

# **TEST REPORT**

FCC Sub6 n70 Test for SM-S721U Certification

APPLICANT SAMSUNG Electronics Co., Ltd.

REPORT NO. HCT-RF-2407-FC032

DATE OF ISSUE July 19, 2024

> **Tested by** Jin Woo Yu

유전

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F-TP22-03(Rev.06)

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T E S T R E P O R T	REPORT NO. HCT-RF-2407-FC032 DATE OF ISSUE July 19, 2024 Additional Model SM-S721U1
Applicant	<b>SAMSUNG Electronics Co., Ltd.</b> 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-S721U
Date of Test	May 21, 2024 ~ July 19, 2024
FCC ID	A3LSMS721U
Location of Test	■ Permanent Testing Lab □ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi- do, 17383 Republic of Korea)
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Test Standard Used	FCC Rule Part: § 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 19, 2024	Initial Release

# Notice

Content

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

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

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

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

The laboratory is not accredited for the test results marked \*. Information provided by the applicant is marked \*\*. Test results provided by external providers are marked \*\*\*.

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

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



# CONTENTS

1. GENERAL INFORMATION	
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	
3. DESCRIPTION OF TESTS	
3.1 TEST PROCEDURE	
3.2 RADIATED POWER	
3.3 RADIATED SPURIOUS EMISSIONS	
3.4 PEAK- TO- AVERAGE RATIO	
3.5 OCCUPIED BANDWIDTH	
3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL	
3.7 BAND EDGE	
3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	
3.9 WORST CASE(RADIATED TEST)	
3.10 WORST CASE(CONDUCTED TEST)	
4. LIST OF TEST EQUIPMENT	
5. MEASUREMENT UNCERTAINTY	
6. SUMMARY OF TEST RESULTS	
7. SAMPLE CALCULATION	
8. TEST DATA	
8.1 EQUIVALENT ISOTROPIC RADIATED POWER	
8.2 RADIATED SPURIOUS EMISSIONS	
8.3 PEAK-TO-AVERAGE RATIO	
8.4 OCCUPIED BANDWIDTH	
8.5 CONDUCTED SPURIOUS EMISSIONS	
8.6 BAND EDGE	
8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	
9. TEST PLOTS	
10. ANNEX A_ TEST SETUP PHOTO	98



# **MEASUREMENT REPORT**

# **1. GENERAL INFORMATION**

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMS721U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27
EUT Type:	Mobile phone
Model(s):	SM-S721U
Additional Model(s)	SM-S721U1
SCS(kHz):	15
Bandwidth(MHz):	5, 10, 15
Waveform:	CP-OFDM, DFT-S-OFDM
Modulation:	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
	CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
	1697.5 MHz – 1707.5 MHz (Sub6 n70(5 MHz))
Tx Frequency:	1700.0 MHz – 1705.0 MHz (Sub6 n70(10 MHz))
	1705.5 MHz (Sub6 n70(15 MHz))
Date(s) of Tests:	May 20, 2024 ~ July 19, 2024
Serial number:	Radiated : 67d50ecc63197ece
Senal number:	Conducted : R3CX40SV7PD





# **1.1 MAXIMUM OUTPUT POWER**

Mada	Ty Frequency	Emission		EIRP		
Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	Max. Power (W)	Max. Power (dBm)	
		4M60G7D	PI/2 BPSK	0.120	20.78	
		4M63G7D	QPSK	0.118	20.73	
Sub6 n70 (5)	1697.5 - 1707.5	4M58W7D	16QAM	0.095	19.77	
		4M65W7D	64QAM	0.066	18.19	
		4M57W7D	256QAM	0.044	16.39	
		8M98G7D	PI/2 BPSK	0.119	20.74	
		9M02G7D	QPSK	0.117	20.70	
Sub6 n70 (10)	1700.0 - 1705.0	8M99W7D	16QAM	0.092	19.65	
		8M98W7D	64QAM	0.067	18.26	
		8M97W7D	256QAM	0.042	16.27	
		13M4G7D	PI/2 BPSK	0.114	20.55	
		13M5G7D	QPSK	0.112	20.51	
Sub6 n70 (15)	1702.5	13M5W7D	16QAM	0.088	19.44	
		13M5W7D	64QAM	0.064	18.05	
		13M4W7D	256QAM	0.041	16.17	





# **2. INTRODUCTION**

# **2.1 DESCRIPTION OF EUT**

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

# 2.2 MEASURING INSTRUMENT CALIBRATION

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

#### **2.3 TEST FACILITY**

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74**, **Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. 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	- KDB 971168 D01 v03r01 – Section 6.0
Antenna Terminal	- 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 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8
Effective Isotropic Radiated Power	- ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12



#### **3.2 RADIATED POWER**

#### **Test Overview**

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

#### **Test Settings**

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5 % of the expected OBW, not to exceed 1 MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points > 2 x span / RBW
- 6. Detector = RMS

7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".

8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.

9. Trace mode = trace averaging (RMS) over 100 sweeps

10. The trace was allowed to stabilize

#### Test Note

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

The power is calculated by the following formula;

 $P_{d}$  (dBm) = Pg (dBm) - cable loss (dB) + antenna gain (dB)

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

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

- 4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- 5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.



#### **3.3 RADIATED SPURIOUS EMISSIONS**

#### **Test Overview**

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

#### **Test Settings**

- 1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
- 2. VBW  $\geq$  3 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<sup>th</sup> harmonics from 9 kHz.

#### Test Note

 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;

Result (dBm) = Pg (dBm) - cable loss (dB) + antenna gain (dBi)

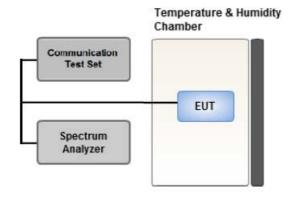
Where:  $\mathsf{P}_{\mathsf{g}}$  is the generator output power into the substitution antenna.

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

EIRP (dBm) = ERP (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:

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



#### **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 × RBW.

- 1. Set the RBW  $\geq$  OBW.
- 2. Set VBW  $\geq$  3 × 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)**

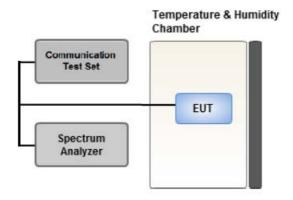
- 1. Set span to 2 × to 3 × the OBW.
- 2. Set RBW  $\geq$  OBW.
- 3. Set VBW  $\geq$  3 × RBW.
- 4. Set number of measurement points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .
- 5. Sweep time:
  - Set  $\geq$  [10 × (number of points in sweep) × (transmission period)] for single sweep

(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 %.



#### 3.5 OCCUPIED BANDWIDTH.



#### Test setup

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

The EUT makes a call to the communication simulator.

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

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

#### **Test Settings**

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



# Communication Test Set EUT Spectrum Analyzer

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

#### Test setup

#### **Test Overview**

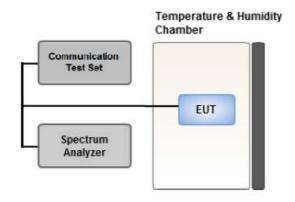
The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured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

#### **Test Settings**

- 1. RBW = 1 MHz
- 2. VBW  $\geq$  3 MHz
- 3. Detector = RMS
- 4. Trace Mode = trace average
- 5. Sweep time = auto
- 6. Number of points in sweep  $\geq 2 \times \text{Span} / \text{RBW}$



#### **3.7 BAND EDGE**



#### Test setup

#### **Test Overview**

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

#### **Test Settings**

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



#### **Test Notes**

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

Where Margin < 1 dB the emission level is either corrected by 10 log(1 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.



# Communication Test Set EUT Spectrum Analyzer

#### Test setup

#### **Test Overview**

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

**3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE** 

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)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
- (Worst case: DFT-S-OFDM)
- 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 Only
- 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.

- 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 was investigated and the worst case bandwidth results are reported. (Worst case : 5 MHz)
- SM-S721U & additional models were tested and the worst case results are reported.
- (Worst case : SM-S721U)

[ Worst case ]					
Test Description	Modulation	RB size	RB offset	Axis	
Effective Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Sec	tion 8.1	Z	
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See Sec	tion 8.2	Z	



# 3.10 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 Only
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.

Please refer to the table below.

- SM-S721U & additional models were tested and the worst case results are reported.

(Worst case : SM-S721U)

[ 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	Mid	Full RB	0
		5	Low	1	0
	PI/2 BPSK	5	High	1	24
		10	Low	1	0
Band Edge			High	1	51
		15	Low	1	0
			High	1	78
		5, 10, 15	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	5, 10, 15	Low, Mid, High	1	1



# 4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	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	09/29/2024	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	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	08/25/2024	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
Base Station	8960 (E5515C)	Agilent	MY48360800	08/10/2024	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	09/19/2024	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 %, <i>k</i> =2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, <i>k</i> =2)



# **6. SUMMARY OF TEST RESULTS**

#### 6.1 Test Condition: Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 27.53(h)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	See 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. See SAR Report

2. All conducted tests were tested using 5G Wireless Tester.

# 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	§ 2.1053,	<43 + 10log10 (P[Watts]) for	DACC
Emissions	§ 27.53(h)	all out-of band emissions	PASS

#### Note:

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



# 7. SAMPLE CALCULATION

#### 7.1 ERP Sample Calculation

Ch.	/ Freq.	Measured Substitute		Ant. Gain	<u> </u>	Del	EF	RP
channel	Freq.(MHz)	Level (dBm)	Level (dBm)	(dBd)	C.L	Pol.	w	dBm
128	824.20	-21.37	38.40	-10.61	0.95	Н	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	Substitute	Ant. Gain	<b>C</b> 1	Pol.	EIRP	
channel	Freq.(MHz)	Level (dBm)	Level (dBm)	(dBi)	C.L	Pol.	w	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	Н	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

<u>QAM Modulation</u> 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 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth	Modulation		Substitute Level	Ant. Gain (dBi)	C.L	Pol	Limit	EI	RP		RB
	[SCS (kHz)]		(dBm)	(dBm)	(UDI)			w	W	dBm	Size	Offset
	PI/2 BPSK	-20.46	13.17	9.60	1.99	v		0.120	20.78			
		QPSK	-20.51	13.12	9.60	1.99	V		0.118	20.73		
1697.5		16-QAM	-21.47	12.16	9.60	1.99	V		0.095	19.77	1	12
		64-QAM	-23.05	10.58	9.60	1.99	V		0.066	18.19		
		256-QAM	-24.85	8.78	9.60	1.99	V		0.044	16.39		
	-	PI/2 BPSK	-20.70	12.93	9.60	1.99	V		0.113	20.54		
	Sub6 n70/	QPSK	-20.76	12.87	9.60	1.99	V		0.112	20.48	1	23
1702.5	5 MHz	16-QAM	-21.70	11.93	9.60	1.99	V	< 1.00	0.090	19.54		
	[15 kHz]	64-QAM	-23.22	10.41	9.60	1.99	V		0.063	18.02		
		256-QAM	-25.08	8.55	9.60	1.99	V		0.041	16.16		
		PI/2 BPSK	-20.63	12.57	9.60	1.99	V		0.104	20.18		
		QPSK	-20.67	12.53	9.60	1.99	V		0.103	20.14		
1707.5		16-QAM	-21.57	11.63	9.60	1.99	V		0.084		1	12
		64-QAM	-23.14	10.06	9.60	1.99	V		0.059	17.67		
		256-QAM	-24.99	8.21	9.60	1.99	V		0.038	15.82		



