM	0.085	19.31
Sub6 n5 (15)	831.5 – 841.5	13M5G7D	PI/2 BPSK	0.243	23.86
		13M4G7D	QPSK	0.237	23.74
		13M4W7D	16QAM	0.189	22.76
		13M5W7D	64QAM	0.135	21.31
		13M4W7D	256QAM	0.086	19.36
Sub6 n5 (20)	834.0 – 839.0	17M9G7D	PI/2 BPSK	0.239	23.78
		17M9G7D	QPSK	0.235	23.71
		17M9W7D	16QAM	0.187	22.71
		17M9W7D	64QAM	0.132	21.21
		17M9W7D	256QAM	0.085	19.30

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Telematics with LTE, Sub 6.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

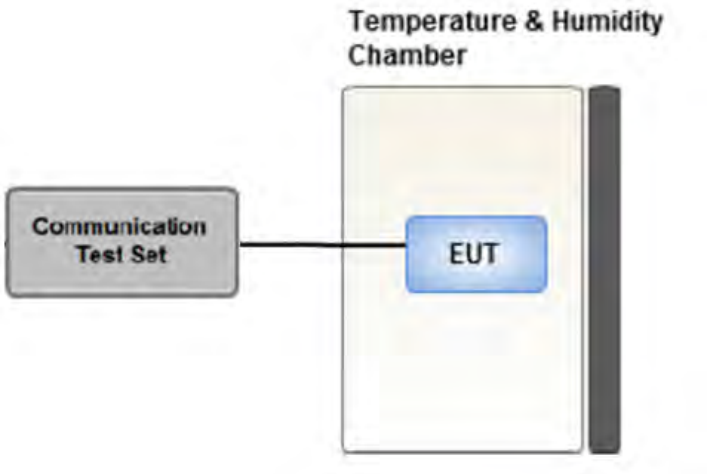
The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- KDB 971168 D01 v03r01 – Section 5.2
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 CONDUCTED OUTPUT POWER



Test setup

Test Overview

When an average power meter is used to perform RF output power measurements, the fundamental condition that measurements be performed only over durations of active transmissions at maximum output power level applies.

Conducted Output Power was tested in accordance with KDB971168 D01 Power Meas License Digital Systems v03r01, Section 5.2.

3.3 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 ≥ 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;

$$P_{d\ (dBm)} = Pg_{\ (dBm)} - \text{cable loss}_{\ (dB)} + \text{antenna gain}_{\ (dB)}$$

   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.

3.4 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 ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} 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;

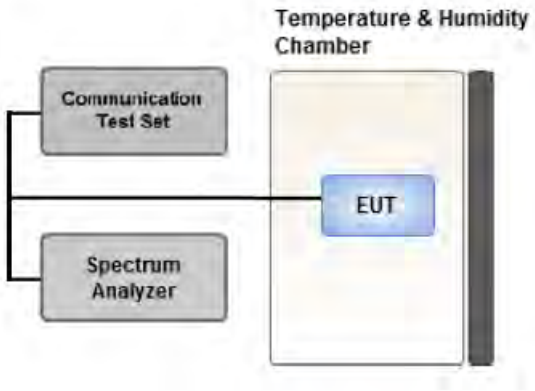
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

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

3.5 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

1. Set resolution/measurement bandwidth ≥ 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:

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

Test Settings(Peak Power)

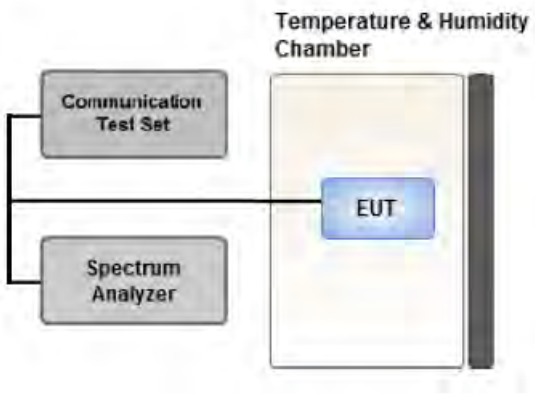
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

1. Set the RBW ≥ OBW.
2. Set VBW ≥ 3 × RBW.
3. Set span ≥ 2 × OBW.
4. Sweep time ≥ 10 × (number of points in sweep) × (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 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   Set ≥ [10 × (number of points in sweep) × (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/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 dB if the duty cycle is a constant 25 %.

3.6 OCCUPIED BANDWIDTH.



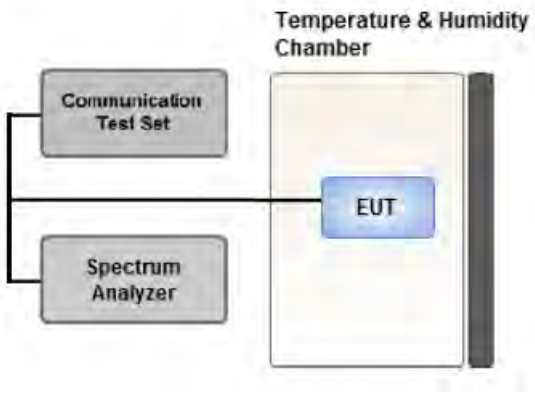
Test setup

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 ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5 % of the 99 % occupied bandwidth observed in Step 7

3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

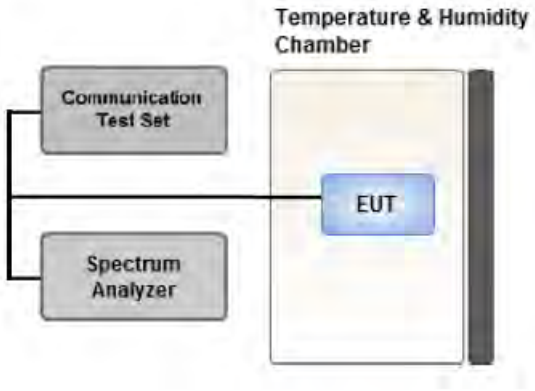
Test Overview

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

3.8 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

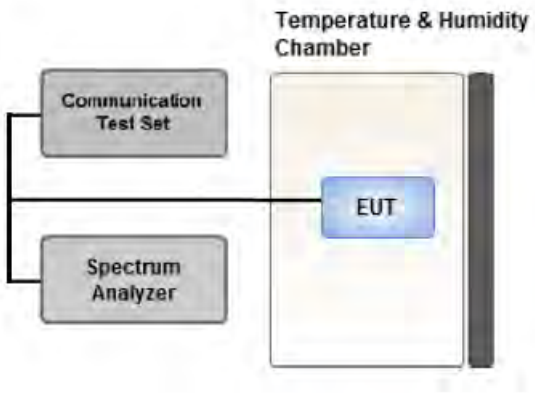
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW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

Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.
All measurements were done at 2 channels(low and high operational frequency range.)
The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

3.9 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.

