

# **TEST REPORT**

FCC Sub6 n71 Test for SM-S721U Certification

APPLICANT SAMSUNG Electronics Co., Ltd.

REPORT NO. HCT-RF-2407-FC033

DATE OF ISSUE July 19, 2024

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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-FC033 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 \*\*\*.

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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
2. INTRODUCTION
2.1. DESCRIPTION OF EUT7
2.2. MEASURING INSTRUMENT CALIBRATION7
2.3. TEST FACILITY
3. DESCRIPTION OF TESTS
3.1 TEST PROCEDURE
3.2 RADIATED POWER9
3.3 RADIATED SPURIOUS EMISSIONS10
3.4 PEAK- TO- AVERAGE RATIO11
3.5 OCCUPIED BANDWIDTH13
3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL14
3.7 BAND EDGE
3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE
3.9 WORST CASE(RADIATED TEST)
3.10 WORST CASE(CONDUCTED TEST)19
4. LIST OF TEST EQUIPMENT
5. MEASUREMENT UNCERTAINTY
6. SUMMARY OF TEST RESULTS
7. SAMPLE CALCULATION
8. TEST DATA
8.1 EFFECTIVE 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



## **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
ЕUT Туре:	Mobile phone
Model(s):	SM-S721U
Additional Model(s)	SM-S721U1
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
	665.5 MHz – 695.5 MHz (Sub6 n71(5 MHz))
Tx Frequency:	668.0 MHz – 693.0 MHz (Sub6 n71(10 MHz)) 670.5 MHz – 690.5 MHz (Sub6 n71(15 MHz)) 673.0 MHz – 688.0 MHz (Sub6 n71(20 MHz))
Date(s) of Tests:	May 21, 2024 ~ July 19, 2024
Serial number:	Radiated : 67d50ecc63197ece Conducted : R3CX40SV7PD



## **1.1. MAXIMUM OUTPUT POWER**

Mode		Emission		Ef	ERP		
(MHz)		Modulation	Max. Power (W)	Max. Powe (dBm)			
		4M66G7D	PI/2 BPSK	0.075	18.74		
		4M68G7D	QPSK	0.073	18.63		
Sub6 n71 (5)	665.5 - 695.5	4M68W7D	16QAM	0.059	17.69		
		4M60W7D	64QAM	0.041	16.09		
		4M71W7D	256QAM	0.027	14.29		
		9M01G7D	PI/2 BPSK	0.073	18.61		
		9M00G7D	QPSK	0.072	18.58		
Sub6 n71 (10)	668.0 - 693.0	9M01W7D	16QAM	0.057	17.59		
		9M02W7D	64QAM	0.041	16.16		
		8M97W7D	256QAM	0.027	14.26		
		13M4G7D	PI/2 BPSK	0.073	18.65		
		13M5G7D	QPSK	0.073	18.61		
Sub6 n71 (15)	670.5 - 690.5	13M4W7D	16QAM	0.058	17.64		
		13M6W7D	64QAM	0.041	16.17		
		13M6W7D	256QAM	0.027	14.33		
		17M9G7D	PI/2 BPSK	0.076	18.78		
		17M9G7D	QPSK	0.075	18.76		
Sub6 n71 (20)	673.0 - 688.0	17M9W7D	16QAM	0.059	17.73		
		17M9W7D	64QAM	0.043	16.34		
		18M0W7D	256QAM	0.028	14.43		





## **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
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)

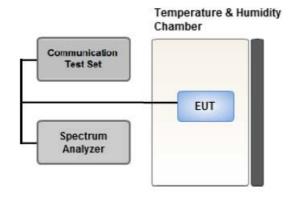
Where:  $P_g$  is the generator output power into the substitution antenna.

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

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)**

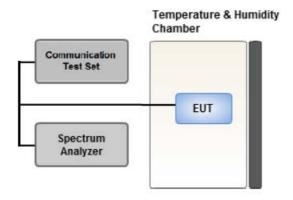
- 1. Set span to 2 × to 3 × the OBW.
- 2. Set RBW  $\geq$  OBW.
- 3. Set VBW  $\geq$  3 × RBW.
- 4. Set number of measurement points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ .
- 5. Sweep time:
  - Set  $\geq$  [10 × (number of points in sweep) × (transmission period)] for single sweep

(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**

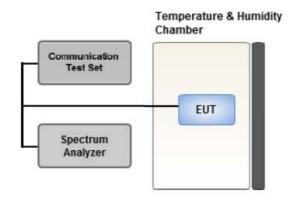
The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured 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: NSA, SA

Worst case: NSA (2A-n71)

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.

- 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.
- 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 : 20 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		
	PI/2 BPSK,					
Effective Radiated Power	QPSK,	See Section 8.1		Х		
	16QAM,					
	64QAM,					
	256QAM					
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See See	ction 8.1	Х		



## 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: NSA, SA

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.

- 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	5,10,15,20	Mid	Full RB	0
		5	Low	1	0
	PI/2 BPSK		High	1	24
		10	Low	1	0
		10	High	1	51
Pand Edge		15	Low	1	0
Band Edge			High	1	78
		20	Low	1	0
		20	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	Manufacture	Serial No.	Due to Calibration	Calibratior 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.,	-	-	-
Precision Dipole Antenna	UHAP	Schwarzbeck	01273	03/10/2026	Biennial

#### 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(g)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	See Note1
Frequency stability / variation of ambient temperature	§ 2.1055, § 27.54	Emission must remain in band	PASS

Note:

1. See SAR Report

2. 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	§ 27.50(c)(10)	< 3 Watts max. ERP	PASS	
Radiated Spurious and Harmonic	§ 2.1053,	< 43 + 10log10 (P[Watts]) for	DACC	
Emissions	§ 27.53(g)	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	ERP		
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	Del	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 EFFECTIVE RADIATED POWER**

Freq	Mod/ Bandwidth	Modulation		Substitute Level	Ant. Gain	C.L	Pol	Limit	ERP		RB	
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBm)         (dBd)           29.00         -9.75           28.99         -9.75           27.93         -9.75           26.42         -9.75           24.52         -9.75           29.67         -9.65           29.56         -9.65           28.62         -9.65			W	w	dBm	Size	Offset
		PI/2 BPSK	-29.89	29.00	-9.75	1.26	Н		0.063	17.99		
		QPSK	-29.90	28.99	-9.75	1.26	Н		0.063	17.98		12
665.5		16-QAM	-30.96	27.93	-9.75	1.26	Н		0.049	16.92	1	
		64-QAM	-32.47	26.42	-9.75	1.26	Н		0.035	15.41		
		256-QAM	-34.37	24.52	-9.75	1.26	Н		0.022	13.51		
		PI/2 BPSK	-30.02	29.67	-9.65	1.28	Н		0.075	18.74	1	12
	Sub6 n71/	QPSK	-30.13	29.56	-9.65	1.28	Н		0.073	18.63		
680.5		16-QAM	-31.07	28.62	-9.65	1.28	Н	< 3.00	0.059	17.69		
		64-QAM	-32.67	27.02	-9.65	1.28	Н		0.041	16.09		
		256-QAM	-34.47	25.22	-9.65	1.28	Н		0.027	14.29		
		PI/2 BPSK	-29.71	29.22	-9.65	1.28	Н		0.068	18.29		
		QPSK	-29.90	29.03	-9.65	1.28	Н		0.065	18.10		
695.5		16-QAM	-30.67	28.26	-9.65	1.28	Н		0.054	17.33	1	12
		64-QAM	-32.16	26.77	-9.65	1.28	Н	Н 0.038	0.038	15.84		
		256-QAM	-34.10	24.83	-9.65	1.28	Н		0.025	13.90		