Freq (MHz)	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain (dBi)	C.L	Pol	Limit	EIRP		RB	
(MHZ)	[SCS (kHz)]		(dBm)	(dBm)	(аві)			w	W	dBm	Size	Offset
		PI/2 BPSK	-20.50	13.13	9.60	1.99	V		0.119	20.74		
		QPSK	-20.54	13.09	9.60	1.99	V		0.117	20.70		
1700.0		16-QAM	-21.59	12.04	9.60	1.99	V		0.092	19.65	1	26
		64-QAM	-22.98	10.65	9.60	1.99	V		0.067	18.26		
		256-QAM	-24.97	8.66	9.60	1.99	V		0.042	16.27		
		PI/2 BPSK	-20.54	13.09	9.60	1.99	V		0.117	20.70		
	Sub6 n70/	QPSK	-20.56	13.07	9.60	1.99	V		0.117	0.117 20.68	1	1
1702.5	10 MHz	16-QAM	-21.60	12.03	9.60	1.99	V	< 1.00	0.092	19.64		
	[15 kHz]	64-QAM	-23.07	10.56	9.60	1.99	V		0.066	18.17		
		256-QAM	-24.99	8.64	9.60	1.99	V		0.042	16.25		
		PI/2 BPSK	-20.55	12.87	9.60	1.99	V		0.112	20.48		
		QPSK	-20.60	12.82	9.60	1.99	V		0.110	20.43		
1705.0		16-QAM	-21.53	11.89	9.60	1.99	V		0.089	19.50	1	26
		64-QAM	-22.96	10.46	9.60	1.99	V	/ 0.064	18.07			
		256-QAM	-24.92	8.50	9.60	1.99	V		0.041	16.11		





Freq (MHz)	· Randwidth		Measured Level	Substitute Level	Ant. Gain (dBi)	C.L	L Pol	Limit	EI	RP	I	RB
(10112)	[SCS (kHz)]		(dBm)	(dBm)				W	W	dBm	Size	Offset
		PI/2 BPSK	-20.69	12.94	9.60	1.99	V		0.114	20.55		
	Sub6 n70/ 1702.5 15 MHz	QPSK	-20.73	12.90	9.60	1.99	۷		0.112	20.51		
1702.5		16-QAM	-21.80	11.83	9.60	1.99	۷	< 1.00	0.088	19.44	1	77
	[15 kHz]	64-QAM	-23.19	10.44	9.60	1.99	۷		0.064	18.05		
		256-QAM	-25.07	8.56	9.60	1.99	۷		0.041	16.17		



# **8.2 RADIATED SPURIOUS EMISSIONS**

NR Band:	<u>N70</u>
Bandwidth:	5 MHz
Modulation:	PI/2 BPSK
Distance:	3 meters
SCS:	15 kHz

	Freq	Measured	Ant. Gain	Substitute			Result	Limit		RB
Ch	(MHz)	Level (dBm)	(dBi)	Level (dBm)	C.L	Pol	(dBm)	(dBm)	Size	Offset
220500	3395.00	-59.70	11.05	-61.88	2.93	V	-53.75	-13.00		
339500 (1007 5)	5092.50	-60.52	10.70	-55.89	3.64	V	-48.83	-13.00	1	12
(1697.5)	6790.00	-62.77	10.60	-51.79	4.25	V	-45.44	-13.00		
240500	3405.00	-60.09	11.10	-62.20	2.91	V	-54.01	-13.00		23
340500	5107.50	-61.12	10.80	-55.63	3.67	V	-48.50	-13.00	1	
(1702.5)	6810.00	-62.85	10.70	-51.86	4.24	V	-45.40	-13.00		
241500	3415.00	-60.00	11.10	-61.58	2.93	V	-53.41	-13.00		
341500	5122.50	-61.01	10.80	-55.39	3.64	V	-48.23	-13.00	1	12
(1707.5)	6830.00	-64.49	10.70	-53.55	4.28	V	-47.13	-13.00		





# 8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB )
			BPSK			4.96
			QPSK			5.68
	5 MHz		16-QAM	25		6.30
			64-QAM			6.37
			256-QAM			6.24
-		1702.5	BPSK			5.59
			QPSK	50		5.82
Sub6 n70	10 MHz		16-QAM		0	6.36
			64-QAM			6.64
			256-QAM			6.55
			BPSK			4.40
			QPSK			5.64
	15 MHz		16-QAM	75		6.34
			64-QAM			6.55
			256-QAM			6.66

# Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 36  $\sim$  50.





# **8.4 OCCUPIED BANDWIDTH**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
			BPSK			4.6020
			QPSK			4.6257
	5 MHz		16-QAM	25		4.5808
			64-QAM			4.6457
			256-QAM			4.5679
-		1702.5	BPSK			8.9829
			QPSK	50		9.0195
Sub6 n70	10 MHz		16-QAM		0	8.9918
			64-QAM			8.9830
			256-QAM			8.9655
-			BPSK			13.441
			QPSK			13.450
	15 MHz		16-QAM	75		13.465
			64-QAM			13.496
			256-QAM			13.443

# Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 51 ~ 65.



#### **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)
		1697.5	3.3914	29.400	-75.227	-45.827	
5	1702.5	3.4019	29.400	-74.949	-45.549		
		1707.5	3.4118	29.400	-75.075	-45.675	
Sub6 n70		1700.0	3.3919	29.400	-74.596	-45.196	-13.00
	10	1702.5	3.3969	29.400	-74.821	-45.421	
		1705.0	3.4019	29.400	-74.235	-44.835	
	15	1702.5	3.3919	29.400	-75.119	-45.719	

# Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 66 ~ 79.

2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)

#### 3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 - 1	26.694
1 – 5	29.400
5 - 10	30.015
10 - 15	30.540
15 - 20	30.913
Above 20	31.555

#### 8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 80 ~ 97.



# 8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

BandWidth:	5 MHz
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
LIMIT:	Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
	100 %	+20(Ref)	1697 500 000	0.0	0.000 000	0.000
	100 %	-30	1697 500 000	-0.3	0.000 000	0.000
	100 %	-20	1697 500 001	1.2	0.000 000	0.001
	100 %	-10	1697 500 000	-0.3	0.000 000	0.000
1007 5	100 %	0	1697 500 000	0.0	0.000 000	0.000
1697.5	100 %	+10	1697 500 001	0.6	0.000 000	0.000
	100 %	+30	1697 500 000	0.3	0.000 000	0.000
	100 %	+40	1697 499 999	-0.9	0.000 000	-0.001
	100 %	+50	1697 499 999	-0.8	0.000 000	0.000
	Batt. Endpoint	+20	1697 500 000	0.3	0.000 000	0.000
	100 %	+20(Ref)	1707 500 001	0.0	0.000 000	0.000
	100 %	-30	1707 500 001	-0.1	0.000 000	0.000
	100 %	-20	1707 500 001	0.3	0.000 000	0.000
1707.5	100 %	-10	1707 500 002	1.3	0.000 000	0.001
	100 %	0	1707 500 001	0.6	0.000 000	0.000
	100 %	+10	1707 500 001	0.4	0.000 000	0.000
	100 %	+30	1707 500 001	0.5	0.000 000	0.000
	100 %	+40	1707 500 002	1.1	0.000 000	0.001
	100 %	+50	1707 500 001	0.3	0.000 000	0.000
	Batt. Endpoint	+20	1707 500 001	0.4	0.000 000	0.000



BandWidth:	<u>10 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
LIMIT:	Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp.	Frequency (Hz)	Frequency	Deviation (%)	ppm
				100 %		
100 %	-30		1699 999 999	0.1	0.000 000	0.000
100 %	-20		1699 999 999	0.4	0.000 000	0.000
100 %	-10		1700 000 000	0.5	0.000 000	0.000
100 %	0		1699 999 999	0.0	0.000 000	0.000
1700.0	100 %	+10	1700 000 000	0.7	0.000 000	0.000
	100 %	+30	1699 999 998	-0.8	0.000 000	0.000
	100 %	+40	1700 000 000	0.8	0.000 000	0.000
	100 %	+50	1699 999 999	0.2	0.000 000	0.000
	Batt. Endpoint	+20	1699 999 999	0.4	0.000 000	0.000
	100 %	+20(Ref)	1705 000 000	0.0	0.000 000	0.000
	100 %	-30	1704 999 999	-0.9	0.000 000	0.000
1705.0	100 %	-20	1704 999 999	-0.8	0.000 000	0.000
	100 %	-10	1704 999 999	-0.8	0.000 000	0.000
	100 %	0	1704 999 999	-0.7	0.000 000	0.000
	100 %	+10	1705 000 000	-0.1	0.000 000	0.000
	100 %	+30	1705 000 000	0.2	0.000 000	0.000
	100 %	+40	1705 000 000	-0.4	0.000 000	0.000
	100 %	+50	1705 000 001	0.4	0.000 000	0.000
	Batt. Endpoint	+20	1705 000 000	-0.2	0.000 000	0.000



BandWidth:	<u>15 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
LIMIT:	Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
1702.5	100 %	+20(Ref)	1702 500 000	0.0	0.000 000	0.000
	100 %	-30	1702 500 000	-0.3	0.000 000	0.000
	100 %	-20	1702 500 000	-0.6	0.000 000	0.000
	100 %	-10	1702 500 000	-0.7	0.000 000	0.000
	100 %	0	1702 500 000	0.1	0.000 000	0.000
	100 %	+10	1702 500 001	0.7	0.000 000	0.000
	100 %	+30	1702 500 000	0.0	0.000 000	0.000
	100 %	+40	1702 500 000	-0.6	0.000 000	0.000
	100 %	+50	1702 500 001	1.2	0.000 000	0.001
	Batt. Endpoint	+20	1702 500 000	-0.7	0.000 000	0.000