3.10 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 : SA, NSA
  Worst case : SA
- 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.
- Radiated Spurious emissions are measured while operating in EN-DC mode with Sub 6 NR carrier as well as an LTE carrier (anchor).
  All EN-DC mode of operation (=anchor) were investigated and the test results were measured No Peak Found.
  The test results which are attenuated more than 20 dB below the permissible value, so it was not reported.
- The worst case is reported with the EUT positioning, modulations, and paging service configurations shown in the test data.
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported. (Worst case : 15 MHz)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 8.2		X
Radiated Spurious Emissions	PI/2 BPSK	See Section 8.3		X

3.11 WORST CASE (CONDUCTED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported. (Worst case: DFT-S-OFDM)
- Modulation : All Modulation of operation were investigated and the worst case configuration results are reported. (Worst case: PI/2 BPSK)
- All modes of operation were investigated and the worst case configuration results are reported.
  Mode: SA, NSA
  Worst case: SA
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth Peak- to- Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Band Edge	PI/2 BPSK	5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	51
		15	Low	1	0
			High	1	78
		20	Low	1	0
			High	1	105
		5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	5, 10, 15, 20	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Precision Dipole Antenna	UHAP	Schwarzbeck	01273	03/10/2026	Biennial
Precision Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	02289	02/14/2026	Biennial
Horn Antenna(1~18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1299	04/27/2025	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Horn Antenna(15~40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Loop Antenna(9 kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	01/16/2025	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/09/2025	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/24/2025	Biennial
RF Switching System	FBSR-06B (1G HPF + LNA)	T&M SYSTEM	F3L1	05/14/2025	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/14/2025	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/14/2025	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/14/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/07/2025	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	08/22/2025	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	02/29/2025	Annual
Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Signal Analyzer(10 Hz~26.5 GHz)	N9020A	Agilent	MY51110063	04/04/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer (10 Hz~40 GHz)	FSV40	REOHDE & SCHWARZ	101436	02/13/2025	Annual
Signal & Spectrum Analyzer (2 Hz~67 GHz)	FSW67	REOHDE & SCHWARZ	101736	23/05/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287701	05/16/2025	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/14/2025	Annual
Signal Analyzer(5 Hz~40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/10/2025	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. 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 (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §22.917(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	PASS
Frequency stability / variation of ambient temperature	§2.1055, §22.355	< 2.5 ppm	PASS

Note:
1. Conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Effective Radiated Power	§22.913(a)(5)	< 7 Watts max. ERP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §22.917(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

Note:
1. Radiated tests were tested using 5G Wireless Tester.

6.3. Data Referencing

Rule Part	Test item	Data Referencing	Comments
§2.1049	Occupied Bandwidth	Y	-
§2.1051, §22.917(a)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal..	Y	-
§22.913(d)	Peak- to- Average Ratio	Y	-
§2.1055, §22.355	Frequency stability / variation of ambient temperature	Y	-
§22.913(a)(5)	Effective Radiated Power	Y	Spot-check
§2.1053, §22.917(a)	Radiated Spurious and Harmonic Emissions	N	Test
§2.1046	Conducted Output Power	Y	-

Spot-Check Result
1. Data was leveraged from model TM19FNNAHD4 for the certification of TM19FNNAHD2.
2. Please refer to the [FCC Evaluation] Report.

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

ERP = Substitute LEVEL(dBm) + Ant. Gain – 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

EIRP = Substitute LEVEL(dBm) + Ant. Gain – 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

8.1 Conducted Output Power

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
						165300	167300	169300
						826.5 MHz	836.5 MHz	846.5 MHz
5 MHz	15	DFT-s	pi/2 BPSK	1	1	23.67	23.60	23.64
				1	13	23.65	23.56	23.46
				1	23	23.59	23.53	23.54
				12	0	23.12	23.15	23.08
				12	7	23.67	23.58	23.42
				12	13	23.07	23.04	22.90
				25	0	23.11	23.07	23.01
			QPSK	1	1	23.62	23.52	23.64
			16QAM	1	1	22.57	22.53	22.53
			64QAM	1	1	21.13	21.10	21.17
			256QAM	1	1	19.33	19.30	19.27
		CP	QPSK	1	1	22.20	22.00	22.13

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
						165800	167300	168800
						829 MHz	836.5 MHz	844 MHz
10 MHz	15	DFT-s	pi/2 BPSK	1	1	23.64	23.67	23.65
				1	26	23.61	23.64	23.62
				1	50	23.58	23.62	23.61
				25	0	23.19	23.10	23.08
				25	14	23.60	23.59	23.63
				25	27	23.16	23.06	23.03
				50	0	23.12	23.13	23.14
			QPSK	1	1	23.50	23.61	23.61
			16QAM	1	1	22.54	22.64	22.70
			64QAM	1	1	21.14	21.06	21.10
			256QAM	1	1	19.13	19.31	19.24
		CP	QPSK	1	1	22.20	22.05	22.02

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
						166300	167300	168300
						831.5 MHz	836.5 MHz	841.5 MHz
15 MHz	15	DFT-s	pi/2 BPSK	1	1	23.86	23.70	23.63
				1	40	23.82	23.68	23.62
				1	77	23.64	23.58	23.59
				36	0	23.32	23.26	23.13
				36	22	23.81	23.69	23.63
				36	43	23.27	23.24	23.17
				75	0	23.24	23.13	23.15
			QPSK	1	1	23.74	23.59	23.59
			16QAM	1	1	22.76	22.67	22.60
			64QAM	1	1	21.31	21.13	21.20
			256QAM	1	1	19.33	19.36	19.28
		CP	QPSK	1	1	22.27	22.11	22.26

Bandwidth	SCS(kHz)	OFDM	Modulation	RB Size	RB Offset	Max.Average Power (dBm)		
						166800	167300	167800
						834 MHz	836.5 MHz	839 MHz
20 MHz	15	DFT-s	pi/2 BPSK	1	1	23.75	23.69	23.72
				1	53	23.74	23.66	23.58
				1	104	23.60	23.58	23.56
				50	0	23.21	23.27	23.19
				50	28	23.78	23.67	23.60
				50	56	23.16	23.12	23.09
				100	0	23.24	23.17	23.06
			QPSK	1	1	23.71	23.69	23.59
			16QAM	1	1	22.67	22.71	22.55
			64QAM	1	1	21.11	21.21	21.20
			256QAM	1	1	19.30	19.27	19.25
		CP	QPSK	1	1	22.21	22.24	22.21