Freq	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	ERP		RB	
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)			w	W	dBm	Size	Offset
		PI/2 BPSK	-29.96	29.24	-9.75	1.26	Н		0.067	18.23		
		QPSK	-30.00	29.20	-9.75	1.26	Н		0.066	18.19		
668.0	16-QAM	-30.97	28.23	-9.75	1.26	Н		0.053	17.22	1	1	
		64-QAM	-32.36	26.84	-9.75	1.26	Н		0.038	15.83		
		256-QAM	-34.31	24.89	-9.75	1.26	Н		0.024	13.88		
		PI/2 BPSK	-30.15	29.54	-9.65	1.28	Н		0.073	18.61		
	Sub6 n71/	QPSK	-30.18	29.51	-9.65	1.28	Н		0.072	18.58		
680.5	10 MHz	16-QAM	-31.20	28.49	-9.65	1.28	Н	< 3.00	0 0.057 17.56 0.041 16.16	1	50	
	[15 kHz]	64-QAM	-32.60	27.09	-9.65	1.28	Н			16.16	-	
		256-QAM	-34.50	25.19	-9.65	1.28	Н		0.027	14.26		
		PI/2 BPSK	-29.78	29.37	-9.65	1.27	Н		0.070	18.45		
		QPSK	-29.80	29.35	-9.65	1.27	Н		0.070	18.43		
693.0		16-QAM	-30.64	28.51	-9.65	1.27	Н		0.057	17.59	1	26
		64-QAM	-32.22	26.93	-9.65	1.27	Н		16.01			
		256-QAM	-34.15	25.00	-9.65	1.27	Н		0.026	14.08	\$	



Frea	Freq Bandwidth			Substitute	Ant. Gain			Limit	ERP		RB	
(MHz)	Bandwidth	Modulation	Level	Level	(dBd)	C.L	Pol					
(14112)	[SCS (kHz)]		(dBm)	(dBm)	(aba)			W	W	dBm	Size	Offset
		PI/2 BPSK	-29.94	29.39	-9.75	1.26	Н		0.069	18.38		
670.5	QPSK	-29.98	29.35	-9.75	1.26	Н		0.068	18.34		1	
	16-QAM	-30.98	28.35	-9.75	1.26	Н		0.054	17.34	1		
	64-QAM	-32.43	26.90	-9.75	1.26	Н		0.039	15.89			
	_	256-QAM	-34.33	25.00	-9.75	1.26	Н		0.025	13.99		
		PI/2 BPSK	-30.11	29.58	-9.65	1.28	Н		0.073	18.65	_	77
	Sub6 n71/	QPSK	-30.16	29.53	-9.65	1.28	Н		0.072	18.60		
680.5	15 MHz	16-QAM	-31.12	28.57	-9.65	1.28	Н	< 3.00		17.64		
	[15 kHz]	64-QAM	-32.59	27.10	-9.65	1.28	Н			16.17		
		256-QAM	-34.43	25.26	-9.65	1.28	Н		0.027	14.33		
		PI/2 BPSK	-29.82	29.55	-9.65	1.27	Н		0.073	18.63		
		QPSK	-29.84	29.53	-9.65	1.27	Н		0.073	18.61		
690.5		16-QAM	-30.83	28.54	-9.65	1.27	Н		0.058	17.62	1	77
		64-QAM	-32.30	27.07	-9.65	1.27	Н	H	0.041	16.15		
		256-QAM	-34.22	25.15	-9.65	1.27		0.027	14.23	1		



Freq	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	ERP		RB	
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)	U.L	FOL	w	w	dBm	Size	Offset
		PI/2 BPSK	-29.96	29.42	-9.75	1.26	Н		0.069	18.41		
		QPSK	-30.00	29.38	-9.75	1.26	Н		0.069	18.37		
673.0	16-QAM	-30.96	28.42	-9.75	1.26	Н		0.055	17.41	1	1	
		64-QAM	-32.48	26.90	-9.75	1.26	Н	_	0.039	15.89		
		256-QAM	-34.32	25.06	-9.75	1.26	Н		0.025	14.05		
		PI/2 BPSK	-29.98	29.71	-9.65	1.28	Н		0.076	18.78		
	Sub6 n71/	QPSK	-30.00	29.69	-9.65	1.28	Н		0.075	18.76	1	104
680.5	20 MHz	16-QAM	-31.03	28.66	-9.65	1.28	Н	< 3.00	0.059	17.73		
	[15 kHz]	64-QAM	-32.42	27.27	-9.65	1.28	Н		0.043	16.34		
		256-QAM	-34.33	25.36	-9.65	1.28	Н		0.028	14.43		
		PI/2 BPSK	-29.83	29.62	-9.65	1.27	Н		0.074	18.70		
		QPSK	-29.85	29.60	-9.65	1.27	Н		0.074	18.68		
688.0		16-QAM	-30.88	28.57	-9.65	1.27	Н		0.058	17.65	1	104
		64-QAM	-32.27	27.18	-9.65	1.27	Н	H	0.042	16.26		
		256-QAM	-34.21	25.24	-9.65	1.27	Н		0.027	14.32		



## **8.2 RADIATED SPURIOUS EMISSIONS**

NR Band:	<u>N71</u>
Bandwidth:	<u>20 MHz</u>
Modulation:	PI/2 BPSK
Distance:	<u>3 meters</u>
SCS:	15 kHz

Ch	Freq (MHz)	Measured Level	evel Gain Level (dBm) C.L		C.L Pol		Limit (dBm)	RB		
	()	(dBm)	(dBi)				(dBm)	(,	Size	Size
124600	1346.00	-57.08	6.75	-63.14	1.74	V	-58.13	-13.00		
134600 (673.0)	2019.00	-57.13	9.40	-63.40	2.15	V	-56.15	-13.00	1	1
(015.0)	2692.00	-58.62	10.25	-62.71	2.59	V	-55.05	-13.00		
126100	1361.00	-57.13	7.00	-63.34	1.80	V	-58.14	-13.00		
136100 (680.5)	2041.50	-58.70	9.40	-64.82	2.23	V	-57.65	-13.00	1	104
(000.5)	2722.00	-59.46	10.40	-63.80	2.63	V	-56.03	-13.00		
107000	1376.00	-58.70	7.00	-64.69	1.82	V	-59.51	-13.00		
137600 (688.0)	2064.00	-58.64	9.20	-64.38	2.27	V	-57.45	-13.00	1	104
(000.0)	2752.00	-58.95	10.30	-62.59	2.66	V	-54.95	-13.00		



## 8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
			BPSK			3.76
			QPSK			4.62
	5 MHz		16-QAM	25		5.15
			64-QAM	-		5.44
			256-QAM			5.74
			BPSK			3.81
			QPSK			4.78
	10 MHz		16-QAM	50		5.34
			64-QAM	-		5.67
Sub6			256-QAM		0	6.04
n71			BPSK		4.02	
			QPSK			4.67
	15 MHz		16-QAM	75		5.27
			64-QAM			5.58
			256-QAM			5.97
			BPSK			3.72
			QPSK			4.61
	20 MHz		16-QAM	100		5.20
			64-QAM			5.55
			256-QAM			6.00

#### Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 38 ~ 57.