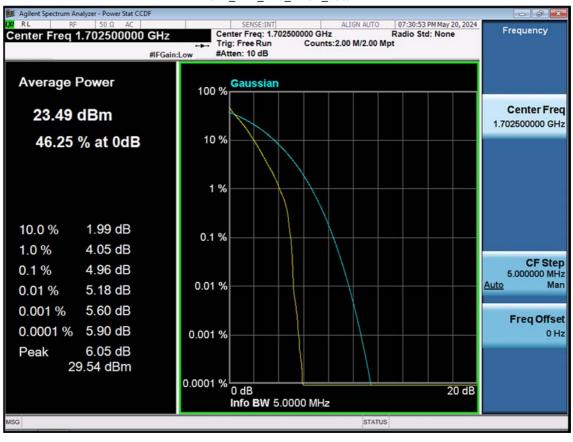


Report No. HCT-RF-2407-FC032

# 9. TEST PLOTS



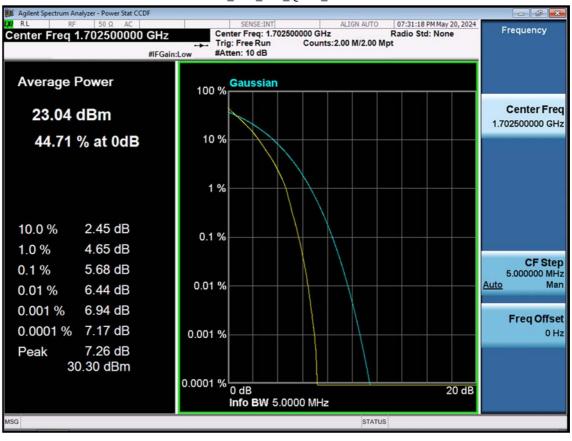




# 5 M\_PAR\_Mid\_BPSK\_FullRB





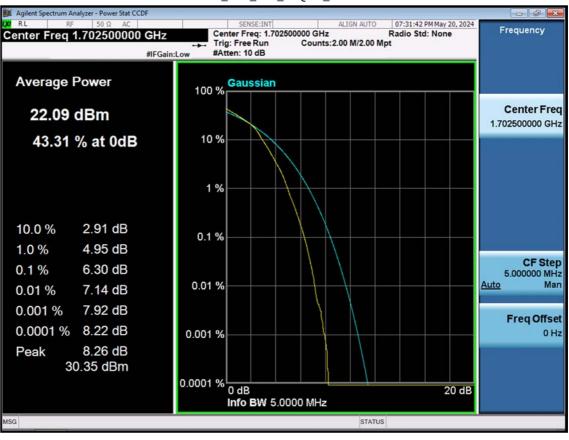


#### 5 M\_PAR\_Mid\_QPSK\_FullRB

F-TP22-03 (Rev. 06)



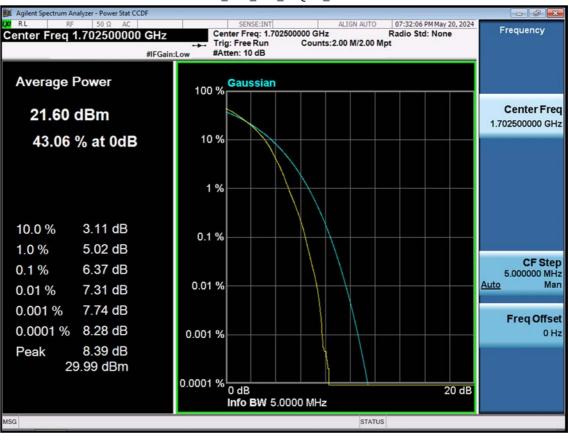




#### 5 M\_PAR\_Mid\_16QAM\_FullRB



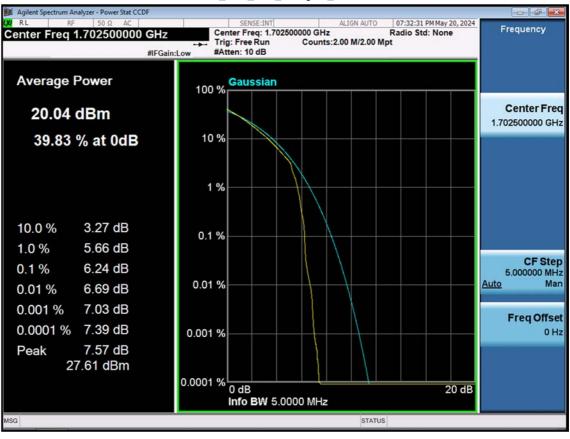




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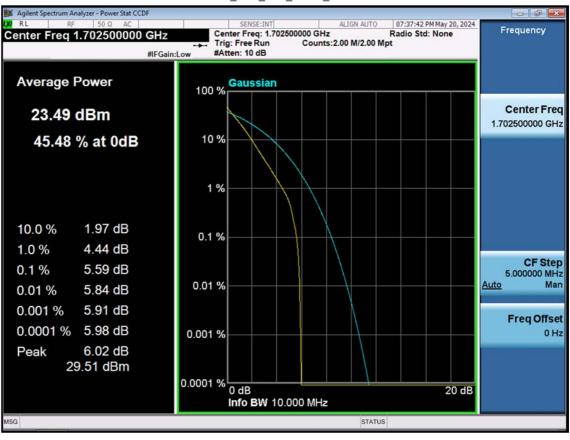




#### 5 M\_PAR\_Mid\_256QAM\_FullRB



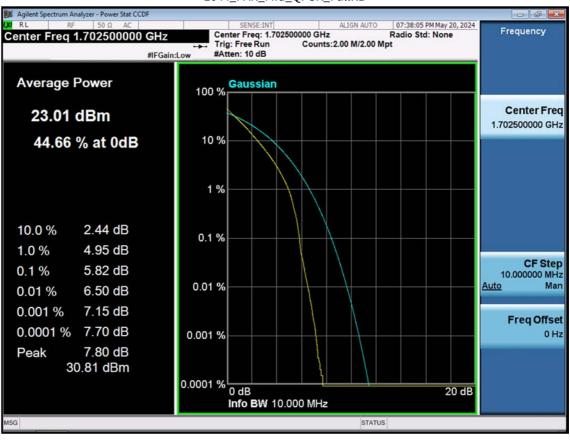




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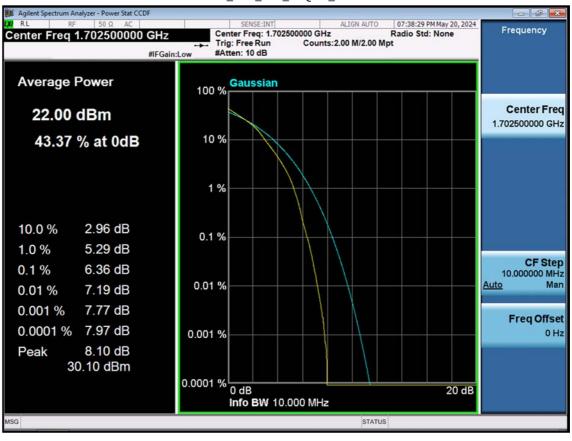




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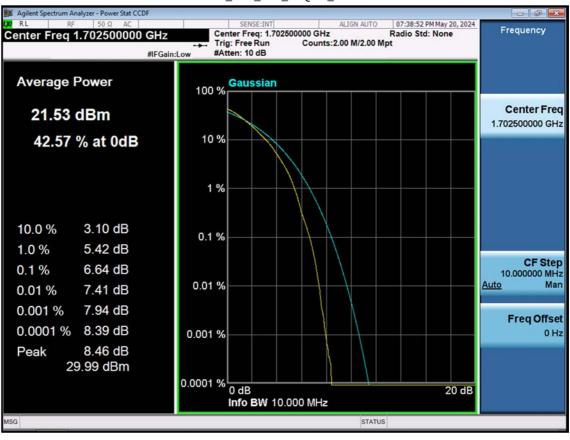




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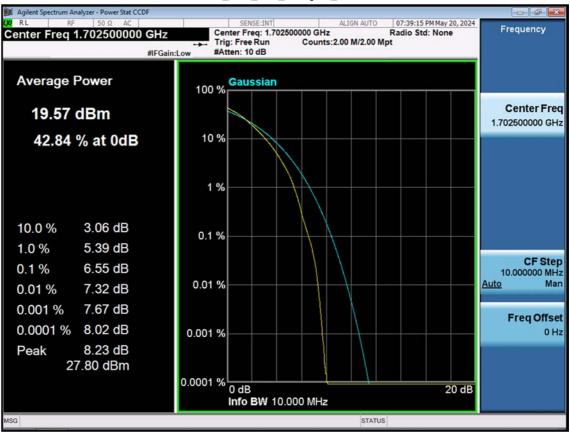




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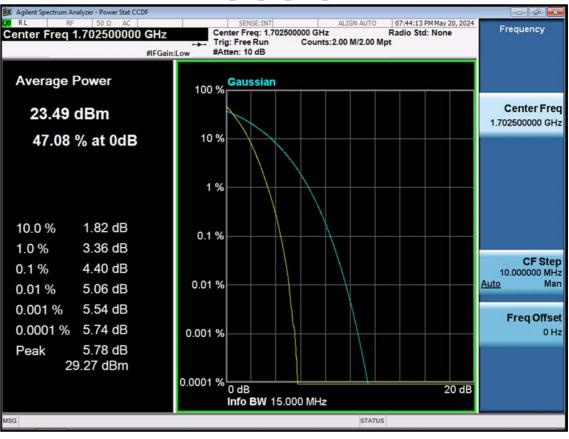




#### 10 M\_PAR\_Mid\_256QAM\_FullRB



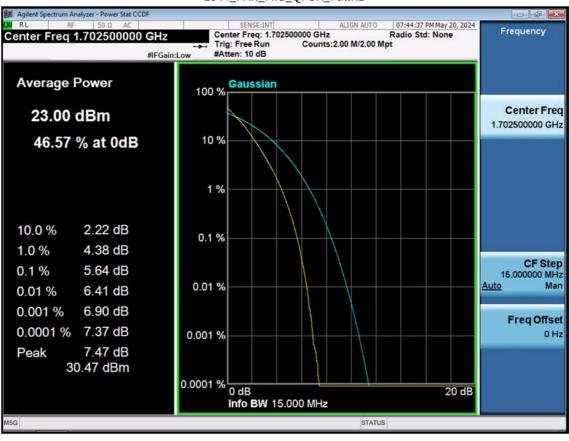




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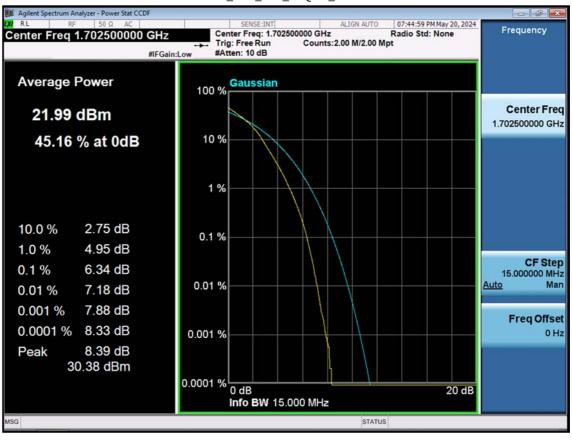