8.2 EFFECTIVE RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
826.5	Sub6 n5/ 5 MHz [15 kHz]	PI/2 BPSK	-26.92	33.26	-9.90	1.44	H	< 7.00	0.156	21.92	1	23
		QPSK	-26.95	33.23	-9.90	1.44	H		0.155	21.89		
		16-QAM	-28.08	32.10	-9.90	1.44	H		0.119	20.76		
		64-QAM	-29.55	30.63	-9.90	1.44	H		0.085	19.29		
		256-QAM	-31.55	28.63	-9.90	1.44	H		0.054	17.29		
836.5		PI/2 BPSK	-26.49	33.73	-9.90	1.45	H		0.173	22.38	1	1
		QPSK	-26.56	33.66	-9.90	1.45	H		0.170	22.31		
		16-QAM	-27.72	32.50	-9.90	1.45	H		0.130	21.15		
		64-QAM	-29.19	31.03	-9.90	1.45	H		0.093	19.68		
		256-QAM	-31.19	29.03	-9.90	1.45	H		0.059	17.68		
846.5		PI/2 BPSK	-26.74	33.73	-9.90	1.45	H		0.173	22.38	1	1
		QPSK	-26.76	33.71	-9.90	1.45	H		0.172	22.36		
		16-QAM	-27.74	32.73	-9.90	1.45	H		0.137	21.38		
		64-QAM	-29.22	31.25	-9.90	1.45	H		0.098	19.90		
		256-QAM	-31.20	29.27	-9.90	1.45	H		0.062	17.92		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
829.0	Sub6 n5/ 10 MHz [15 kHz]	PI/2 BPSK	-26.78	33.36	-9.90	1.44	H	< 7.00	0.159	22.02	1	50
		QPSK	-26.82	33.32	-9.90	1.44	H		0.158	21.98		
		16-QAM	-27.82	32.32	-9.90	1.44	H		0.125	20.98		
		64-QAM	-29.28	30.86	-9.90	1.44	H		0.090	19.52		
		256-QAM	-31.25	28.89	-9.90	1.44	H		0.057	17.55		
836.5		PI/2 BPSK	-26.70	33.52	-9.90	1.45	H		0.165	22.17	1	50
		QPSK	-26.75	33.47	-9.90	1.45	H		0.163	22.12		
		16-QAM	-27.77	32.45	-9.90	1.45	H		0.129	21.10		
		64-QAM	-29.25	30.97	-9.90	1.45	H		0.092	19.62		
		256-QAM	-31.22	29.00	-9.90	1.45	H		0.058	17.65		
844.0		PI/2 BPSK	-26.71	33.63	-9.90	1.45	H		0.169	22.28	1	50
		QPSK	-26.79	33.55	-9.90	1.45	H		0.166	22.20		
		16-QAM	-27.79	32.55	-9.90	1.45	H		0.132	21.20		
		64-QAM	-29.25	31.09	-9.90	1.45	H		0.094	19.74		
		256-QAM	-31.27	29.07	-9.90	1.45	H		0.059	17.72		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
831.5	Sub6 n5/ 15 MHz [15 kHz]	PI/2 BPSK	-26.66	33.54	-9.90	1.45	H	< 7.00	0.166	22.19	1	77
		QPSK	-26.75	33.45	-9.90	1.45	H		0.162	22.10		
		16-QAM	-27.74	32.46	-9.90	1.45	H		0.129	21.11		
		64-QAM	-29.21	30.99	-9.90	1.45	H		0.092	19.64		
		256-QAM	-31.20	29.00	-9.90	1.45	H		0.058	17.65		
836.5		PI/2 BPSK	-26.61	33.61	-9.90	1.45	H		0.168	22.26	1	39
		QPSK	-26.72	33.50	-9.90	1.45	H		0.164	22.15		
		16-QAM	-27.70	32.52	-9.90	1.45	H		0.131	21.17		
		64-QAM	-29.18	31.04	-9.90	1.45	H		0.093	19.69		
		256-QAM	-31.17	29.05	-9.90	1.45	H		0.059	17.70		
841.5		PI/2 BPSK	-26.59	33.78	-9.90	1.45	H		0.175	22.43	1	1
		QPSK	-26.69	33.68	-9.90	1.45	H		0.171	22.33		
		16-QAM	-27.66	32.71	-9.90	1.45	H		0.137	21.36		
		64-QAM	-29.14	31.23	-9.90	1.45	H		0.097	19.88		
		256-QAM	-31.10	29.27	-9.90	1.45	H		0.062	17.92		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	ERP		RB	
								W	W	dBm	Size	Offset
834.0	Sub6 n5/ 20 MHz [15 kHz]	PI/2 BPSK	-26.60	33.72	-9.90	1.45	H	< 7.00	0.173	22.37	1	53
		QPSK	-26.63	33.69	-9.90	1.45	H		0.171	22.34		
		16-QAM	-27.59	32.73	-9.90	1.45	H		0.137	21.38		
		64-QAM	-29.07	31.25	-9.90	1.45	H		0.098	19.90		
		256-QAM	-31.52	28.80	-9.90	1.45	H		0.056	17.45		
836.5		PI/2 BPSK	-26.59	33.63	-9.90	1.45	H		0.169	22.28	1	53
		QPSK	-26.62	33.60	-9.90	1.45	H		0.168	22.25		
		16-QAM	-27.71	32.51	-9.90	1.45	H		0.131	21.16		
		64-QAM	-29.19	31.03	-9.90	1.45	H		0.093	19.68		
		256-QAM	-31.20	29.02	-9.90	1.45	H		0.059	17.67		
839.0		PI/2 BPSK	-26.70	33.67	-9.90	1.45	H		0.171	22.32	1	104
		QPSK	-26.84	33.53	-9.90	1.45	H		0.165	22.18		
		16-QAM	-27.75	32.62	-9.90	1.45	H		0.134	21.27		
		64-QAM	-29.21	31.16	-9.90	1.45	H		0.096	19.81		
		256-QAM	-31.21	29.16	-9.90	1.45	H		0.060	17.81		

8.3 RADIATED SPURIOUS EMISSIONS

▣ NR Band: N5

▣ Bandwidth: 15 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 3 meters

▣ SCS: 15 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	RB	
									Size	Offset
166300 (831.5)	1 663.00	-38.26	9.58	-47.33	2.04	V	-39.79	-13.00	1	73
	2 494.50	-58.34	10.65	-62.81	2.50	V	-54.66	-13.00		
	3 326.00	-58.46	11.57	-60.01	2.99	V	-51.43	-13.00		
167300 (836.5)	1 673.00	-37.85	9.69	-47.23	2.05	H	-39.59	-13.00	1	39
	2 509.50	-58.60	10.55	-63.33	2.51	V	-55.29	-13.00		
	3 346.00	-58.57	11.53	-61.09	2.96	V	-52.52	-13.00		
168300 (841.5)	1 683.00	-37.72	9.80	-46.83	2.06	H	-39.09	-13.00	1	1
	2 524.50	-59.00	10.52	-63.27	2.54	V	-55.29	-13.00		
	3 366.00	-60.56	11.49	-62.99	2.96	V	-54.46	-13.00		

8.4 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n5	5 MHz	836.5	BPSK	25	0	4.13
			QPSK			4.60
			16-QAM			5.82
			64-QAM			6.27
			256-QAM			6.90
	10 MHz		BPSK	50		4.05
			QPSK			4.60
			16-QAM			5.59
			64-QAM			6.11
			256-QAM			6.66
	15 MHz		BPSK	75		3.90
			QPSK			4.58
			16-QAM			5.49
			64-QAM			5.97
			256-QAM			6.63
	20 MHz		BPSK	100		3.82
			QPSK			4.61
			16-QAM			5.58
			64-QAM			6.01
			256-QAM			6.59

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 41 ~ 61.

8.5 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n5	5 MHz	836.5	BPSK	25	0	4.5016
			QPSK			4.5028
			16-QAM			4.4993
			64-QAM			4.4967
			256-QAM			4.4959
	10 MHz		BPSK	50		8.9684
			QPSK			8.9822
			16-QAM			8.9488
			64-QAM			8.9592
			256-QAM			8.9935
	15 MHz		BPSK	75		13.454
			QPSK			13.434
			16-QAM			13.423
			64-QAM			13.491
			256-QAM			13.421
	20 MHz		BPSK	100		17.863
			QPSK			17.870
			16-QAM			17.860
			64-QAM			17.882
			256-QAM			17.869

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 62 ~ 81.

8.6 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
Sub6 n5	5	826.5	9.9402	30.815	-62.164	-31.349	-13.00
		836.5	6.0020	30.815	-62.772	-31.957	
		846.5	4.9851	30.200	-63.215	-33.015	
	10	829.0	5.7528	30.815	-62.672	-31.857	
		836.5	8.5843	30.815	-63.432	-32.617	
		844.0	9.6511	30.815	-63.430	-32.615	
	15	831.5	9.5813	30.815	-63.091	-32.276	
		836.5	9.7009	30.815	-61.843	-31.028	
		841.5	3.8286	30.200	-60.977	-30.777	
	20	834.0	3.1107	30.200	-63.257	-33.057	
		836.5	9.1526	30.815	-62.979	-32.164	
		839.0	9.9701	30.815	-62.003	-31.188	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 82 ~ 93.
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 94 ~ 117.