2. Peak- to- Average Ratio is not required. These values are reported for information only.



## **8.4 OCCUPIED BANDWIDTH**

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
			BPSK			4.6560
			QPSK		4.6752	
	5 MHz		16-QAM	25		4.6812
			64-QAM	50		4.5992
			256-QAM			4.7125
			BPSK			9.0113
			QPSK			8.9977
	10 MHz		16-QAM			9.0045
			64-QAM			9.0175
Sub6		600 F	256-QAM		_	8.9736
n71		- 680.5	BPSK		0	13.438
			QPSK			13.467
	15 MHz		16-QAM			13.438
			64-QAM			13.643
			256-QAM			13.634
			BPSK			17.883
			QPSK			17.932
	20 MHz		16-QAM	100		17.897
			64-QAM			17.941
			256-QAM			17.946

## Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 58 ~ 77.



Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
		665.5	3.7678	30.200	-74.482	-44.282	
	5	680.5	9.6899	30.815	-73.753	-42.938	
		695.5	9.6999	30.815	-74.593	-43.778	
	668.0	9.6909	30.815	-73.875	-43.060		
	10	680.5	3.7807	30.200	-73.410	-43.210	
Sub6		693.0	9.9272	30.815	-74.634	-43.819	10.00
n71		670.5	3.7827	30.200	-73.939	-43.739	-13.00
	20	680.5	5.2279	30.815	-73.893	-43.078	
		690.5	9.9641	30.815	-73.980	-43.165	
		673.0	9.1466	30.815	-74.352	-43.537	
		680.5	8.2662	30.815	-73.447	-42.632	
		688.0	3.8021	30.200	-73.946	-43.746	

## **8.5 CONDUCTED SPURIOUS EMISSIONS**

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 78 ~ 89.

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

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

#### 8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 90 ~ 121.

F-TP22-03 (Rev. 06)



## 8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

BandWidth:	<u>5 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 Error	Deviation (%)	ppm
		(°C)		(Hz)		
	100 %	+20(Ref)	665 500 001	0.0	0.000 000	0.000
	100 %	-30	665 500 002	1.2	0.000 000	0.002
	100 %	-20	665 500 002	1.0	0.000 000	0.002
	100 %	-10	665 500 002	1.1	0.000 000	0.002
	100 %	0	665 500 003	1.2	0.000 000	0.002
665.5	100 %	+10	665 500 002	1.0	0.000 000	0.001
	100 %	+30	665 500 003	1.2	0.000 000	0.002
	100 %	+40	665 500 002	0.9	0.000 000	0.001
	100 %	+50	665 500 002	0.8	0.000 000	0.001
	Batt. Endpoint	+20	665 500 002	0.4	0.000 000	0.001
	100 %	+20(Ref)	695 500 001	0.0	0.000 000	0.000
	100 %	-30	695 500 002	1.5	0.000 000	0.002
	100 %	-20	695 500 002	1.1	0.000 000	0.002
	100 %	-10	695 500 002	1.0	0.000 000	0.001
	100 %	0	695 500 002	1.1	0.000 000	0.002
695.5	100 %	+10	695 500 002	1.5	0.000 000	0.002
	100 %	+30	695 500 002	0.9	0.000 000	0.001
	100 %	+40	695 500 001	0.8	0.000 000	0.001
	100 %	+50	695 500 002	1.6	0.000 000	0.002
	Batt. Endpoint	+20	695 500 002	1.2	0.000 000	0.002



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

Test. Frequncy	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
	100 %	+20(Ref)	668 000 001	0.0	0.000 000	0.000
	100 %	-30	668 000 001	0.2	0.000 000	0.000
	100 %	-20	668 000 001	0.5	0.000 000	0.001
	100 %	-10	668 000 002	1.0	0.000 000	0.001
668.0	100 %	0	668 000 002	1.4	0.000 000	0.002
668.0	100 %	+10	668 000 002	0.8	0.000 000	0.001
	100 %	+30	668 000 002	1.1	0.000 000	0.002
	100 %	+40	668 000 002	1.4	0.000 000	0.002
	100 %	+50	668 000 001	0.3	0.000 000	0.000
	Batt. Endpoint	+20	668 000 002	0.8	0.000 000	0.001
	100 %	+20(Ref)	693 000 000	0.0	0.000 000	0.000
	100 %	-30	693 000 000	0.4	0.000 000	0.001
	100 %	-20	692 999 999	-0.3	0.000 000	0.000
	100 %	-10	692 999 999	-0.3	0.000 000	0.000
	100 %	0	693 000 000	0.0	0.000 000	0.000
693.0	100 %	+10	693 000 000	-0.2	0.000 000	0.000
	100 %	+30	693 000 001	0.9	0.000 000	0.001
	100 %	+40	692 999 999	-0.7	0.000 000	-0.001
	100 %	+50	693 000 000	-0.2	0.000 000	0.000
	Batt. Endpoint	+20	693 000 000	0.4	0.000 000	0.001



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 Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
	100 %	+20(Ref)	670 499 999	0.0	0.000 000	0.000
	100 %	-30	670 499 997	-1.7	0.000 000	-0.003
	100 %	-20	670 499 997	-1.8	0.000 000	-0.003
	100 %	-10	670 499 997	-1.5	0.000 000	-0.002
670.5	100 %	0	670 499 997	-1.7	0.000 000	-0.002
670.5	100 %	+10	670 499 998	-1.2	0.000 000	-0.002
	100 %	+30	670 499 997	-1.6	0.000 000	-0.002
	100 %	+40	670 499 998	-1.2	0.000 000	-0.002
	100 %	+50	670 499 998	-1.2	0.000 000	-0.002
	Batt. Endpoint	+20	670 499 998	-1.2	0.000 000	-0.002
	100 %	+20(Ref)	690 500 000	0.0	0.000 000	0.000
	100 %	-30	690 499 999	-0.2	0.000 000	0.000
	100 %	-20	690 499 999	-1.0	0.000 000	-0.001
	100 %	-10	690 499 999	-0.6	0.000 000	-0.001
C00 F	100 %	0	690 499 999	-1.1	0.000 000	-0.002
690.5	100 %	+10	690 499 999	-0.6	0.000 000	-0.001
	100 %	+30	690 499 999	-0.8	0.000 000	-0.001
	100 %	+40	690 499 999	-0.6	0.000 000	-0.001
	100 %	+50	690 499 999	-1.1	0.000 000	-0.002
	Batt. Endpoint	+20	690 499 999	-0.7	0.000 000	-0.001