#### 15 M\_PAR\_Mid\_QPSK\_FullRB



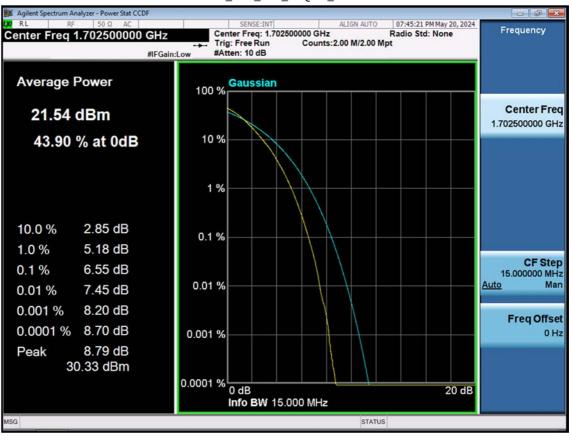




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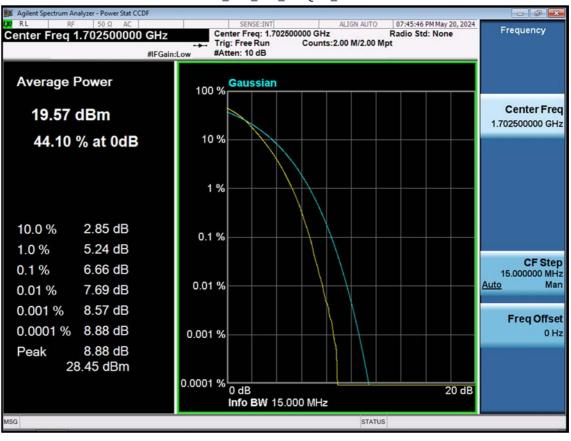




#### 15 M\_PAR\_Mid\_64QAM\_FullRB







#### 15 M\_PAR\_Mid\_256QAM\_FullRB





Agilent Spectrum Analyzer - Occupied BV	v		cucc.ter			07-00-45		
RL RF 50Ω AC Center Freq 1.70250000 PASS	0 GHz #IFGain:Low	Center		0000 GHz Avg Hold	ALIGN AUTO	Radio Std		Frequency
Ref Offset 27.14 10 dB/div Ref 40.00 dB			_					
20.0	$\wedge$							Center Fred 1.702500000 GH2
10.0 0.00	p	L. Martin	n-v-mvvi	mm	May 1			
-10.0					North Contraction	<u>,</u>		
-20.0 -30.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						M. Marson	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
40.0 50.0								CF Step
Center 1.703 GHz #Res BW 100 kHz		#V	/BW 390 k	Hz			n 10 MHz ep 1 ms	1.000000 MHz
Occupied Bandwid	<sup>th</sup> .6020 MI	H7	Total P	ower	33.4	1 dBm		Freq Offset 0 Hz
Transmit Freq Error	-48.624		OBW P	ower	99	9.00 %		
x dB Bandwidth	5.162 N	MHz	x dB		-26	00 dB		
ISG					STATU	S		

# 5 M\_OBW\_Mid\_BPSK\_FullRB





Agilent Spectrum Analyzer - Occupied BV	/		at and				- @ <u>*</u>
00 RL RF 50.Ω AC Center Freq 1.702500000 PASS	0 GHz #IFGain:Low		1.702500000 GHz un Avg Hc	ALIGN AUTO	Radio Std: Radio Devie		Frequency
Ref Offset 27.14 10 dB/div Ref 40.00 dB Log							
30.0 20.0	Ama		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Center Freq 1.702500000 GHz
10.0 0.00 -10.0							
-20.0 -30.0					hower	moun	
-50.0 Center 1.703 GHz #Res BW 100 kHz		#VBW	390 kHz			n 10 MHz ep 1 ms	CF Step 1.000000 MHz <u>Auto</u> Man
Occupied Bandwid	<sup>th</sup> .6257 MI		otal Power	33.4	1 dBm		<b>Freq Offset</b> 0 Hz
Transmit Freq Error x dB Bandwidth	-56.255 5.095 N		BW Power dB		9.00 % .00 dB		
MSG				STATU	IS		

# 5 M\_OBW\_Mid\_QPSK\_FullRB





Agilent Spectrum Analyzer - Occupied BV R RL RF 50 Ω AC	V	SE	NSE:INT		ALIGN AUTO	07:31:33	PM May 20, 2024	
Center Freq 1.70250000 PASS	0 GHz #IFGain:Low	Center F	req: 1.70250 e Run		INTERNAS	Radio Sto Radio De	i: None	Frequency
Ref Offset 27.14								
20.0	$\land$							Center Fre 1.702500000 GH
10.0	1 hanna 3	m		·····	m			
					- voor			
0.0 m m m m						2. Common	- Annon	
0.0								CF Ste
enter  1.703 GHz Res BW  100 kHz		#VE	3W 390 k	(Hz			an 10 MHz eep 1 ms	<u>Auto</u> Ma
Occupied Bandwidth 4.5808 MHz		Hz	Total Power			dBm		<b>Freq Offse</b> 0 H
Transmit Freq Error	-61.871	kHz	OBW P	ower	99	.00 %		
x dB Bandwidth	5.047 N	IHz	x dB		-26.	00 dB		

#### 5 M\_OBW\_Mid\_16QAM\_FullRB





Center Freq 1.70250000 Center Freq 1.70250000 CASS	0 GHz #IFGain:Low	. Trig: F	SENSE:INT r Freq: 1.70250 Free Run h: 10 dB		ALIGN AUTO : 500/500	07:31:56 Pl Radio Std: Radio Devi		Frequency
Ref Offset 27.14								
20.0	$\wedge$							Center Free 1.702500000 GH
10.0	1 martin	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	M_			
20.0					North A	n		
0.0 m						human	Mr.Am	
								CF Ste 1.000000 MH
enter  1.703 GHz Res BW  100 kHz		#	VBW 390 H	٢Hz			n 10 MHz ep 1 ms	<u>Auto</u> Ma
Occupied Bandwidth 4.6457 MH			Total P	ower	32.1 dBm			Freq Offse 0 H
Transmit Freq Error	-70.966	kHz	OBW P	ower	99	9.00 %		
x dB Bandwidth	5.047 N	<b>IHz</b>	x dB		-26	00 dB		
5G					STATU	S		

#### 5 M\_OBW\_Mid\_64QAM\_FullRB





📕 Agilent Spectrum Analyzer - Occupied BV	V		_			
RL         RF         50.Ω         AC           Center Freq 1.70250000         PASS         Ref Offset 27.14           10 dB/div         Ref 40.00 dB         Ref 40.00 dB	#IFGain:Low	SENSE:INT Center Freq: 1.7025 Trig: Free Run #Atten: 10 dB		Radio Sto		Frequency
	$\bigcap$					Center Freq 1.702500000 GHz
10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0					amalaan	CF Step
Center 1.703 GHz #Res BW 100 kHz		#VBW 390	kHz		an 10 MHz eep 1 ms	1.000000 MHz <u>Auto</u> Man
Occupied Bandwid	<sup>th</sup> .5679 MԻ	Total F	Power	31.2 dBm		<b>Freq Offset</b> 0 Hz
Transmit Freq Error x dB Bandwidth	-61.653 k 5.068 M		Power	99.00 % -26.00 dB		
MSG				STATUS		

# 5 M\_OBW\_Mid\_256QAM\_FullRB





Agilent Spectrum Analyzer - Occupied		5	ENSE:INT	ALIGN AUTO	07:37:34 PM May	20.2024	
Center Freq 1.7025000		Center F	Freq: 1.702500000 GHz Run Avg Hold	d: 500/500	Radio Std: Non Radio Device: E	e	Frequency
Ref Offset 27. 10 dB/div Ref 40.00 d Log							
20.0						1.	Center Free 702500000 GH:
10.0	formanous	for an and the second	war warmen warmen	m			
10.0	1			- Contraction of the second se			
20.0 30.0 marsharen an					mana	man	
50,0							CF Step
Center 1.703 GHz #Res BW 200 kHz		#V	BW 820 kHz		Span 20 Sweep	0 MHz 1 ms	2.000000 MH; <u>o</u> Mar
Occupied Bandwidth 8.9829 MHz		Hz	Total Power	31.7 dBm			Freq Offse 0 Ha
Transmit Freq Error	-157.98	kHz	OBW Power	99	9.00 %		
x dB Bandwidth	10.02 N	IHz	x dB	-26	00 dB		
ISG				STATU	s		

### 10 M\_OBW\_Mid\_BPSK\_FullRB





Agilent Spectrum Analyzer - Occupied  K RL RF 50 Ω AC		SENSE:IN	T	ALIGN AUTO	07:37:57 PM May 20, 2024	
Center Freq 1.7025000		Center Freq: 1	.702500000 GHz	Radio Device: BTS	Frequency	
Ref Offset 27.1 10 dB/div Ref 40.00 dl						
30.0 20.0						Center Free 1.702500000 GH:
10.0	- Amarina and	karathathta aitha na ang	hen market and			
20.0	<u>م</u> ر			Ц М М.		
30.0 Junphone June Junk Manager Mark				Murde	muranalanatha	
50.0						CF Step 2.000000 MH
Center 1.703 GHz #Res BW 200 kHz		#VBW	820 kHz		Span 20 MHz Sweep 1 ms	Auto Mar
Occupied Bandwidth 9.0195 MHz			Total Power		dBm	Freq Offse 0 H
Transmit Freq Error	-152.09	kHz OB	W Power	99.	00 %	
x dB Bandwidth	10.07 N	MHz xd	В	-26.0	0 dB	
ISG				STATUS		

### 10 M\_OBW\_Mid\_QPSK\_FullRB





Agilent Spectrum Analyzer - Occupied B	N	CENCE INT		NITO 07.00.00 0		
Center Freq 1.70250000 PASS	#IFGain:Low	SENSE:INT Center Freq: 1.7025 Trig: Free Run #Atten: 10 dB	ALIGN 00000 GHz Avg Hold: 500/	Radio Std:		Frequency
10 dB/div Ref 40.00 dB						
- <b>og</b> 30.0 20.0						Center Fre 1.702500000 GH
10.0	monimum	homenne	mannen			
0.00	$A \rightarrow$		<u> </u>			
20.0				5		
30.0 annon man man				monum	anawhan	
50.0						CF Ste
Center 1.703 GHz Res BW 200 kHz		#VBW 8201	⊥ ⊥ ⊥ ⊥ L		n 20 MHz ep 1 ms	2.000000 MH <u>Auto</u> Ma
Occupied Bandwid	th	Total P	ower	30.3 dBm		Freq Offse
8	.9918 MH	z				0 H
Transmit Freq Error	-160.75 k	Hz OBW P	ower	99.00 %		
x dB Bandwidth	10.02 M	Hz x dB		-26.00 dB		
SG				STATUS		