8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ BandWidth: 5 MHz

▣ Voltage(100 %): 13.200 VDC

▣ Deviation Limit: ± 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
836.5	100 %	+20(Ref)	836 500 003	0.0	0.000 000	0.000
	100 %	-30	836 500 005	1.9	0.000 000	0.002
	100 %	-20	836 500 004	0.5	0.000 000	0.001
	100 %	-10	836 500 002	-1.0	0.000 000	-0.001
	100 %	0	836 500 001	-2.1	0.000 000	-0.002
	100 %	+10	836 500 000	-3.4	0.000 000	-0.004
	100 %	+30	836 499 998	-4.7	-0.000 001	-0.006
	100 %	+40	836 499 997	-6.1	-0.000 001	-0.007
	100 %	+50	836 499 996	-7.2	-0.000 001	-0.009
	85 %	+20	836 499 998	-4.8	-0.000 001	-0.006
	115 %	+20	836 499 998	-5.2	-0.000 001	-0.006

▣ BandWidth: 10 MHz

▣ Voltage(100 %): 13.200 VDC

▣Deviation Limit: ± 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
836.5	100 %	+20(Ref)	836 499 998	0.0	0.000 000	0.000
	100 %	-30	836 499 995	-2.8	0.000 000	-0.003
	100 %	-20	836 499 994	-4.0	0.000 000	-0.005
	100 %	-10	836 499 993	-5.1	-0.000 001	-0.006
	100 %	0	836 499 992	-6.3	-0.000 001	-0.007
	100 %	+10	836 500 002	3.4	0.000 000	0.004
	100 %	+30	836 500 001	2.6	0.000 000	0.003
	100 %	+40	836 500 000	1.6	0.000 000	0.002
	100 %	+50	836 499 999	0.7	0.000 000	0.001
	85 %	+20	836 499 999	0.8	0.000 000	0.001
	115 %	+20	836 499 999	1.1	0.000 000	0.001

▣ BandWidth: 15 MHz

▣ Voltage(100 %): 13.200 VDC

▣Deviation Limit: ± 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
836.5	100 %	+20(Ref)	836 500 002	0.0	0.000 000	0.000
	100 %	-30	836 500 003	1.2	0.000 000	0.001
	100 %	-20	836 500 003	0.6	0.000 000	0.001
	100 %	-10	836 500 002	-0.1	0.000 000	0.000
	100 %	0	836 500 001	-0.9	0.000 000	-0.001
	100 %	+10	836 500 000	-1.9	0.000 000	-0.002
	100 %	+30	836 500 000	-2.4	0.000 000	-0.003
	100 %	+40	836 499 999	-3.0	0.000 000	-0.004
	100 %	+50	836 499 998	-3.9	0.000 000	-0.005
	85 %	+20	836 500 001	-1.4	0.000 000	-0.002
	115 %	+20	836 499 998	-3.8	0.000 000	-0.005

▣ BandWidth: 20 MHz

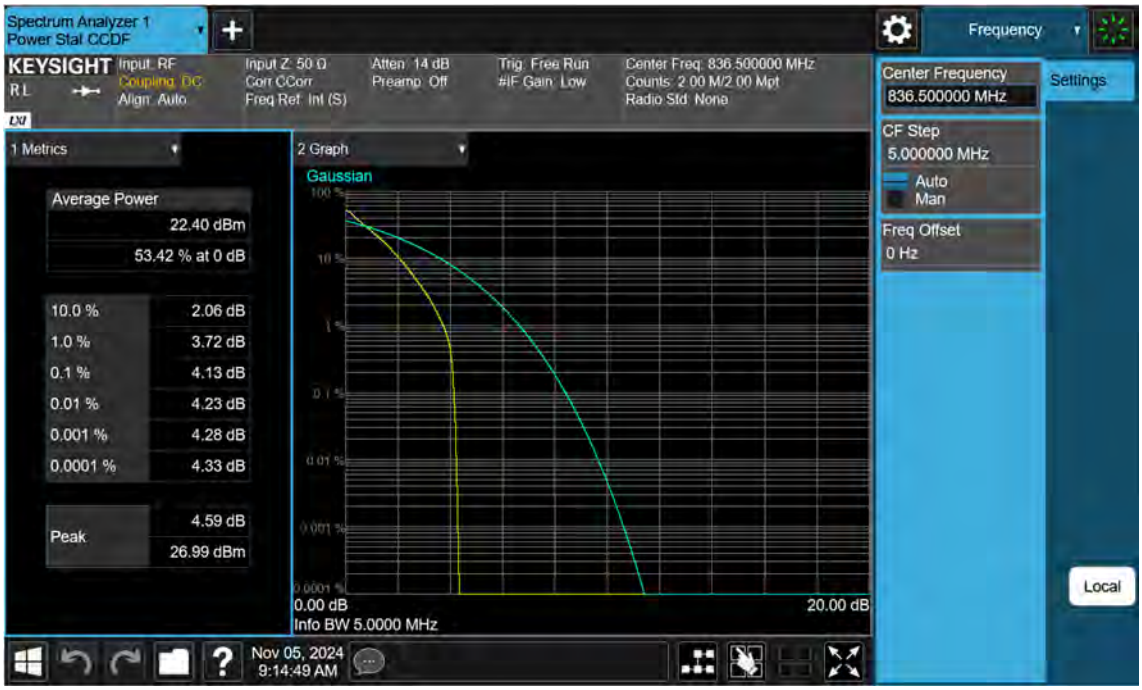
▣ Voltage(100 %): 13.200 VDC

▣Deviation Limit: ± 0.000 25 % or 2.5 ppm

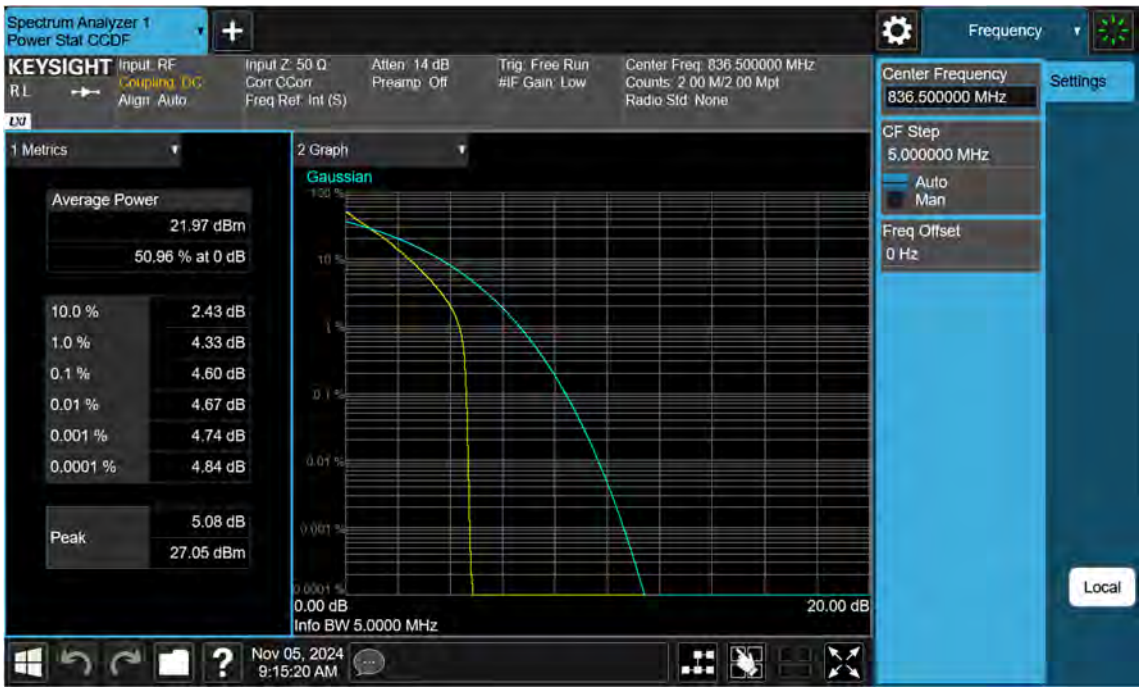
Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
836.5	100 %	+20(Ref)	836 500 003	0.0	0.000 000	0.000
	100 %	-30	836 500 005	2.4	0.000 000	0.003
	100 %	-20	836 500 004	1.2	0.000 000	0.001
	100 %	-10	836 500 004	0.7	0.000 000	0.001
	100 %	0	836 500 003	0.2	0.000 000	0.000
	100 %	+10	836 500 002	-0.8	0.000 000	-0.001
	100 %	+30	836 500 002	-1.2	0.000 000	-0.001
	100 %	+40	836 500 001	-2.0	0.000 000	-0.002
	100 %	+50	836 500 001	-2.2	0.000 000	-0.003
	85 %	+20	836 500 004	0.8	0.000 000	0.001
	115 %	+20	836 500 005	2.2	0.000 000	0.003