BandWidth:	<u>20 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
LIMIT:	Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency (Hz)	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)		(Hz)	(%)	
	100 %	+20(Ref)	672 999 999	0.0	0.000 000	0.000
	100 %	-30	672 999 999	-0.8	0.000 000	-0.001
	100 %	-20	673 000 000	0.5	0.000 000	0.001
	100 %	-10	672 999 999	-0.6	0.000 000	-0.001
672.0	100 %	0	672 999 999	0.0	0.000 000	0.000
673.0	100 %	+10	672 999 999	-0.8	0.000 000	-0.001
	100 %	+30	672 999 999	0.0	0.000 000	0.000
	100 %	+40	672 999 999	-0.5	0.000 000	-0.001
	100 %	+50	672 999 999	-0.1	0.000 000	0.000
	Batt. Endpoint	+20	672 999 999	-0.1	0.000 000	0.000
	100 %	+20(Ref)	688 000 001	0.0	0.000 000	0.000
	100 %	-30	688 000 002	1.0	0.000 000	0.001
	100 %	-20	688 000 001	0.2	0.000 000	0.000
	100 %	-10	688 000 001	0.9	0.000 000	0.001
<b>COO O</b>	100 %	0	688 000 002	1.3	0.000 000	0.002
688.0	100 %	+10	688 000 001	0.6	0.000 000	0.001
	100 %	+30	688 000 002	1.8	0.000 000	0.003
	100 %	+40	688 000 002	1.9	0.000 000	0.003
	100 %	+50	688 000 001	0.9	0.000 000	0.001
	Batt. Endpoint	+20	688 000 001	0.9	0.000 000	0.001



Report No. HCT-RF-2407-FC033

### 9. TEST PLOTS



	oupling: DC	nput Z: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics		2 Graph	•			On Off	Attenuati
		Gaussia 100 %	an				Signal Pa
Average P	ower 24.41 dBm	100 38					
	50.26 % at 0 dB						
	50.20 % at 0 0D	10 %					
10.0 %	1.91 dB						
1.0 %	3.21 dB	1.%					
0.1 %	3.76 dB						
0.01 %	4.12 dB	0.1 %					
0.001 %	4.37 dB						
0.0001 %	4.50 dB	0.01 %					
	4.54 dB	0.001 %					
Peak	28.95 dBm	E					
		0.0001 %					Loc
		0.00 dB Info BW 5	5.0000 MHz		20	.00 dB	
		11 01 0001	5.0000 MHz			X	

## 5 M\_PAR\_Mid\_BPSK\_FullRB



	upling: DC Co	put Z: 50 Ω orr CCorr eq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2 00 Mpt Radio Std: None	Ref Level Offset 26.83 dB On	Y Scale
etrics	•	2 Graph	•			Off	Attenua
Average Pov	uor	Gaussi 100 %	an				Signal F
Average For	23.94 dBm						
4	19.24 % at 0 dB	10 %					
10.0 %	2.36 dB						
1.0 %	3.85 dB	1.%					
0.1 %	4.62 dB						
0.01 %	5.06 dB	0.1 %					
0.001 %	5.32 dB						
0.0001 %	5.43 dB	0.01 %					
	5.59 dB	0.001 %					
Peak	29.53 dBm	0.001 %					
		0.0001 % 0.00 dB	5.0000 MHz		20.00	) dB	Loc

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





	Ipling: DC Co	put Z: 50 Ω orr CCorr eq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph	÷.			On Off	Attenua
Average Pov	ior	Gaussi 100 %	an				Signal F
Average Pov	23.00 dBm						
4	6.25 % at 0 dB	10 %					
10.0 %	2.90 dB	1.%					
1.0 %	4.36 dB						
0.1 %	5.15 dB						
0.01 %	5.63 dB	0.1 %					
0.001 %	5.91 dB						
0.0001 %	6.14 dB	0.01 %					
	6.24 dB	0.001 %					
Peak	29.24 dBm						
		0.0001 % 0.00 dB Info BW 5	5.0000 MHz		20.0	0 dB	Lo

# 5 M\_PAR\_Mid\_16QAM\_FullRB



	ipling: DC	nput Ζ: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph				On Off	Attenuat
		Gaussia	in				Signal P
Average Pow	ver 22.58 dBm						
4	4.70 % at 0 dB	10 %					
10.0 %	3.07 dB	1 %					
1.0 %	4.59 dB						
0.1 %	5.44 dB						
0.01 %	5.95 dB	0.1 %					
0.001 %	6.30 dB						
0.0001 %	6.49 dB	0.01 %					
	6.64 dB	0.001 %					
Peak	29.22 dBm						
		0.0001 % 0.00 dB Info BW 5	.0000 MHz		20.00	) dB	Loc

#### 5 M\_PAR\_Mid\_64QAM\_FullRB



	pling: DC Corr		Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB On	Y Scale
etrics	*	2 Graph	•			Off	Attenuati
Average Pow	ior	Gaussian					Signal Pa
Average For	20.74 dBm	1					
4	1.87 % at 0 dB	10 %					
10.0 %	3.15 dB						
1.0 %	5.26 dB	1.%		$\langle \rangle$			
0.1 %	5.74 dB						
0.01 %	6.23 dB	0.1 %					
0.001 %	6.69 dB						
0.0001 %	6.77 dB	0.01 %					
_	6.79 dB	0.001 %					
Peak	27.53 dBm						
		0.0001 % 0.00 dB Info BW 5.0	0000 MHz		21	0.00 dB	Loc

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



	upling: DC C	nput Ζ: 50 Ω Corr CCorr Treq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph	-			On Off	Attenuat
		Gaussi	an				Signal P
Average Po	24.47 dBm						
	49.77 % at 0 dB	10 %					
	ion i fo al o ab						
10.0 %	1.89 dB						
1.0 %	3.10 dB	1%					
0.1 %	3.81 dB						
0.01 %	4.22 dB	0.1 %		$ \rightarrow $			
0.001 %	4.48 dB						
0.0001 %	4.61 dB	0.01 %					
	4.76 dB	0.001 %					
Peak	29.23 dBm	0.001 10					
		0.0001 % 0.00 dB	10.000 MHz		20.0	0 dB	Loc