# 10 M\_OBW\_Mid\_16QAM\_FullRB





Agilent Spectrum Analyzer - Occupied E  K RL RF 50 Ω AC	w	SENSE:INT		ALIGN AUTO	07-29-44 0	May 20, 2024	o đ
Center Freq 1.70250000	00 GHz #IFGain:Low	Center Freq: 1.702			Radio Std: Radio Devi		Frequency
Ref Offset 27.1 10 dB/div Ref 40.00 dE			_				
30.0 20.0							Center Free 1.702500000 GH
10.0	mahrin	man	mm	h h			
20.0	ſ			la la			
30.0				hvy	nah anta	nhow when the	
50.0							CF Ste 2.000000 MH
enter 1.703 GHz Res BW 200 kHz		#VBW 820	) kHz			n 20 MHz ep 1 ms	<u>Auto</u> Ma
Occupied Bandwig	ith .9830 MI		Power	29.8	dBm		Freq Offse 0 H
Transmit Freq Error	-166.06	kHz OBW	Power	99	.00 %		
x dB Bandwidth	9.958 N	MHz x dB		-26.	00 dB		
ISG				STATUS	3		

### 10 M\_OBW\_Mid\_64QAM\_FullRB





Agilent Spectrum Analyzer - Occupied E		SENSE:INT	ALIGN AUT	TO 07:39:08 PM May 2	
Center Freq 1.70250000		Center Freq: 1.70250		Radio Std: None	Frequency
Ref Offset 27.1 10 dB/div Ref 40.00 dE					
30.0					Center Free 1.702500000 GH
10.0	perman	manna	monun		
10.0	/				
20.0				hannowing	
40.0				and a constraint	hun
50.0				Enon 30	CF Step 2.000000 MH
#Res BW 200 kHz		#VBW 8201	KHz	Sweep	MHz <u>Auto</u> Mar 1 ms
Occupied Bandwic	ith .9655 MI	Total P <b>HZ</b>	ower 2	7.8 dBm	Freq Offse 0 Ha
Transmit Freq Error	-166.53	kHz OBW P	ower	99.00 %	
x dB Bandwidth	9.954 N	NHZ X dB	-2	6.00 dB	
ISG			ST	ATUS	

#### 10 M\_OBW\_Mid\_256QAM\_FullRB





Agilent Spectrum Analyzer - Occupied RL RF 50 Ω AG Center Freq 1.7025000 PASS		Center Fre		ALIGN AUTO	07:44:05 Pl Radio Std: Radio Devi		Frequency
Ref Offset 27.1 10 dB/div Ref 40.00 dl							
20.0							Center Freq 1.702500000 GHz
0.00	permitination	h manana an	northerenter	h			
20.0							
30.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				hun	and farmer and a second	alman hann	
50.0							CF Step 3.000000 MH
Center  1.703 GHz #Res BW  300 kHz		#VB	W 1.2 MHz			n 30 MHz ep 1 ms	<u>Auto</u> Mar
Occupied Bandwidth 13.441 MHz			Total Power	31.7	7 dBm		Freq Offset 0 Hz
Transmit Freq Error	-304.97	kHz	OBW Power	99	9.00 %		
x dB Bandwidth	14.54 N	lHz	x dB	-26.	00 dB		
ISG				STATU	S		

### 15 M\_OBW\_Mid\_BPSK\_FullRB





Agilent Spectrum Analyzer - Occupied BV	ſ	SENSE:INT	-	IGN AUTO 07:44:29	PM May 20, 2024	
Center Freq 1.70250000	) GHz #IFGain:Low	Center Freq: 1.70	Center Freq: 1.702500000 GHz Trig: Free Run Avg Hold: 500/500			Frequency
Ref Offset 27.14 10 dB/div Ref 40.00 dB						
20.0						Center Free 1.702500000 GH
10.0	unannan	-litermented proved	mannanan			
10.0						
20.0 r				Lunnann	Valuer Marina	
50.0						CF Stej 3.000000 MH
Center  1.703 GHz ≉Res BW  300 kHz		#VBW 1.2	MHz		an 30 MHz eep 1 ms	<u>Auto</u> Mar
Occupied Bandwidth 13.450 MHz			Power	31.5 dBm		<b>Freq Offse</b> 0 Hi
Transmit Freq Error	-313.06	kHz OBW	Power	99.00 %		
x dB Bandwidth	14.66 N	MHz x dB		-26.00 dB		
ISG				STATUS		

### 15 M\_OBW\_Mid\_QPSK\_FullRB





Agilent Spectrum Analyzer - Occupied B	N	control that		
Center Freq 1.70250000 PASS Ref Offset 27.14	#IFGain:Low #Atte	SENSE:INT  ter Freq: 1.702500000 GHz : Free Run Avg Hold en: 10 dB	ALIGN AUTO 07:44:51 PM May Radio Std: Non I: 500/500 Radio Device: B	e Frequency
10 dB/div Ref 40.00 dB -og 30.0 20.0				Center Fred 1.702500000 GH
10.0		man and an and a second and a		
20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0			householden	alwhna
Center 1.703 GHz Res BW 300 kHz		#VBW 1.2 MHz	Span 30 Sweep	MHz Auto Ma
Occupied Bandwid	<sup>th</sup> 3.465 MHz	Total Power	30.4 dBm	Freq Offse 0 H
Transmit Freq Error x dB Bandwidth	-330.43 kHz 14.63 MHz	OBW Power x dB	99.00 % -26.00 dB	
ISG			STATUS	

## 15 M\_OBW\_Mid\_16QAM\_FullRB





Agilent Spectrum Analyzer - Occupied BV	v				- Ø ×
RL         RF         50.Ω         AC           Center Freq 1.70250000         PASS         Ref Offset 27.14           10 dB/diy         Ref 40.00 dB         Ref 40.00 dB	#IFGain:Low	SENSE:INT Center Freq: 1.7025000 Trig: Free Run #Atten: 10 dB	ALIGN AUTO 000 GHz Avg Hold: 500/500	07:45:13 PM May 2 Radio Std: None Radio Device: B	Frequency
		- Mar Due Sterman mars	norman Martha		Center Freq 1.702500000 GHz
10.0	musuno				
-30.0				when all production that when	CF Step
Center 1.703 GHz #Res BW 300 kHz		#VBW 1.2 MH	z	Span 30 Sweep	3.000000 MHz MHz Auto Man
Occupied Bandwid	Total Po <b>1</b> Z	Total Power 29.9		Freq Offset 0 Hz	
Transmit Freq Error x dB Bandwidth	-313.73 k 14.74 M			9.00 % 5.00 dB	
MSG			STAT	US	

### 15 M\_OBW\_Mid\_64QAM\_FullRB





Agilent Spectrum Analyzer - Occupied B	w		CENCE MICE	_		07.45.00		
Center Freq 1.70250000 PASS	IO GHz #IFGain:Low	Center	SENSE:INT Freq: 1.70250 ree Run : 10 dB		ALIGN AUTO	Radio Sto Radio De		Frequency
Ref Offset 27.14 10 dB/div Ref 40.00 dB					-	_		
20.0								Center Freq 1.702500000 GHz
10.0	frank	mar	mary	yen and the	m			
-10.0					- Co- Co- Co- Co- Co- Co- Co- Co- Co- Co			
20.0 30.0 40.0					- Janas	an and a second second	-wattherap	
50.0 Center 1.703 GHz							an 30 MHz	CF Step 3.000000 MHz <u>Auto</u> Mar
#Res BW 300 kHz		#	VBW 1.2 N				eep 1 ms	
Occupied Bandwid	ith 3.443 MI	Hz	Total P	ower	27.9	∂dBm		Freq Offset 0 Hz
Transmit Freq Error	-313.74	kHz	OBW P	ower	99	9.00 %		
x dB Bandwidth	14.54 N	IHz	x dB		-26.	00 dB		
MSG					STATU	s		

# 15 M\_OBW\_Mid\_256QAM\_FullRB



Agilent Spectrum Analyzer - Swept SA				
RL RF 50 Ω AC Center Freq 5.015000000	0 GHz PNO: Fast Trig: Free F	#Avg Type: RMS	TO 07:29:44 PM May 20, 2024 TRACE 2 3 4 5 6 TYPE A WWWW DET A A A A A A	Frequency
0 dB/div Ref 0.00 dBm	IFGain:Low #Atten: 10		Mkr1 3.391 4 GHz -75.227 dBm	Auto Tune
• 9 7 2 10.0 20.0 30.0 30.0				Center Fred 5.015000000 GHz
40.0				Start Free 30.000000 MH;
70.0 80.0 90.0		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Stop Fred 10.000000000 GH:
Start 30 MHz Res BW 1.0 MHz MKR MODE TRC SCL X	#VBW 3.0 MHz	Sweep	Stop 10.000 GHz 17.33 ms (20001 pts) DTH FUNCTION VALUE	CF Step 997.000000 MH Auto Mar
	3.391 4 GHz -75.227 dBn 1.696 0 GHz -3.440 dBn			Freq Offse 0 Hz
SG	m	et	ATUS	

# 5 M\_Conducted Spurious(30 M-10 G)\_Low\_BPSK\_1RB



	ctrum Analyze					-		
Center F	<sup>RF</sup> req 5.0′	50 Ω AC 1500000	0 GHz PNO: Fast	SENSE	#Av	g Type: RMS	07:32:56 PM May 20, 202 TRACE 2 3 4 5 TYPE A 4 A A A A DET A A A A A	Frequency
10 dB/div	Ref 0.	00 dBm	IFGain:Low	#Atten: 10 d	B	M	r1 3.401 9 GHz -74.949 dBm	Auto Tune
-10.0 -20.0 -30.0		×2						Center Fred 5.015000000 GHz
-40.0 -50.0 -60.0								Start Free 30.000000 MH:
-70.0 -80.0 -90.0						<u> </u>	RM	Stop Fred 10.000000000 GH:
Start 30 N Res BW	1.0 MHz	z		W 3.0 MHz	FUNCTION	Sweep 17	Stop 10.000 GHz 33 ms (20001 pts)	CF Step 997.000000 MH Auto Mar
1 N 1 2 N 1 3 4 5 5 7 8 9 9 10	1 f		3.401 9 GHz 1.701 0 GHz	-74,949 dBm -3.660 dBm				Freq Offse 0 H
11				m				
sg 🧼 Align	nment Con	npleted				STATU	S	

# 5 M\_Conducted Spurious(30 M-10 G)\_Mid\_BPSK\_FullRB



Agilent Spectrum Analyz								
Center Freq 5.0	50 Ω AC 15000000 GH	NO: Fast +	SENSE:INT	#Avg Typ	ALIGN AUTO	07:34:36 PM TRACE TYPE	1 2 3 4 5 6 A 4444 A A A A	Frequency
10 dB/div Ref 0.	.00 dBm	Gain:Low	#Atten: 10 dB		Mk	r1 3.411 -75.07	8 GHz	Auto Tune
-10.0 -20.0 -30.0	×2							Center Fred 5.015000000 GH:
-40.0 -50.0 -60.0								Start Free 30.000000 MH
-70.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				RMS	Stop Fred 10.000000000 GH
Start 30 MHz Res BW 1.0 MH	z	#VBW 3			weep 17	Stop 10.0 .33 ms (20)	001 pts)	CF Stej 997.000000 MH <u>Auto</u> Ma
N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -           7         -         -         -           8         -         -         -	3.411		75.075 dBm -3.950 dBm				E	Freq Offse 0 H
9 10 11 *					STATUS	3	+	