9. TEST PLOTS

NR5_5 M_PAR_Mid_BPSK_FullRB



NR5_5 M_PAR_Mid_QPSK_FullRB

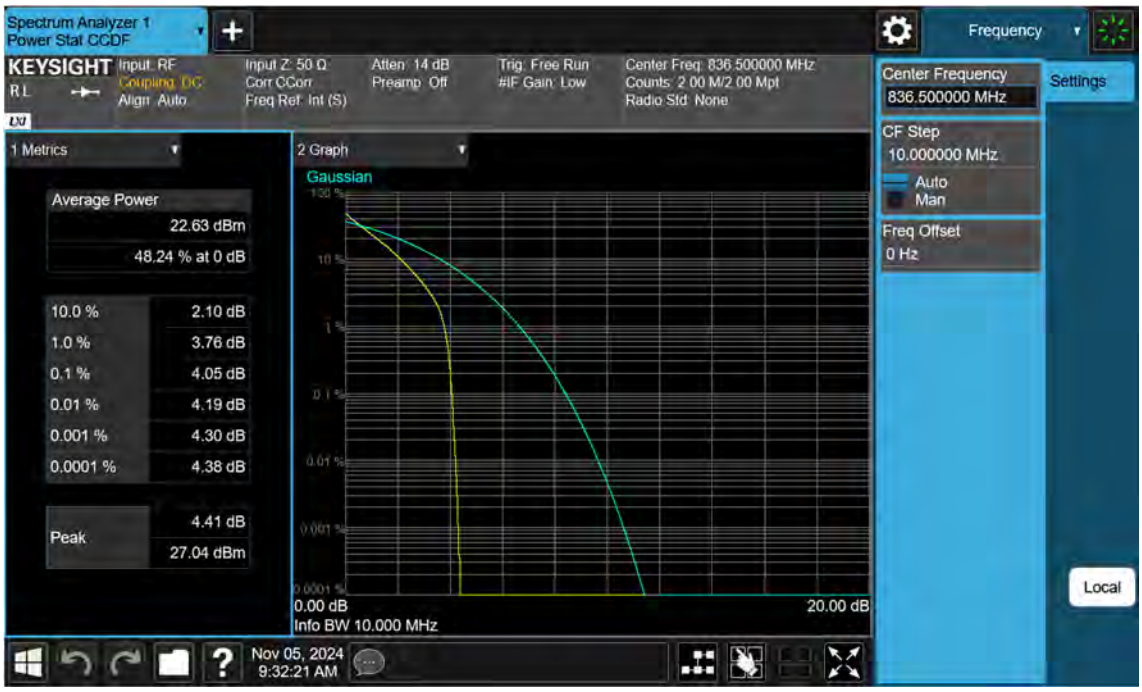


NR5_5 M_PAR_Mid_16QAM_FullRB

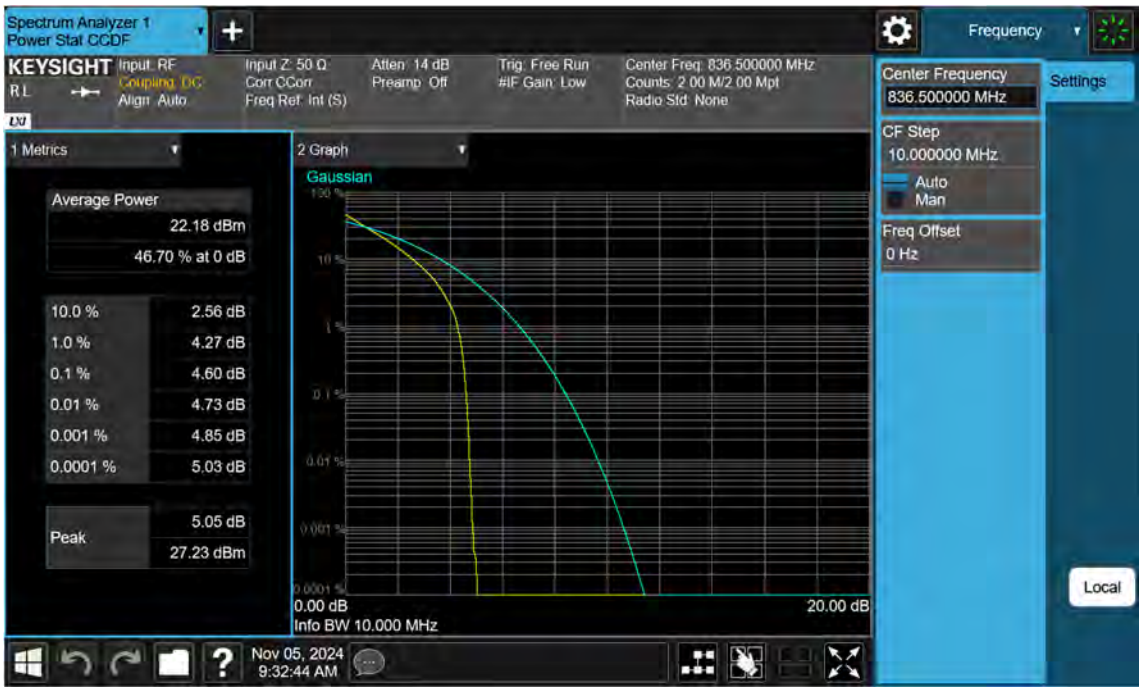
NR5_5 M_PAR_Mid_64QAM_FullRB

NR5_5 M_PAR_Mid_256QAM_FullRB

NR5_10 M_PAR_Mid_BPSK_FullRB



NR5_10 M_PAR_Mid_QPSK_FullRB

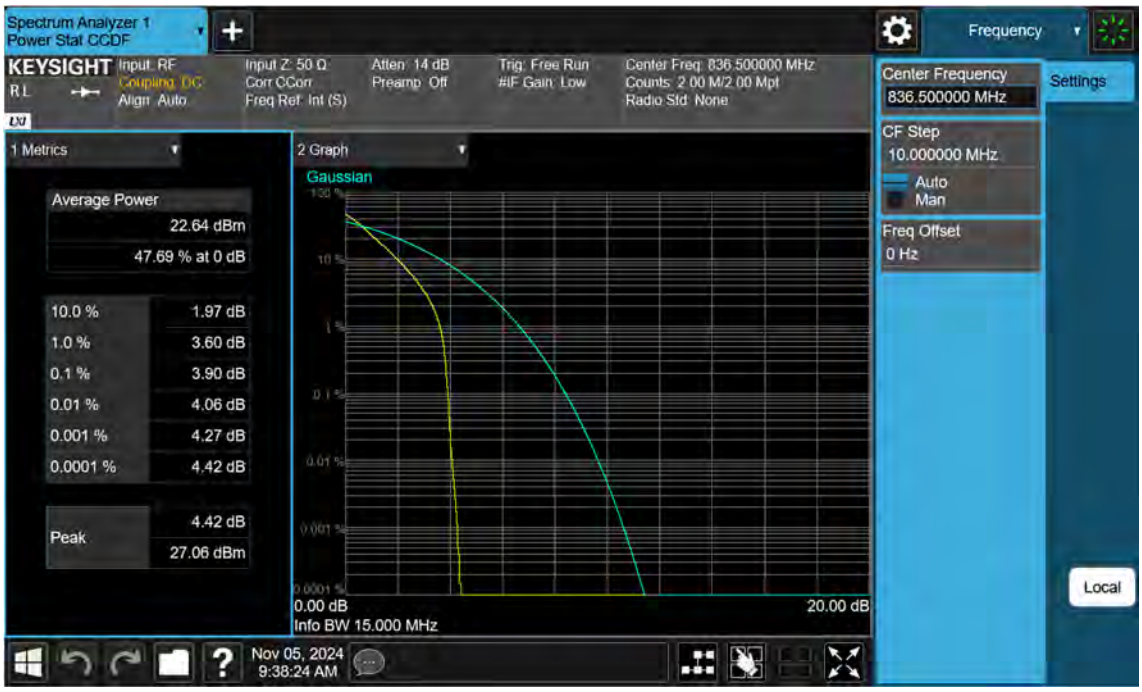


NR5_10 M_PAR_Mid_16QAM_FullRB

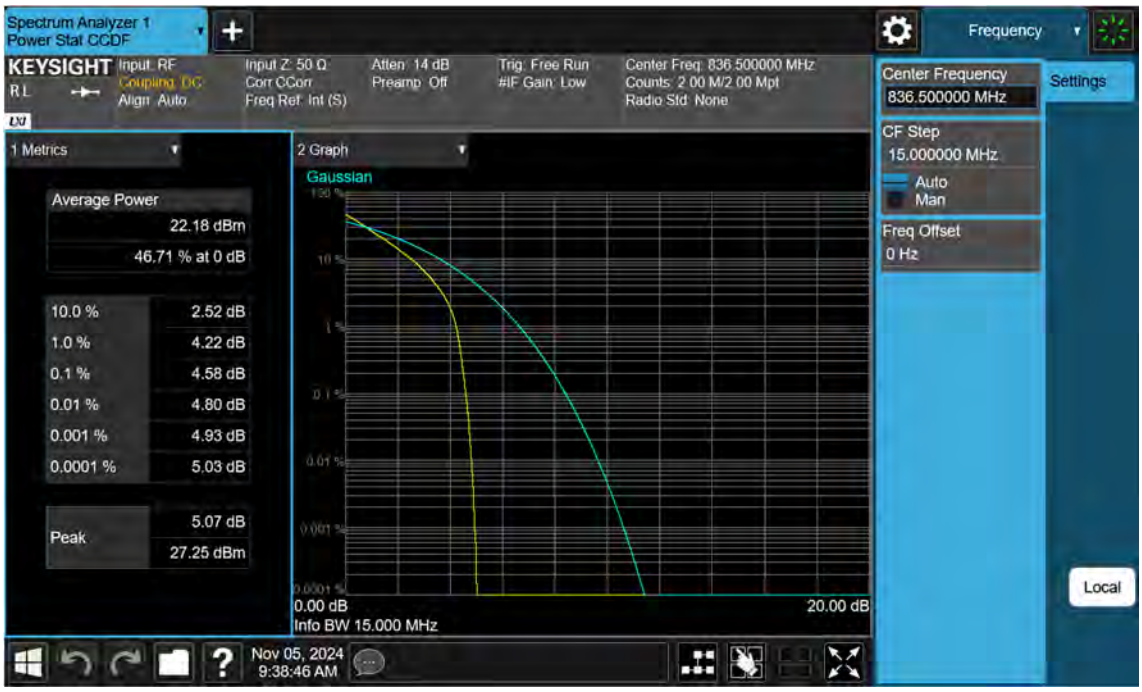
NR5_10 M_PAR_Mid_64QAM_FullRB

NR5_10 M_PAR_Mid_256QAM_FullRB

NR5_15 M_PAR_Mid_BPSK_FullRB



NR5_15 M_PAR_Mid_QPSK_FullRB

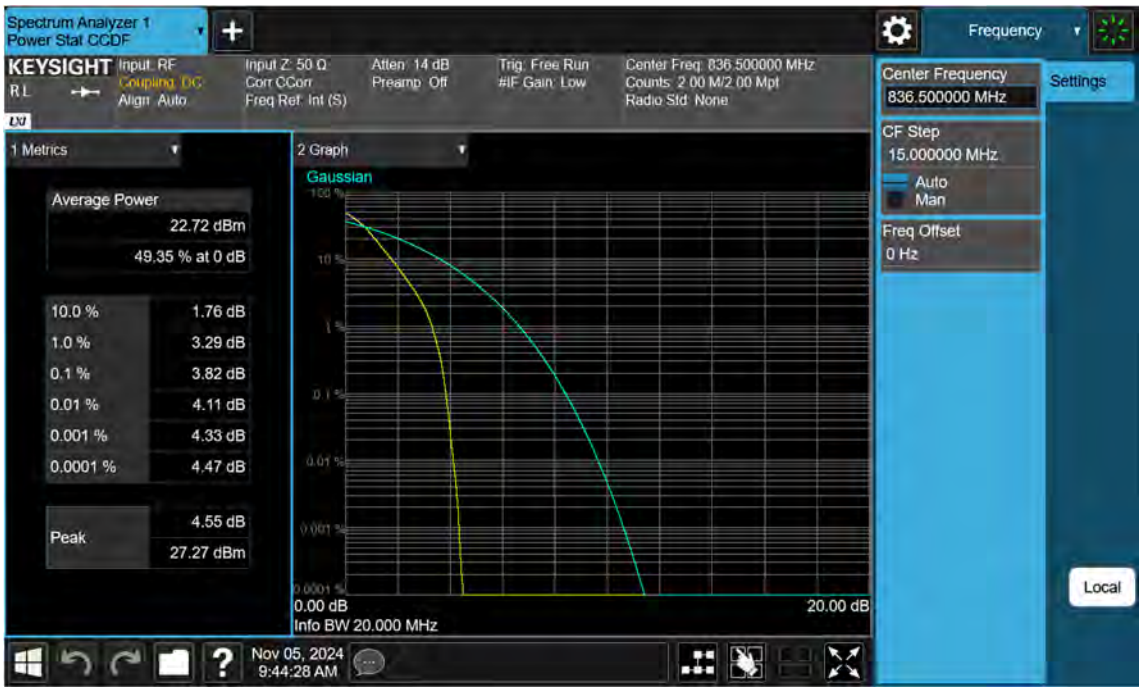


NR5_15 M_PAR_Mid_16QAM_FullRB

NR5_15 M_PAR_Mid_64QAM_FullRB

NR5_15 M_PAR_Mid_256QAM_FullRB

NR5_20 M_PAR_Mid_BPSK_FullRB



NR5_20 M_PAR_Mid_QPSK_FullRB