# 10 M\_PAR\_Mid\_BPSK\_FullRB



YSIGHT Inpl +++ Col Alig	Ipling DC Cor		Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph				On Off	Attenua
		Gaussian					Signal F
Average Pov	ver 23.93 dBm						
4	9.66 % at 0 dB	10 %					
10.0 %	2.34 dB	1 %					
1.0 %	3.96 dB						
0.1 %	4.78 dB						
0.01 %	5.25 dB	0.1 %					
0.001 %	5.57 dB						
0.0001 %	5.87 dB	0.01 %					
	5.91 dB	0.001 %					
Peak	29.84 dBm						
		0.0001 % 0.00 dB Info BW 10	.000 MHz		20.00	D dB	Lo

## 10 M\_PAR\_Mid\_QPSK\_FullRB



	upling: DC Cor	ut Z: 50 Ω r CCorr q Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB On	Y Scale
etrics	•	2 Graph	•			Off	Attenuati
Average Po	War	Gaussi 100 %	an				Signal Pa
Average FU	22.94 dBm						
	46.94 % at 0 dB	10 %					
10.0 %	2.80 dB						
1.0 %	4.51 dB	1.%					
0.1 %	5.34 dB	F					
0.01 %	5.82 dB	0.1 %					
0.001 %	6.07 dB						
0.0001 %	6.34 dB	0.01 %					
	6.39 dB	0.001 %=					
Peak	29.33 dBm						
		0.0001 % 0.00 dB	10.000 MHz		20.	00 dB	Loo

## 10 M\_PAR\_Mid\_16QAM\_FullRB



	upling: DC Corr	t Z: 50 Ω ·CCorr Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB On	Y Scale Attenuation
etrics	*	2 Graph				Off	Allenuali
Average Pov	ver	Gaussia 100 %	an				Signal Pa
, tronage i ei	22.45 dBm	1					
4	15.28 % at 0 dB	10 %					
10.0 %	2.87 dB						
1.0 %	4.77 dB	1%					
0.1 %	5.67 dB						
0.01 %	6.26 dB	0.1 %		$\setminus$			
0.001 %	6.62 dB	E					
0.0001 %	6.78 dB	0.01 %					
Deelk	6.89 dB	0.001 %					
Peak	29.34 dBm						
		0.0001 % 0.00 dB Info BW 1	10.000 MHz		20.0	0 dB	Loc

## 10 M\_PAR\_Mid\_64QAM\_FullRB



	upling DC C	put Z: 50 Ω orr CCorr eq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph	•			On Off	Attenuati
		Gaussia 100 %	an				Signal Pa
Average Pov	wer 20.47 dBm	100 3					
	43.89 % at 0 dB						
	40.00 % at 0 0D	10 %					
10.0 %	2.99 dB						
1.0 %	5.12 dB	1.%		$\langle \langle \rangle$			
0.1 %	6.04 dB						
0.01 %	6.64 dB	0.1 %					
0.001 %	6.96 dB						
0.0001 %	7.31 dB	0.01 %					
	7.33 dB	0.001 %					
Peak	27.80 dBm						
		0.0001 % 0.00 dB	10.000 MHz		20.0	0 dB	Loc

# 10 M\_PAR\_Mid\_256QAM\_FullRB



	upling: DC	nput Ζ: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph				On Off	Attenua
		Gaussi	an				Signal F
Average Pov	ver 24.46 dBm						
	19.03 % at 0 dB	10 %					
10.0 %	1.97 dB	1.%=					
1.0 %	3.57 dB						
0.1 %	4.02 dB						
0.01 %	4.16 dB	0.1 %					
0.001 %	4.38 dB						
0.0001 %	4.74 dB	0.01 %					
	4.84 dB						
Peak	29.30 dBm	0.001 %					
	and the second se	0.0001 %					Loc
		0.00 dB	15.000 MHz		20.00	0 dB	

# 15 M\_PAR\_Mid\_BPSK\_FullRB



	ipling DC C	nput Ζ: 50 Ω corr CCorr req Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph				On Off	Attenua
		Gaussia	in				Signal F
Average Pov	er 23.97 dBm	100 %					
	8.15 % at 0 dB	10 %					
	0.10 /0 41 0 40	10 %					
10.0 %	2.48 dB						
1.0 %	4.08 dB	1%					
0.1 %	4.67 dB						
0.01 %	5.08 dB	0.1 %					
0.001 %	5.34 dB	F					
0.0001 %	5.52 dB	0.01 %					
	5.54 dB						
Peak	29.51 dBm	0.001 %					
	29.51 GBIII						
		0.0001 % 0.00 dB Info BW 1	5.000 MHz		20.00	0 dB	Loc

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



	Ipling: DC Co	put Z: 50 Ω orr CCorr eq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
atrics	•	2 Graph				On Off	Attenuati
		Gaussia 100 %	in				Signal Pa
Average Pov	ver 22.96 dBm	100 %					
	22.96 dBm						
-	5.41 % at 0 db	10 %					
10.0 %	2.99 dB						
1.0 %	4.50 dB	1.%					
0.1 %	5.27 dB			$\rightarrow$			
0.01 %	5.72 dB	0.1 %					
0.001 %	6.01 dB						
0.0001 %	6.13 dB	0.01 %					
	6.23 dB	0.001 %					
Peak	29.19 dBm						
		0.0001 % 0.00 dB			20	00 dB	Loc
			5.000 MHz		20.		

## 15 M\_PAR\_Mid\_16QAM\_FullRB



	upling: DC Corr	t Ζ: 50 Ω CCorr Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	•	2 Graph	•			Off	Attenuati
A		Gaussia	in				Signal P
Average Po	22.48 dBm						
	43.71 % at 0 dB	10 %					
10.0 %	3.13 dB						
1.0 %	4.76 dB	1.%		$\rightarrow$			
0.1 %	5.58 dB						
0.01 %	6.00 dB	0.1 %					
0.001 %	6.31 dB						
0.0001 %	6.49 dB	0.01 %					
	6.57 dB	0.001 %=					
Peak	29.05 dBm						
		0.0001 % 0.00 dB Info BW 1	5.000 MHz		20.0	00 dB	Loc

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



	upling: DC Corr		Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Of 26.83 dB	T Scale
etrics	•	2 Graph	•			On	Attenuat
Average Po	war	Gaussian					Signal P
Average Fo	20.52 dBm	Į.					
	42.07 % at 0 dB	10 %					
10.0 %	3.23 dB						
1.0 %	5.13 dB	1.%					
0.1 %	5.97 dB						
0.01 %	6.54 dB	0.1 %					
0.001 %	6.69 dB						
0.0001 %	6.76 dB	0.01 %					
	6.82 dB	0.001 %					
Peak	27.34 dBm						
		0.0001 % 0.00 dB Info BW 15	000 MHz		20.	00 dB	Loc

# 15 M\_PAR\_Mid\_256QAM\_FullRB



	oupling: DC	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	*	2 Graph	-			On Off	Attenua
		Gaussi	an				Signal F
Average Po	wer 24.51 dBm						
	49.78 % at 0 dB						
10.0 %	1.78 dB	1 %					
1.0 %	3.08 dB						
0.1 %	3.72 dB						
0.01 %	4.07 dB	0.1 %					
0.001 %	4.32 dB						
0.0001 %	4.42 dB	0.01 %					
	4.46 dB	0.001 %					
Peak	28.97 dBm	0.001 %					
		0.0001 %					Loc
		0.00 dB	20.000 MHz		20.	00 dB	
		11				X	