# 5 M\_Conducted Spurious(30 M-10 G)\_High\_BPSK\_1RB



	rum Analyzer - Swept SA					
Center Fre	RF 50 Ω AC eq 5.01500000	PNO: Fast +	SENSE:INT	#Avg Type: RMS	07:36:36 PM May 20, 2024 TRACE 2 3 4 5 0 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div	Ref 0.00 dBm	IFGain:Low	#Atten: 10 dB	M	(r1 3.391 9 GHz -74.596 dBm	Auto Tune
-10.0	¥2					Center Free 5.015000000 GH:
-40.0 -50.0 -60.0						Start Free 30.000000 MH
-70.0 -80.0 -90.0					RMS	Stop Free 10.000000000 GH:
Start 30 M Res BW 1	1.0 MHz	#VBV	V 3.0 MHz	Sweep 17	Stop 10.000 GHz 2.33 ms (20001 pts)	CF Step 997.000000 MH <u>Auto</u> Ma
1         N         1           2         N         1           3         -         -           4         -         -           5         -         -           6         -         -           7         -         -           8         -         -	f	3.391 9 GHz 1.696 0 GHz	-74.596 dBm -4.440 dBm		E E	Freq Offse 0 H:
9 10 11 11			III	STATU	s	

# 10 M\_Conducted Spurious(30 M-10 G)\_Low\_BPSK\_1RB



Agilent Spectrum Analyzer - Swept S	5A				
RL RF 50 Ω Center Freq 5.015000	AC 000 GHz PNO: Fast ↔	Trig: Free Run	#Avg Type: RMS	07:39:40 PM May 20, 2024 TRACE 1 2 3 4 5 0 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div Ref 0.00 dBi	IFGain:Low	#Atten: 10 dB	M	r1 3.396 9 GHz -74.821 dBm	Auto Tune
-10.0 ¥2 -20.0					Center Free 5.015000000 GH:
-40.0					Start Free 30.000000 MH:
-70.0 				RMS	Stop Fred 10.000000000 GH
Start 30 MHz ¢Res BW 1.0 MHz MKR MODE TRC SCL	X		Sweep 17	Stop 10.000 GHz .33 ms (20001 pts)	CF Step 997.000000 MH <u>Auto</u> Mar
1         N         1         f           2         N         1         f           3         -         -         -           4         -         -         -           5         -         -         -           6         -         -         -         -	3.396 9 GHz 1.699 0 GHz	-74.821 dBm -4.410 dBm		1	Freq Offse 0 H:
7 8 9 10 11		m			
ISG			STATU	S	

# 10 M\_Conducted Spurious(30 M-10 G)\_Mid\_BPSK\_FullRB



	trum Analyzer - Sv	wept SA		_		_			
Center Fi	req 5.0150	000000 GI	HZ NO: Fast ↔	SENSE	#A1	ALIGN AUTO	07:41:20 PM TRACE TYPE	lay 20, 2024 <b>2 3 4 5 6</b> A 4 4 A A A A	Frequency
10 dB/div	Ref 0.00	IF	Gain:Low	#Atten: 10 d		MI	kr1 3.401 -74.23	9 GHz	Auto Tune
-10.0 -20.0	¥	2							Center Free 5.015000000 GH:
-40.0 -50.0 -60.0									Start Free 30.000000 MHz
-70.0 -80.0 -90.0								RMS	Stop Fred 10.00000000 GH;
Start 30 N #Res BW	1.0 MHz	X	#VB\	V 3.0 MHz	FUNCTION	Sweep 17	Stop 10.0 7.33 ms (200	001 pts)	CF Step 997.000000 MH: Auto Mar
1         N         1           2         N         1           3         4         5           6         7         8           9         9         10		3.401	9 GHz 0 GHz	-74.235 dBm -4.708 dBm					Freq Offse 0 H;
11				ш		1	1	•	
ISG						STATU	s		

# 10 M\_Conducted Spurious(30 M-10 G)\_High\_BPSK\_1RB



Agilent Spectrum Analyzer - Swept SA				
Center Freq 5.015000000	GHz PNO: Fast +++ Trig: Free Rur	#Avg Type: RMS	07:43:16 PM May 20, 2024 TRACE 1 2 3 4 5 0 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div Ref 0.00 dBm	IFGain:Low #Atten: 10 dB	MI	kr1 3.391 9 GHz -75.119 dBm	Auto Tune
-og 2200				Center Freq 5.015000000 GHz
40.0				Start Freq 30.000000 MHz
-70.0 			RMS	<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBW 3.0 MHz		Stop 10.000 GHz 7.33 ms (20001 pts)	CF Step 997.000000 MHz Auto Man
1 N 1 f 3.	391 9 GHz -75.119 dBm 696 5 GHz -3.701 dBm			Freq Offset 0 Hz
sg	m	STATU	IS	

# 15 M\_Conducted Spurious(30 M-10 G)\_Low\_BPSK\_1RB



	ctrum Analyzer - Swept SA					
Center F	RF 50 Ω AC	00 GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast ++ IFGain:High	Trig: Free Run #Atten: 0 dB			ALC: MARKED AND A
10 dB/div Log	Ref -20.00 dBm			Mkr	1 18.930 47 GHz -83.132 dBm	Auto Tune
-30.0						Center Freq 15.000000000 GHz
-40.0						Start Freq 10.000000000 GHz
-60.0						<b>Stop Freq</b> 20.000000000 GHz
-80.0					1	CF Step 1.000000000 GHz Auto Mar
-100						Freq Offse 0 Hz
Start 10.0	000 GHz				Stop 20.000 GHz	
#Res BW		#VBW	3.0 MHz		26.67 ms (40000 pts)	
MSG				STAT	US	

### 5 M\_Conducted Spurious(Above10 G)\_Low\_BPSK\_1RB



	ectrum Analyzer - Swept SA					-		
	RF 50 Ω AC Freq 15.0000000	00 GHz	SENSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	07:33:11 PM May TRACE	23456	Frequency
		PNO: Fast ++ IFGain:High	Trig: Free Run #Atten: 0 dB				AAAAA	Auto Tune
10 dB/div Log	Ref -20.00 dBm	1			Mkr1	18.898 97 -83.361	GHz dBm	AutoTune
-30.0							_	Center Freq 15.00000000 GHz
-40.0								<b>Start Freq</b> 10.000000000 GHz
-60,0								<b>Stop Freq</b> 20.000000000 GHz
-80.0						1	RMS	CF Step 1.000000000 GHz Auto Man
-90.0								Freq Offset 0 Hz
-110	000 CH2					Stop 20.00		
#Res BW	1.0 MHz	#VBW	3.0 MHz		Sweep 26	.67 ms (4000	0 pts)	
MSG					STATUS	1		

### 5 M\_Conducted Spurious(Above10 G)\_Mid\_BPSK\_FullRB



	ctrum Analyzer - Swept SA		_				
Center F	RF 50 Ω AC req 15.0000000	00 GHz	SENSE:IN	#Avg	ALIGN AUTO Type: RMS	07:34:52 PM May 20, 20 TRACE 2 3 4	Frequency
		PNO: Fast ++ IFGain:High	Trig: Free Run #Atten: 0 dB				A A
					Mkr1	18.930 47 GH -83.214 dB	Auto Tune
10 dB/div Log	Ref -20.00 dBm					-83.214 dB	m
							Center Freq
-30.0							15.00000000 GHz
-40.0							
-40.0							Start Freq
-50.0							10.00000000 GHz
-60.0							Stop Freq
-70.0							20.00000000 GHz
							CF Step
-80.0						<u> </u>	1.00000000 GHz
-90.0		and the second	with the second state				Auto Man
and the second							Freq Offset
-100							0 Hz
-110							
-110							
Start 10.0						Stop 20.000 GH	
#Res BW		#VBW	3.0 MHz		Sweep 26	6.67 ms (40000 pt	s)
MSG					STATUS	3	

### 5 M\_Conducted Spurious(Above10 G)\_High\_BPSK\_1RB



Spectrum Analy Swept SA	/zer 1	+				Ę	Frequency	12
EYSIGHT ⊥ +→ 7	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 0 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off			enter Frequency 5.000000000 GHz	Settings
Spectrum ale/Div 10 d	•	a sectore and rester and the	Ref Level -20.00		Mkr1 19.765 99 -87.695	GHz 1	pan 0.0000000 GHz	
og							Swept Span Zero Span	
D.0 D.0							Full Span	
0.0							tart Freq 0.000000000 GHz	
							top Freq 20.000000000 GHz	
							AUTO TUNE	
0.0	inter di cuda cata cata	and the second data	unden transmitterfolgen under	Appellis aller den state alle			F Step .000000000 GHz	
00				and a standard and a standard			Auto Man	
							req Offset Hz	
art 10.000 G Res BW 1.0 M			#Video BW 3.0	MHz	Stop 20.00 Sweep ~20.4 ms (400	0 GHz	Axis Scale Log Lin	Loca
15		Jul 15, 2024 3:53:47 PM				X	ignal Track Ioan Zoom)	

### 10 M\_Conducted Spurious(Above10 G)\_Low\_BPSK\_1RB



Center Freq 15.000000000 GHz PRO: Fast ++		ctrum Analyzer - Swept SA					
Mkr1 18.919 72 GHz         Auto Tune           0 dB/div         Ref -20.00 dBm         Center Free           0 dB/div         Ref -20.00 dBm         Center Free           0 dB/div         Start Free         15.00000000 GHz           0 dB/div         Start Free         10.00000000 GHz           0 dB/div         Stop Free         10.00000000 GHz           10 dB/div         Stop Z0.000 GHz         Freq Offse           0 Hz         #VBW 3.0 MHz         Sweep 26.67 ms (40000 pts)	X RL Center F	RF 50 Ω AC	00 GHz	SENSE:INT	#Avg Type: RMS	07:39:56 PM May 20, 2024 TRACE 1 2 3 4 5 6	Frequency
Od BZ/div       Ref -20.00 dBm       -82.766 dBm         00       -82.766 dBm         01       -82.766 dBm         02       -82.766 dBm         03       -90.0000000 GHz         040       -90.0000000 GHz         100000000 GHz       -90.000 GHz         110       -90.000 GHz         110.0000 GHz       -90.000 GHz         110.000 GHz       #VBW 3.0 MHz       Stop 20.000 GHz         10.000 GHz       -90.000 GHz         10.000 GHz       -90.000 GHz         10.000 GHz       -90.000 GHz         10.000 GHz       -90.000 GHz         10.000 GHz	Genter T	104 10.0000000	PNO: Fast +>				a second and the second
300       Image: Center Free         300       Image: Center Free         400       Image: Center Free <td< td=""><td>10 dB/div</td><td>Ref -20.00 dBm</td><td>ı</td><td></td><td>Mkr</td><td>18.919 72 GHz -82.766 dBm</td><td>Auto Tune</td></td<>	10 dB/div	Ref -20.00 dBm	ı		Mkr	18.919 72 GHz -82.766 dBm	Auto Tune
Start Free 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	-30.0						Center Freq 15.00000000 GHz
70.0       1       1       CF Step Free         80.0       1       1       CF Step 1.00000000 GHz         80.0       1       1       CF Step 1.00000000 GHz         100       1       1       1       Freq Offse         110       1       1       1       1         110       1       1       1       1         110       1       1       1       1         110       1       1       1       1         110       1       1       1       1       1         110       1       1       1       1       1         110       1       1       1       1       1         110       1       1       1       1       1       1         110       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	-40.0						Start Fred 10.000000000 GH2
1.00000000 GHz           1.00000000 GHz           1.0000 GHz           Res BW 1.0 MHz         #VBW 3.0 MHz	-60.0						Stop Freq 20.000000000 GHz
Image: Start 10.000 GHz         Stop 20.000 GHz           Res BW 1.0 MHz         #VBW 3.0 MHz	-80.0					1 RMS	CF Step 1.00000000 GHz <u>Auto</u> Mar
Start 10.000 GHz Stop 20.000 GHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 26.67 ms (40000 pts)	-100						
						Stop 20.000 GHz	
	#Res BW	1.0 WHZ	#VBN	3.0 WHZ			