NR5_20 M_PAR_Mid_16QAM_FullRB

NR5_20 M_PAR_Mid_64QAM_FullRB

NR5_20 M_PAR_Mid_256QAM_FullRB

NR5_5 M_OBW_Mid_BPSK_FullRB

NR5_5 M_OBW_Mid_QPSK_FullRB

NR5_5 M_OBW_Mid_16QAM_FullRB

NR5_5 M_OBW_Mid_64QAM_FullRB

NR5_5 M_OBW_Mid_256QAM_FullRB

NR5_10 M_OBW_Mid_BPSK_FullRB

NR5_10 M_OBW_Mid_QPSK_FullRB

NR5_10 M_OBW_Mid_16QAM_FullRB

NR5_10 M_OBW_Mid_64QAM_FullRB

NR5_10 M_OBW_Mid_256QAM_FullRB

NR5_15 M_OBW_Mid_BPSK_FullRB

NR5_15 M_OBW_Mid_QPSK_FullRB

NR5_15 M_OBW_Mid_16QAM_FullRB

NR5_15 M_OBW_Mid_64QAM_FullRB

NR5_15 M_OBW_Mid_256QAM_FullRB

NR5_20 M_OBW_Mid_BPSK_FullRB

NR5_20 M_OBW_Mid_QPSK_FullRB

NR5_20 M_OBW_Mid_16QAM_FullRB

NR5_20 M_OBW_Mid_64QAM_FullRB

NR5_20 M_OBW_Mid_256QAM_FullRB

NR5_5 M_Conducted Spurious(30 M-10 G)_Low_BPSK_1RB