## 20 M\_PAR\_Mid\_BPSK\_FullRB



	ipling: DC C	nput Ζ: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	¥	2 Graph	•			On Off	Attenua
		Gaussia	an				Signal F
Average Pow	24.02 dBm						
4	9.41 % at 0 dB	10 %					
10.0 %	2.23 dB	1.%					
1.0 %	3.86 dB						
0.1 %	4.61 dB						
0.01 %	5.05 dB	0.1 %					
0.001 %	5.30 dB						
0.0001 %	5.45 dB	0.01 %					
	5.53 dB	0.001 %					
Peak	29.55 dBm						
		0.0001 % 0.00 dB	20.000 MHz		20.00	dB	Lo

## 20 M\_PAR\_Mid\_QPSK\_FullRB



	upling: DC Corr	t Z: 50 Ω r CCorr a Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB On	Y Scale Attenuation
etrics	•	2 Graph				Off	Allendali
Average Pov	Nor	Gaussi	an				Signal Pa
Average For	23.00 dBm						
	47.06 % at 0 dB	10 %					
10.0 %	2.81 dB						
1.0 %	4.46 dB	1.%					
0.1 %	5.20 dB	F					
0.01 %	5.63 dB	0.1 %					
0.001 %	5.90 dB	F					
0.0001 %	6.04 dB	0.01 %					
	6.31 dB	0.001 %					
Peak	29.31 dBm						
		0.0001 % 0.00 dB Info BW	20.000 MHz		20.0	00 dB	Loc

## 20 M\_PAR\_Mid\_16QAM\_FullRB



	upling DC Corr		Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
etrics	*	2 Graph	•			Off	Attenuatio
Average Pov	uor	Gaussian					Signal Pa
Average For	22.51 dBm						
4	15.80 % at 0 dB	10 %					
10.0 %	2.90 dB						
1.0 %	4.70 dB	1 %		$\lambda$			
0.1 %	5.55 dB						
0.01 %	5.98 dB	0.1 %					
0.001 %	6.20 dB						
0.0001 %	6.32 dB	0.01 %					
	6.38 dB	0.001 %					
Peak	28.89 dBm						
		0.0001 % 0.00 dB Info BW 20.	000 MHz		20.0	0 dB	Loc

## 20 M\_PAR\_Mid\_64QAM\_FullRB



	upling DC Co	out Z: 50 Ω orr CCorr eq Ref: Int (S)	Atten: 16 dB Preamp: Off	Trig: Free Run #IF Gain: Low	Center Freq: 680.500000 MHz Counts: 2.00 M/2.00 Mpt Radio Std: None	Ref Level Offset 26.83 dB	Y Scale
atrics	•	2 Graph				On Off	Attenuati
		Gaussi	an				Signal Pa
Average Po		100 %					
	20.55 dBm						
	44.22 % at 0 dB	10 %					
10.0 %	3.00 dB						
1.0 %	5.05 dB	1.%					
0.1 %	6.00 dB			$\setminus$			
0.01 %	6.48 dB	0.1 %					
0.001 %	6.66 dB						
0.0001 %	6.73 dB	0.01 %					
	6.78 dB	0.001 %					
Peak	27.33 dBm						
		0.0001 % 0.00 dB			20.0	0 dB	Loc
		Info BW 2	20.000 MHz				

# 20 M\_PAR\_Mid\_256QAM\_FullRB





cupied BW	+						Frequency	
VSIGHT Input RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Free Avg Hold: 5 Radio Std:		680.50	Frequency 0000 MHz	Settings
sraph v ale/Div 10.0 dB		Ref LvI Offset 26 Ref Value 40.00				Span 10.000	MHz	
<b>g</b>		Kel value 40.00				CF Step 1.0000	o 00 MHz	
.0	1 mm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	maniferra Constante			Aut Ma		
0	4 1				PEAK	Freq Of 0 Hz	fset	
.0								
nter 680.500 MHz es BW 100.00 kHz		#Video BW 390.	00 kHz	Sv	Span 10 MH weep 16.7 ms (1001 pts			
letrics v								
Occupied Bandwidth 4.65	60 MHz		Total Power		34.7 dBm			
Transmit Freq Error x dB Bandwidth	-91.846 k 5.176 M		% of OBW Pow x dB	ver	99.00 % -26.00 dB			Loc
	May 21, 2024 11:05:03 AM							

## 5 M\_OBW\_Mid\_BPSK\_FullRB





EYSIGHT Input RF Coupling: DC	Input Z: 50 Q					Ö		
Align: Auto	Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 680.500000 Avg Hold: 500/500 Radio Std: None	MHz	680.500	requency 000 MHz	Settings
Graph v		Ref LvI Offset 26				Span 10.000 I	ИHz	
cale/Div 10.0 dB		Ref Value 40.00 (	JBM			CF Step 1.00000	0 MHz	
0.0	1 marine	mar and a second and a second	and and shall and form			Auto Man		
0.0 0.0				monormen	PEAK	Freq Offs 0 Hz	et	
enter 680.500 MHz Res BW 100.00 kHz		#Video BW 390.0	00 kHz	Sweep 16.7 m	pan 10 MHz s (1001 pts)			
Metrics <b>v</b>								
Occupied Bandwidth								
	52 MHz		Total Power	34.4 d				
Transmit Freq Error x dB Bandwidth	-106.46 kl 5.198 Mi		% of OBW Pov x dB	ver 99.00 -26.00				Loca

## 5 M\_OBW\_Mid\_QPSK\_FullRB





pectrum Analyzer 1	+					\$	Frequency	· • E
EYSIGHT Input RF L + Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 68 Avg Hold: 500/3 Radio Std: Non	500	680.50	Frequency 0000 MHz	Settings
Graph v		Ref LvI Offset 26 Ref Value 40.00				Span 10.000	MHz	
<b>9</b> 0.0		Ref Value 40.00				CF Step 1.0000	) 00 MHz	
).0 ).0 00		all and a second	an the gradh an arthur	www.		Aut Ma		
0.0	par			- Andrew -	PEAK	Freq Of 0 Hz	fset	
0.0								
nter 680.500 MHz es BW 100.00 kHz		#Video BW 390.	00 kHz	Swee	Span 10 MH p 16.7 ms (1001 pts			
Metrics ¥								
Occupied Bandwidth								
	12 MHz		Total Power		33.9 dBm			
Transmit Freq Error x dB Bandwidth	-105.64 ki 5.213 Mi		% of OBW Pow x dB	ver	99.00 % -26.00 dB			Loc
1 5 6 T	May 21, 2024							