### 10 M\_Conducted Spurious(Above10 G)\_Mid\_BPSK\_FullRB



	ectrum Analyzer - Swept SA	_				
Center F	RF 50 Ω AC		SENSE:INT	#Avg Type: RMS	07:41:36 PM May 20, 2024 TRACE 1 2 3 4 5 6	Frequency
Genter i	100 10.000000	PNO: Fast	Trig: Free Run #Atten: 0 dB			
10 dB/div	Ref -20.00 dBr	n		Mkr1	18.867 22 GHz -82.694 dBm	Auto Tune
-30.0						Center Freq 15.00000000 GHz
-40.0						Start Fred 10.000000000 GHz
-60.0						Stop Fred 20.000000000 GH2
-80.0					1 RMS	CF Step 1.000000000 GHz <u>Auto</u> Man
-100						Freq Offse 0 Ha
-110						
Start 10.0 #Res BW	000 GHZ 1.0 MHz	#VBW	3.0 MHz	Sweep 26	Stop 20.000 GHz 6.67 ms (40000 pts)	
ISG				STATUS		

### 10 M\_Conducted Spurious(Above10 G)\_High\_BPSK\_1RB



	ctrum Analyzer - Swept SA		_				
Center F	RF 50 Ω AC	000 GHz	SENSE:INT	#Avg Typ	ALIGN AUTO	07:43:32 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A WWWW	Frequency
Genter i		PNO: Fast ++ IFGain:High	Trig: Free Run #Atten: 0 dB				and the second
10 dB/div	Ref -20.00 dBn	n			Mkr1	18.939 47 GHz -82.740 dBm	Auto Tune
-30.0							Center Freq 15.000000000 GHz
-40.0							Start Freq 10.000000000 GHz
-60.0							<b>Stop Freq</b> 20.000000000 GHz
-80.0		. Address y dden y Ladery y yn en land dd				1 RMS	CF Step 1.00000000 GHz <u>Auto</u> Man
-100							Freq Offset 0 Hz
-110						Stop 20 000 CH	
#Res BW		#VBW	3.0 MHz	s	weep 26	Stop 20.000 GHz .67 ms (40000 pts)	
MSG					STATUS		

### 15 M\_Conducted Spurious(Above10 G)\_Low\_BPSK\_1RB



					_	ctrum Analyzer - Swept SA	
Frequency	07:29:26 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A 4 A A A A A DET A A A A A A A	ALIGN AUTO e: RMS	#Avg Ty	SENSE:INT	PNO: Wide	RF 50 Ω AC req 1.695000000	Center F
Auto Tune	1.695 000 GHz -27.015 dBm	Mkr1		#Atten: 10 dB	IFGain:Low	Ref Offset 27.14 dB Ref 27.14 dBm	10 dB/div
Center Free 1.695000000 GH				ſ			17.1
Start Fre 1.693000000 GH							2.86
<b>Stop Fre</b> 1.697000000 GH	-13.00 dBm			1			12.9 22.9
CF Ste 400.000 k⊦ <u>Auto</u> Ma							32.9
Freq Offs 0 F							52.9
	Span 4.000 MHz 1.000 s (1001 pts)	#Sween		1.0 MHz	#VBW	695000 GHz 30 kHz	Center 1.
	(receipto)	STATUS					SG

## 5 M\_Band Edge\_Low\_BPSK\_1RB



Agilent Spectrum Analyzer - Swept SA					
RL RF 50 Ω A Center Freq 1.6950000		SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGN AUTO #Avg Type: RMS	07:28:54 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A A A A A A A	Frequency
Ref Offset 27.14 10 dB/div Ref 27.14 dBi	dB		Mkr1	1.694 992 GHz -24.517 dBm	Auto Tune
17.1					Center Freq 1.695000000 GHz
2.86					Start Fred 1.693000000 GH;
-12.9		1		-13.00 dBm	Stop Fred 1.697000000 GH2
32.9	and the second				CF Step 400.000 kH <u>Auto</u> Mar
.52.9	nga ganaga				Freq Offse 0 H
62.9 Center 1.695000 GHz				Span 4.000 MHz	
#Res BW 51 kHz	#VBW	160 kHz	#Sweep	1.000 s (1001 pts)	

### 5 M\_Band Edge\_Low\_BPSK\_FullRB





	um Analyzer - Channe					
Center Fre	RF 50 Ω eq 1.693500 Ref Offset 27	#IFGain:Low	SENSE:INT Center Freq: 1.693500000 Trig: Free Run Av #Atten: 10 dB	ALIGN AUTO GHz g Hold: 300/300	07:29:05 PM May 20, 2024 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Log	Ref 30.00					
20.0						Center Freq 1.693500000 GHz
0.00 -10.0						
-20.0						
-40.0	~~~~~			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-60.0 Center 1.6	694 GHz				Span 4 MHz	CF Step 400.000 kHz Auto Man
Res BW 3	9 kHz		VBW 390 kHz		Sweep 3.2 ms	
Chann	el Power		Power Sp	ectral Dens	sity	Freq Offset 0 Hz
-2	8.33 dB	m / 1 MHz	-88	.33 dBm	/Hz	
MSG				STATU	S	

### 5 M\_Extended Band Edge\_Low\_BPSK\_FullRB



	trum Analyzer - Swept SA					
	RF 50 Ω AC req 1.71000000	0 GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	07:34:18 PM May 20, 2024 TRACE 1 2 3 4 5 6	Frequency
	Ref Offset 27.14 di	PNO: Wide ++ IFGain:Low	Trig: Free Run #Atten: 10 dB	Mkr1	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A 1.710 004 GHz	Auto Tune
10 dB/div	Ref 27.14 dBm	B			1.710 004 GHz -30.656 dBm	
17.1			ang -			Center Fred 1.710000000 GH:
2.86						Start Free 1.708000000 GH
12.9					-13.00 dBm	Stop Fre 1.712000000 GH
32.9			1		RMS	CF Ste 400.000 kH Auto Ma
42.9 52.9	-			Mary and a second and a second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Freq Offse
62.9						
Center 1.7 #Res BW	710000 GHz 30 kHz	#VBW	/ 1.0 MHz	#Sweep	Span 4.000 MHz 1.000 s (1001 pts)	
ISG				STATU		

## 5 M\_Band Edge\_High\_BPSK\_1RB



		-				_		trum Analyzer - Swept SA	
Frequency	5 PM May 20, 2024           CACE         1 2 3 4 5 6           TYPE         A WWWWWW	TRA	ALIGN AUTO	#Avg Ty	e Run	100	GHz PNO: Wide ↔	RF 50 Ω AC req 1.710000000	Center F
Auto Tune	000 GHz 372 dBm		Mkr1		10 dB	#Atten: 1	IFGain:Low	Ref Offset 27.14 dB Ref 27.14 dBm	10 dB/div
Center Freq 1.710000000 GHz									17.1
Start Fred 1.708000000 GHz							\$		-2.86
Stop Fred 1.712000000 GHz	-13.00 dBm				↓1				-12.9
CF Step 400.000 kH Auto Mar	RMS	Sale of a regative any		and an and and and and and and and and a	Non a property of				-32.9
Freq Offse 0 H:									-52.9
	4.000 MHz 5 (1001 pts)	Span 4	#Sweep		,	∮ 160 kHz	#VBW	710000 GHz 51 kHz	Center 1. #Res BW
	(Hoor pro)	11000-5	STATUS			100 1112			MSG

## 5 M\_Band Edge\_High\_BPSK\_FullRB





	rum Analyzer - Channel Po	wer				
Center Fre	RF 50 Ω AC eq 1.71150000		SENSE:INT Center Freq: 1.7115 Trig: Free Run #Atten: 10 dB	ALIGN AUTO 500000 GHz Avg Hold: 300/300	07:33:56 PM May 20, 2024 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset 27.14 Ref 30.00 dE					
20.0						Center Freq 1.711500000 GHz
10.00						
-20.0	Marin Marin					
-40.0						
Center 1.7 Res BW 3			VBW 390 k	Hz	Span 4 MHz Sweep 3.2 ms	
Chann	Channel Power		Powe	r Spectral Dens	sity	Freq Offset 0 Hz
-2	8.63 dBm	/ 1 MHz		-88.63 dBm	/Hz	
150						
ISG				STATU	5	

### 5 M\_Extended Band Edge\_High\_BPSK\_FullRB



RL RF									- ×
enter Freq 1.69	50 Ω AC 5000000 GI	NO: Wide ++ Irig: I	SENSE:INT	#Avg Typ	ALIGN AUTO e: RMS	07:36:18 PM TRACE TYPE	May 20, 2024           1         2         3         4         5         6           A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A         A	Frequenc	У
Ref Offse	et 27.14 dB	Gain:Low #Atter	n: 10 dB		Mkr1	1.695 00 -37.50	0 GHz	Auto 1	ſun
7.1			/					Center 1.695000000	
.14								Start 1.693000000	
2.9							-13.00 dBm	<b>Stop</b> 1.697000000	
2.9			1		J.			CF 400.000 Auto	
2.9	and and a second second second	and the second designed and th			have	**************************************	RMS	Freq O	ffs 0 I
enter 1.695000 G	Hz					Span 4.0	000 MHz		
Res BW 30 kHz		#VBW 1.0 M	HZ		#Sweep	1.000 s (1	001 pts)		