NR5_5 M_Conducted Spurious(30 M-10 G)_Mid_BPSK_1RB

NR5_5 M_Conducted Spurious(30 M-10 G)_High_BPSK_1RB

NR5_10 M_Conducted Spurious(30 M-10 G)_Low_BPSK_1RB

NR5_10 M_Conducted Spurious(30 M-10 G)_Mid_BPSK_1RB

NR5_10 M_Conducted Spurious(30 M-10 G)_High_BPSK_1RB

NR5_15 M_Conducted Spurious(30 M-10 G)_Low_BPSK_1RB

NR5_15 M_Conducted Spurious(30 M-10 G)_Mid_BPSK_1RB

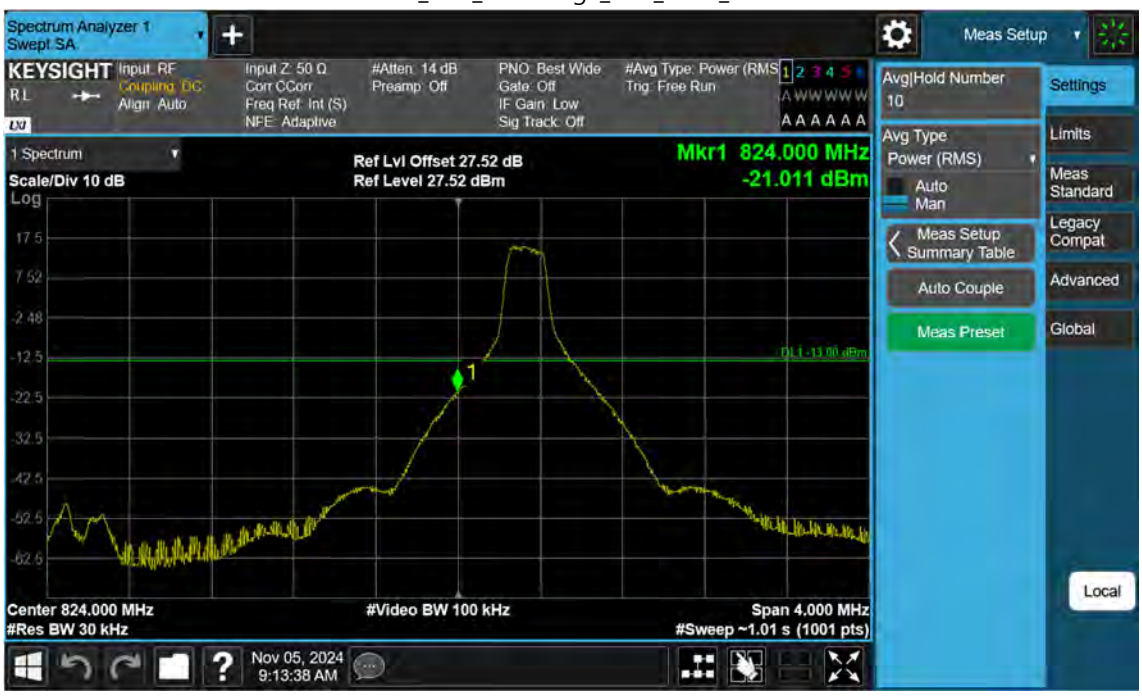
NR5_15 M_Conducted Spurious(30 M-10 G)_High_BPSK_1RB

NR5_20 M_Conducted Spurious(30 M-10 G)_Low_BPSK_1RB

NR5_20 M_Conducted Spurious(30 M-10 G)_Mid_BPSK_1RB

NR5_20 M_Conducted Spurious(30 M-10 G)_High_BPSK_1RB

NR5_5 M_Band Edge_Low_BPSK_1RB



NR5_5 M_Band Edge_Low_BPSK_FullRB

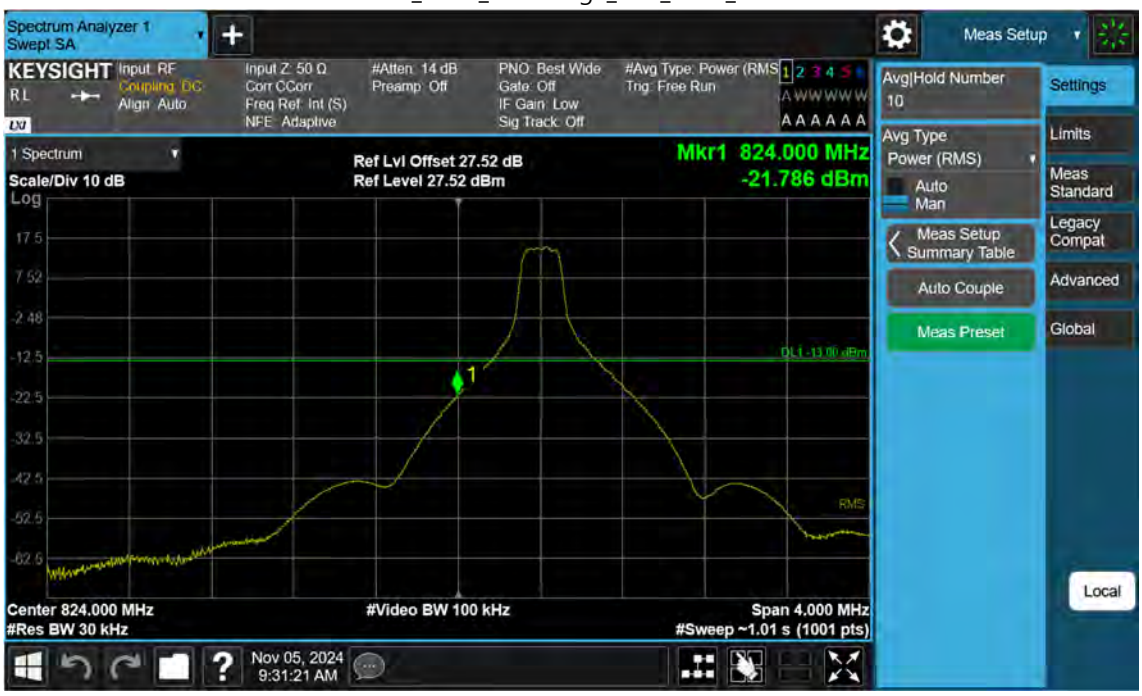
NR5_5 M_Extended Band Edge_Low_BPSK_FullRB