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





pectrum Analyzer 1	+					\$	Frequency	
EYSIGHT Input: RF L + Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.5 Avg Hold: 500/500 Radio Std: None	00000 MHz	680.500	requency 0000 MHz	Settings
Graph ▼ cale/Div 10.0 dB		Ref LvI Offset 26				Span 10.000	MHz	
og 0.0		Ref Value 40.00				CF Step 1.00000	Second Revenues	
0.0				~~~		Auto Mar		
0.0 and a subsection of the				And and a second second	PEAK	Freq Off 0 Hz	set	
0.0								
enter 680.500 MHz Res BW 100.00 kHz		#Video BW 390.	00 kHz	Sweep 1	Span 10 MHz 6.7 ms (1001 pts)			
Metrics v								
Occupied Bandwidth	92 MHz		Total Power		33.5 dBm			
Transmit Freq Error	-73.133 ki		% of OBW Pov	ver	99.00 %			
x dB Bandwidth	4.934 M	HZ	x dB		26.00 dB			Loca
	May 21, 2024 11:06:34 AM	$\odot$						

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





Spectrum Analyzer 1 Occupied BW	+			Frequency	- <b>1</b> []
KEYSIGHT       Input: RF         R L       →→       Coupling: DC         Align: Auto       Auto	Input Ζ: 50 Ω Atten: 16 dB     Corr CCorr Preamp: Off     Freq Ref: Int (S)     NFE: Adaptive	Gate: Off Avg Ho	Freq: 680.500000 MHz Id: 500/500 Std: None	Center Frequency 680.500000 MHz	Settings
1 Graph T Scale/Div 10.0 dB Log 20.0	Ref Lvi Offset Ref Value 40.0			Span 10.000 MHz CF Step 1.000000 MHz	
10.0 0.00 -10.0 -20.0 -30.0 -40.0			PEAK	Man Freq Offset 0 Hz	
-50.0 Center 680.500 MHz #Res BW 100.00 kHz	#Video BW 39	0.00 kHz	Span 10 MHz Sweep 16.7 ms (1001 pts)		
Occupied Bandwidth	25 MHz	Total Power	32.1 dBm		
Transmit Freq Error x dB Bandwidth	-148.52 kHz 5.183 MHz	% of OBW Power x dB	99.00 % -26.00 dB		Local
<b>まって</b>	May 21, 2024 11:07:07 AM				

## 5 M\_OBW\_Mid\_256QAM\_FullRB





Ceupied BW         EYSIGHT         Input: RF         L         Aign: Auto         PASS	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.500000 MHz Avg Hold: 500/500 Radio Std: None	Frequency Center Frequency 680.500000 MHz	Settings
Graph v cale/Div 10.0 dB		Ref LvI Offset 26 Ref Value 40.00			Span 20.000 MHz CF Step	
<b>0</b> 0 0 0 0 0 0 0 0 0	Juna	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	w	~	2.000000 MHz Auto Man	
00 0.0 0.0 0.0 0.0				PEAK	Freq Offset 0 Hz	
0.0 nter 680.50 MHz es BW 200.00 kHz		#Video BW 820.	00 kHz	Span 20 MHz Sweep 1.00 ms (1001 pts)		
Itetrics	h 113 MHz		Total Power	32.7 dBm		
Transmit Freq Error x dB Bandwidth	-204.30 9.985 M		% of OBW Powe x dB	er 99.00 % -26.00 dB		Loo
	? May 21, 2024 11:12:39 AM					ŀ

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





EYSIGHT Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.500000 MHz Avg[Hold: 500/500 Radio Std: None	Center Frequency 680.500000 MHz	Settings
Graph 🔹	AND DESCRIPTION OF AND ADDRESS	Ref LvI Offset 26			Span 20.000 MHz	
ale/Div 10.0 dB		Ref Value 40.00	dBm		CF Step 2.000000 MHz	
0.0	Junan	man management	mann	~~	Auto Man	
0.0	and the second			PE	Freq Offset 0 Hz	
0.0						
nter 680.50 MHz es BW 200.00 kHz		#Video BW 820.	00 kHz	Span 20 Mi Sweep 1.00 ms (1001 pt		
Metrics v						
Occupied Bandwidt 8.9	h 1977 MHz		Total Power	32.2 dBm		
Transmit Freq Error x dB Bandwidth	-199.53 9.952 M		% of OBW Pow x dB	ver 99.00 % -26.00 dB		Lo

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





ccupied BW	+	o	T	000 F00000 NUL	Freq	luency 🔻 🛃
EYSIGHT Input: RF L + Align: Auto	Input Z: 50 Corr CCorr Freq Ref: In NFE: Adapt	Preamp: Off at (S)	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.500000 MHz Avg Hold: 500/500 Radio Std: None	Center Frequenc 680.500000 MH	Settings
Graph T		Ref LvI Offset 26 Ref Value 40.00			Span 20.000 MHz	
<b>bg</b>		Rei Value 40.00			CF Step 2.000000 MHz	
0.0					Auto Man	
0.0	more			PEAK	Freq Offset 0 Hz	
0.0						
o o Inter 680.50 MHz les BW 200.00 kHz		#Video BW 820.	00 kHz	Span 20 MHz Sweep 1.00 ms (1001 pts		
Metrics <b>v</b>						
Occupied Bandwid	th 0045 MHz		Total Power	31.1 dBm		
Transmit Freq Erro	r -199	.83 kHz	% of OBW Pow	er 99.00 %		
x dB Bandwidth	9.9	62 MHz	x dB	-26.00 dB		Loc
		2024 💬 🛆				

## 10 M\_OBW\_Mid\_16QAM\_FullRB





Spectrum Analyzer 1 Occupied BW	+						Frequency	· • 2
KEYSIGHT     Input: RF       Coupling: DC       Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.5 Avg Hold: 500/500 Radio Std: None	00000 MHz	680.50	Frequency 0000 MHz	Settings
Graph v		Ref LvI Offset 26 Ref Value 40.00				Span 20.000	MHz	
		Ref Value 40.00				CF Step 2.0000	o 00 MHz	
0.0	Januar	Marken Marken and Marken		~n		Au Ma		
10.0 20.0 - Mar mar da harrow	and			Jumm	PEAK	Freq Of 0 Hz	fset	
0.0								
60.0 enter 680.50 MHz Res BW 200.00 kHz		#Video BW 820.	00 kHz	Sweep 1	Span 20 MHz .00 ms (1001 pts)			
Metrics v								
Occupied Bandwidt								
9.0 Transmit Freq Error	175 MHz -198.29 I	d la	Total Power % of OBW Pow		0.9 dBm 99.00 %			
x dB Bandwidth	9.959 N		x dB		26.00 dB			Loca
<b>ま</b> りで	<b>?</b> May 21, 2024 11:13:45 AM	$\bigcirc \land$						