### 10 M\_Band Edge\_Low\_BPSK\_1RB



	ctrum Analyzer - Swept SA			-		
Center F	RF 50 Ω AC req 1.69500000	PNO: Wide	SENSE:INT Trig: Free Run #Atten: 10 dB	#Avg Type: RMS	07:35:46 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A MANA A A A DET A A A A A A A	Frequency
0 dB/div	Ref Offset 27.14 dE Ref 27.14 dBm	IFGain:Low	#Atten: 10 dB	Mkr1	1.695 000 GHz -26.738 dBm	Auto Tun
17.1						Center Fre 1.695000000 GH
2.86 <b></b>			/		RMS	Start Fre 1.693000000 GF
2.9			1		-13.00 dBm	<b>Stop Fre</b> 1.697000000 GR
2.9		and the second				CF Ste 400.000 kl <u>Auto</u> M
2.9						Freq Offs 0
	695000 GHz 100 kHz	#\/B\A	300 kHz	#Sween	Span 4.000 MHz 1.000 s (1001 pts)	
SG		# 4 D 4 4	500 MHZ	STATU		

# 10 M\_Band Edge\_Low\_BPSK\_FullRB





M Agilent Spect	rum Analyzer - Channel Po						
Center Fr	RF 50Ω AC eq 1.69350000	00 GHz #IFGain:Low	SENSE:INT Center Freq: 1.693500 Trig: Free Run #Atten: 10 dB	Center Freq: 1.693500000 GHz Trig: Free Run Avg Hold: 300/300		Frequency	
10 dB/div	Ref Offset 27.1 Ref 30.00 dE						
20.0 10.0						Center Freq 1.693500000 GHz	
0.00 -10.0							
-20.0					monor		
-40.0							
Center 1.6 Res BW 3			VBW 390 kH	z	Span 4 MHz Sweep 3.2 ms	CF Step 400.000 kHz Auto Man	
Chann	el Power		Power	Spectral Dens	sity	<b>Freq Offset</b> 0 Hz	
-3	2.30 dBm	/ 1 MHz	-4	92.30 dBm	/Hz		
MSG				STATU	s		

### 10 M\_Extended Band Edge\_Low\_BPSK\_FullRB



Agilent Spectrum Analyzer - Swept SA	_				
RL RF 50 Ω AC Center Freq 1.71000000	OGHZ	#Avg Type e Run		1:02 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A	Frequency
Ref Offset 27.14 dB 0 dB/div Ref 27.14 dBm	IFGain:Low #Atten: 1	0 dB	Mkr1 1.71 -3	0 000 GHz 8.014 dBm	Auto Tun
17.1					Center Fre 1.710000000 GH
.14					<b>Start Fre</b> 1.708000000 GF
2.9				-13.00 dBm	<b>Stop Fre</b> 1.712000000 GF
2.9		1			CF Ste 400.000 kł Auto Ma
2.9		and provide and	hanna ann an tha ann an tha ann an tha	RMS	Freq Offs 01
enter 1.710000 GHz Res BW 30 kHz	#VBW 1.0 MHz		Spa #Sweep 1.000	an 4.000 MHz ) s (1001 p <u>ts</u> )	
SG			STATUS		

# 10 M\_Band Edge\_High\_BPSK\_1RB



	ctrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 1.71000000	0 GHz	SENSE:INT	#Avg Type: RMS	07:40:30 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A MAAAAA DET A A A A A A A	Frequency
10 dB/div	Ref Offset 27.14 dE Ref 27.14 dBm	PNO: Wide ++ IFGain:Low	#Atten: 10 dB	Mkr1	1.710 004 GHz -33.681 dBm	Auto Tune
17.1						Center Free 1.710000000 GH
2.86						Start Free 1.708000000 GH
-12.9					-13.00 dBm	<b>Stop Fre</b> 1.712000000 GH
32.9			1		RMS	CF Ste 400.000 kH Auto Ma
52.9						Freq Offse 0 ⊦
Center 1.	710000 GHz 100 kHz	#VBW	300 kHz	#Sweep	Span 4.000 MHz 1.000 s (1001 pts)	
ISG				STATUS		

### 10 M\_Band Edge\_High\_BPSK\_FullRB





	um Analyzer - Char			_	ALIGN AUTO	-			d
Center Fre	RF 50 Ω 2q 1.71150	AC 0000 GHz #IFGain:Lov	, - <b>-</b> v	SENSE:INT Center Freq: 1.711500000 G Trig: Free Run Avg #Atten: 10 dB	07:40:39 PM Radio Std: I Radio Devic		Freque	ncy	
10 dB/div Log	Ref Offset Ref 30.0		_						
20.0								Cente 1.7115000	e <b>r Freq</b> 100 GHz
-10.00									
-20.0	×								
-40.0	- marine	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			~~~~~~				
-60.0 Center 1.7									F Step 000 kHz Man
Res BW 39	9 kHz			VBW 390 kHz		Sweep	3.2 ms		
Channe	el Power			Power Spe	ctral Dens	sity		Freq Offs 0 H	Offset 0 Hz
-32	2.98 dE	3m / 1 MHz	:	-92.98 dBm /нz					
MSG					STATU	S			

### 10 M\_Extended Band Edge\_High\_BPSK\_FullRB



- d ×						rum Analyzer - Swept SA	
Frequency	07:42:57 PM May 20, 2024 TRACE 1 2 3 4 5 5 TYPE A A A A A A A	ALIGN AUTO	#Avg Typ	SENSE:INT	GHz	eq 1.695000000	Center F
Auto Tune	.694 996 GHz -39.446 dBm	Mkr1		Trig: Free Run #Atten: 10 dB	PNO: Wide IFGain:Low	Ref Offset 27.14 dB Ref 27.14 dBm	10 dB/div
Center Fred 1.695000000 GHz			$\sim$				17.1
Start Free 1.693000000 GH							2.86
Stop Free 1.697000000 GH	-13.00 dBm						-12.9
CF Step 400.000 kH <u>Auto</u> Ma				21			32.9
Freq Offse 0 H	RMS				to a second and a se	m /m /m /m	52.9
	Span 4.000 MHz .000 s (1001 pts)	#Sween		1.0 MHz	#\/B)A(	95000 GHz	Center 1.
		status			<i></i>		ISG

#### 15 M\_Band Edge\_Low\_BPSK\_1RB



	ctrum Analyzer - Swept SA		_			
Center F	RF 50 Ω AC	0 GHz PNO: Wide	SENSE:INT	#Avg Type: RMS	07:42:26 PM May 20, 2024 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	Frequency
10 dB/div	Ref Offset 27.14 dE Ref 27.14 dBm	IFGain:Low	#Atten: 10 dB	Mkr1	1.695 000 GHz -28.239 dBm	Auto Tun
17.1						Center Fre 1.695000000 GH
2.86					RMS	Start Fre 1.693000000 GF
12.9 22.9			1,		-13.00 dBm	Stop Fre 1.697000000 GF
2.9						CF Ste 400.000 kł Auto Ma
2.9						Freq Offs 01
	695000 GHz 150 kHz	#VBW	470 kHz	#Sweep	Span 4.000 MHz 1.000 s (1001 pts)	
G				STATUS		

# 15 M\_Band Edge\_Low\_BPSK\_FullRB





	rum Analyzer - Channel P					
Center Fr	RF 50 Ω A0 eq 1.6935000	00 GHz	SENSE:INT Center Freq: 1.69350 Trig: Free Run #Atten: 10 dB	ALIGN AUTO 00000 GHz Avg Hold: 300/300	07:42:36 PM May 20, 2024 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset 27. Ref 30.00 d					
20.0 10.0						Center Freq 1.693500000 GHz
0.00 -10.0						
-20.0					- And -	
-40.0						
Center 1.6 Res BW 3			VBW 390 ki	Hz	Span 4 MHz Sweep 3.2 ms	CF Step 400.000 kHz <u>Auto</u> Mar
	el Power			Spectral Dens	•	Freq Offse 0 Ha
-3	2.89 dBn	1 / 1 MHz	-	92.89 dBm	/Hz	
ISG	_			STATU	S	

### 15 M\_Extended Band Edge\_Low\_BPSK\_FullRB



Agilent Spectrum Analyzer - Swept SA					
Center Freq 1.710000000		SENSE:INT	#Avg Type: RMS	07:46:49 PM May 20, 2024 TRACE 1 2 3 4 5 0 TYPE A WWWW DET A A A A A A A	Frequency
Ref Offset 27.14 dB 0 dB/div Ref 27.14 dBm	IFGain:Low	#Atten: 10 dB	Mkr1	1.710 016 GHz -39.989 dBm	Auto Tun
17.1					Center Fre 1.710000000 GH
2.86					Start Fre 1.708000000 GF
22.9				-13.00 dBm	Stop Fre 1.712000000 GH
12.9					CF Ste 400.000 kH Auto Ma
52.9 <b></b>		the same	an magnific an she from a more more more	RMS	Freq Offs 0 H
Center 1.710000 GHz Res BW 30 kHz	#VBW ′	1.0 MHz	#Sweep	Span 4.000 MHz 1.000 s (1001 pts)	
SG			STATUS	3	

# 15 M\_Band Edge\_High\_BPSK\_1RB



	ctrum Analyzer - Swept SA					
Center F	RF 50 Ω AC req 1.710000000	) GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	07:46:17 PM May 20, 2024 TRACE 1 2 3 4 5 6	Frequency
		PNO: Wide +	<ul> <li>Trig: Free Run #Atten: 10 dB</li> </ul>		TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	Auto Tune
10 dB/div Log	Ref Offset 27.14 dB Ref 27.14 dBm			Mkr1	1.710 016 GHz -37.210 dBm	Auto Tulle
17.1						Center Fred
						1.710000000 GHz
7.14						Start Free 1.708000000 GH
-2.86						1.70800000 GH
12.9					-13.00 dBm	Stop Free 1.712000000 GH
22.9		Jan Maria				
32.9			11			CF Stej 400.000 kH
42.9					RMS	<u>Auto</u> Ma
52.9						Freq Offse 0 H
62.9						
Center 1	710000 GHz				Span 4.000 MHz	
#Res BW		#VBW	470 kHz	#Sweep	1.000 s (1001 pts)	
ISG				STATUS	5	

### 15 M\_Band Edge\_High\_BPSK\_FullRB





	um Analyzer - Chan			_		
Center Fre	RF 50 Ω eq 1.71150		SENSE:INT ALIGN AUTO Center Freq: 1.711500000 GHz Trig: Free Run Avg Hold: 300/300 #Atten: 10 dB		07:46:26 PM May 20, 2024 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset					
20.0						Center Freq 1.711500000 GHz
-10.0						
-20.0						
-40.0	~~~~~			~~~~~		
Center 1.7 Res BW 39			VBW 390 kHz		Span 4 MHz Sweep 3.2 ms	CF Step 400.000 kHz <u>Auto</u> Man
Chann	el Power		Power Spectral Density			Freq Offset 0 Hz
-3	3.70 dE	3m / 1 MHz	-93.	-93.70 dBm /Hz		
					í.	
MSG				STATU	S	

### 15 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-2407-FC032-P				