NR5_5 M_Band Edge_High_BPSK_1RB

NR5_5 M_Band Edge_High_BPSK_FullRB

NR5_5 M_Extended Band Edge_High_BPSK_FullRB

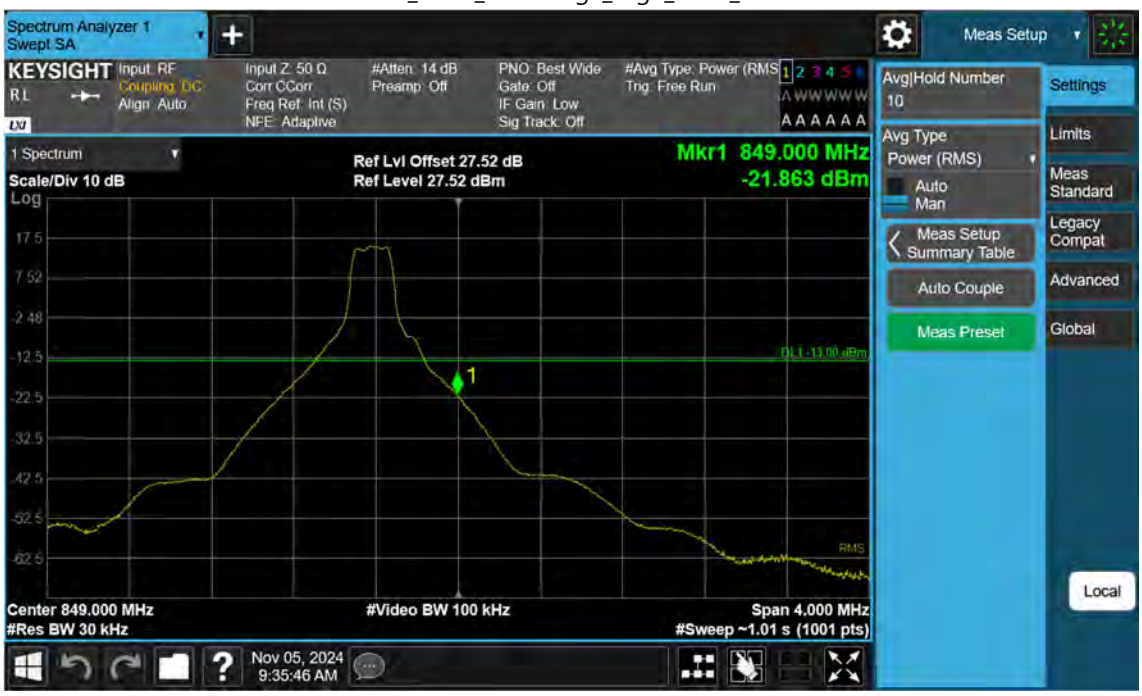
NR5_10 M_Band Edge_Low_BPSK_1RB



NR5_10 M_Band Edge_Low_BPSK_FullRB

NR5_10 M_Extended Band Edge_Low_BPSK_FullRB

NR5_10 M_Band Edge_High_BPSK_1RB



NR5_10 M_Band Edge_High_BPSK_FullRB

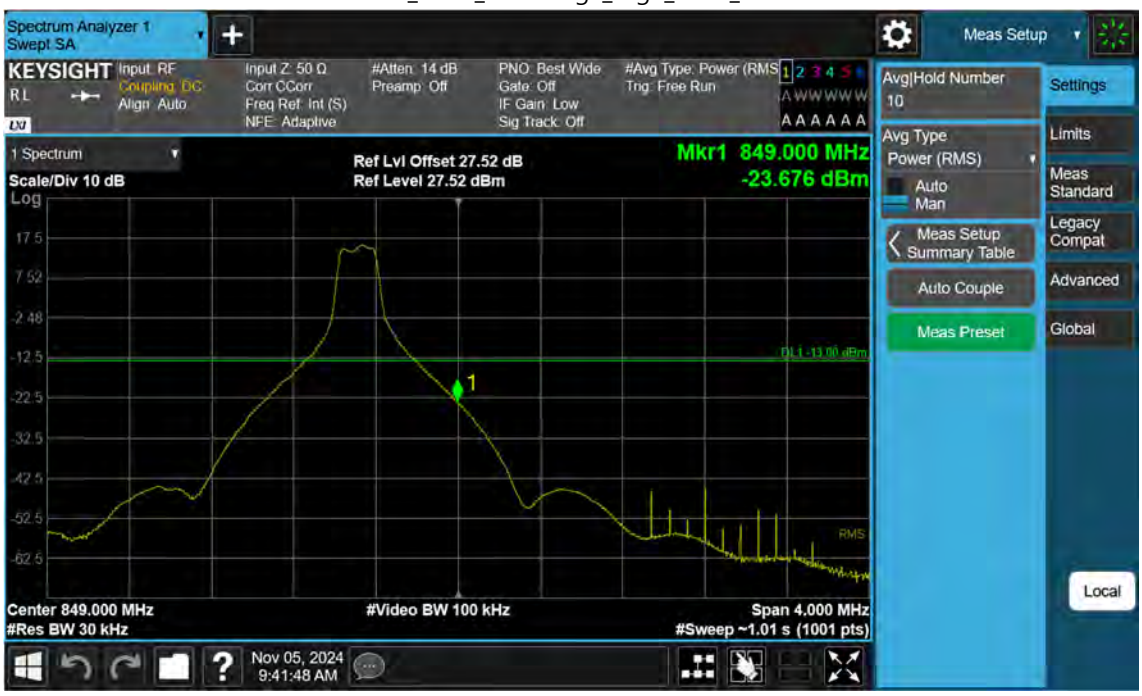
NR5_10 M_Extended Band Edge_High_BPSK_FullRB

NR5_15 M_Band Edge_Low_BPSK_1RB

NR5_15 M_Band Edge_Low_BPSK_FullRB

NR5_15 M_Extended Band Edge_Low_BPSK_FullRB

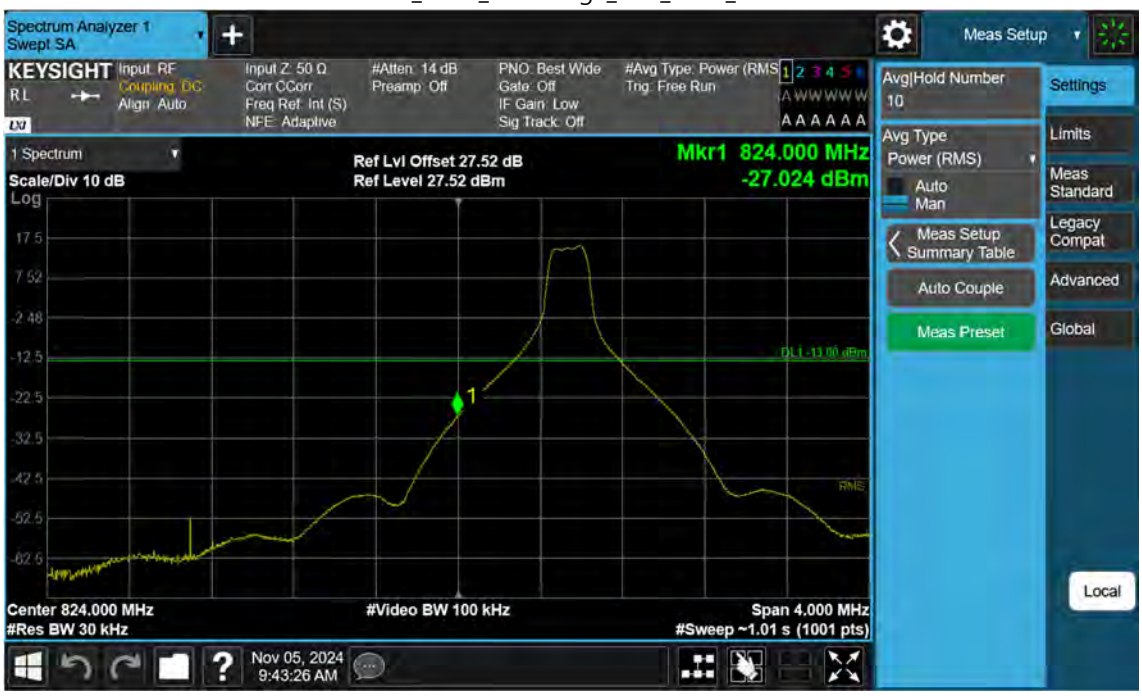
NR5_15 M_Band Edge_High_BPSK_1RB



NR5_15 M_Band Edge_High_BPSK_FullRB

NR5_15 M_Extended Band Edge_High_BPSK_FullRB

NR5_20 M_Band Edge_Low_BPSK_1RB



NR5_20 M_Band Edge_Low_BPSK_FullRB

NR5_20 M_Extended Band Edge_Low_BPSK_FullRB

NR5_20 M_Band Edge_High_BPSK_1RB

NR5_20 M_Band Edge_High_BPSK_FullRB

NR5_20 M_Extended Band Edge_High_BPSK_FullRB

10. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2412-FC030-P