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





pectrum Analyzer 1	+				₽	Frequency	· • 🖧
KEYSIGHT     Input: RF       Coupling: DC       Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 680.500000 MHz Avg Hold: 500/500 Radio Std: None	president and a second s	Frequency 0000 MHz	Settings
Graph 🔹		Ref LvI Offset 20			Span 20.000	MHz	
cale/Div 10.0 dB .og 30.0		Ref Value 40.00	dBm		CF Step 2.0000	o 00 MHz	
20.0	Jamman	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	A construction		Au Ma		
10.0 20.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	w			hunsman wowen we	EAK 0 Hz	fset	
40.0							
enter 680.50 MHz Res BW 200.00 kHz		#Video BW 820.	00 kHz	Span 20 S Sweep 1.00 ms (1001			
Metrics v							
Occupied Bandwidth 8.97	36 MHz		Total Power	28.6 dBm			
Transmit Freq Error x dB Bandwidth	-201.04 k 9.871 M		% of OBW Pow x dB				Loca
	May 21, 2024						
	May 21, 2024 11:14:07 AM	$\square$		🔣 🔛 🗎			

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





Spectrum Analyzer 1	+				Frequency	· • 🔆
KEYSIGHT Input: RF R L +++ Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.500000 MHz Avg Hold: 500/500 Radio Std: None	Center Frequency 680.500000 MHz	Settings
1 Graph v Scale/Div 10.0 dB Log 30 0		Ref LvI Offset 26 Ref Value 40.00 (			Span 30.000 MHz CF Step 3.000000 MHz	
20.0	former	and the second		~	Auto Man	
10.0 20.0 30.0				PE.	RC Freq Offset Ra 0 Hz	
40.0 50.0 Center 680.50 MHz Res BW 300.00 kHz	#	Video BW 1.200	00 MHz	Span 30 M Sweep 1.00 ms (1001 p		
? Metrics Y				Sweep 1.00 ms (1001 p	5)	
Occupied Bandwidth	1 438 MHz		Total Power	32.7 dBm		
Transmit Freq Error x dB Bandwidth	-380.85 kł 14.67 Mł		% of OBW Pow x dB			Local
4 h C 🗌	May 21, 2024 11:19:39 AM	$\square$				

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





cupied BW		17.000	44	700 F.00 D.00	0			Frequency	
	oupling DC Co ign: Auto Fre	out Z: 50 Ω orr CCorr eq Ref: Int (S) Έ: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Avg Hold: 500 Radio Std: No			Frequency 0000 MHz	Settings
Graph ale/Div 10.0 dE	•	R	ef LvI Offset 26 ef Value 40.00 d				Span 30.000	MHz	
<b>g</b>			er value 40.00 d	JBM			CF Step 3.0000	o 00 MHz	
.0		ground have been	mana	want an and a star	my		Au Ma		
0 and any and a	manna				therm	PEAN	Freq Of 0 Hz	fset	
0									
nter 680.50 MH		#\	/ideo BW 1.200	0 MHz	Swe	Span 30 MH ep 1.00 ms (1001 pts			
letrics	*								
Occupied	d Bandwidth								
	13.467 MH	z		Total Power		32.4 dBm			
Transmit x dB Ban	Freq Error	-368.14 kH: 14.67 MH:		% of OBW Pow x dB	/er	99.00 % -26.00 dB			Loc
		lay 21, 2024 🖉							

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





Spectrum Analyzer 1 Occupied BW	+						Frequency	- 湯
KEYSIGHT     Input: RF       RL     →     Coupling: DC       Align: Auto     Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 6 Avg Hold: 500 Radio Std: Nor		president and the second second	Frequency 00000 MHz	Settings
1 Graph 🔻		Ref LvI Offset 26				30.000	) MHz	
Scale/Div 10.0 dB		Ref Value 40.00	dBm			CF Ste 3.0000	p )00 MHz	
20.0	francourses	mension	and a start and a start and a start a s	m		AL Ma		
-10.0	wat			human	PEAK	Freq O 0 Hz	ffset	
-30.0								
Center 680.50 MHz #Res BW 300.00 kHz	#	Video BW 1.200	00 MHz	Swee	Span 30 MHz pp 1.00 ms (1001 pts)			
2 Metrics V								
Occupied Bandwidth	38 MHz		Total Power		31.4 dBm			
Transmit Freq Error x dB Bandwidth	-387.22 kł 14.51 Mł		% of OBW Pow x dB	ver	99.00 % -26.00 dB			Local
<b>ニット</b>	May 21, 2024 11:20:22 AM	$\square$						

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





EYSIGHT Input: RF L +++ Coupling: DC Align: Auto	H Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Fred Avg Hold: 5 Radio Std: I			Frequency 0000 MHz	Settings
Graph v		Ref LvI Offset 26 Ref Value 40.00				Span 30.000	MHz	
og 0.0	0	Kel Value 40.00				CF Step 3.0000		
0.0	homen		March Jan Marchan	m		Aut Ma		
0.0 methoderstandersellighters	hall			formerel	Manna PEAK	Freq Off 0 Hz	set	
0.0								
enter 680.50 MHz Res BW 300.00 kHz	· ·	#Video BW 1.200	0 MHz	Sv	Span 30 MH: veep 1.00 ms (1001 pts			
Metrics v								
Occupied Bandwidt 13.	h 643 MHz		Total Power		32.2 dBm			
Transmit Freq Error x dB Bandwidth	-528.53 14.53 M		% of OBW Pow x dB	ver	99.00 % -26.00 dB			Loca
	<b>?</b> May 21, 2024 11:20:44 AM	(						

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





ectrum Analyzer 1	+				₽	Frequency	
EYSIGHT Input: RF L + Auto PASS	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 680.500000 MHz Avg Hold: 500/500 Radio Std: None	680.50	Frequency 0000 MHz	Settings
Graph 🔹		Ref LvI Offset 26			Span 30.000	MHz	
ale/Div 10.0 dB		Ref Value 40.00			CF Step 3.0000	o 00 MHz	
0.0	fluman		m	~	Au Ma		
).0 0.0 0.0	mal			hanna	PEAK 0 Hz	fset	
0.0 0.0							
enter 680.50 MHz Res BW 300.00 kHz		#Video BW 1.200	00 MHz	Span 3 Sweep 1.00 ms (10	30 MHz 01 pts)		
Metrics •							
13.6	634 MHz -532.67		Total Power	30.9 dBm			
Transmit Freg Error		KHZ	% of OBW Pov	ver 99.00 %			

## 15 M\_OBW\_Mid\_256QAM\_FullRB





Spectrum Analyzer 1	+			_			Frequency	- 迷
KEYSIGHT     Input: RF       Coupling: DC     Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680 Avg Hold: 500/50 Radio Std: None			Frequency 0000 MHz	Settings
Graph v scale/Div 10.0 dB	F	tef LvI Offset 26 tef Value 40.00				Span 40.000 CF Step		
000 20.0 10.0			mun promo	~		4.0000 Aut Ma		
0.00 10.0 20.0 hMh	rund -			termen	PEAK	Freq Of 0 Hz	fset	
50.0 Senter 680.50 MHz Res BW 390.00 kHz	#	Video BW 1.600	00 MHz	Sweep	Span 40 MHz 1.00 ms (1001 pts)			
Metrics <b>v</b>								
Occupied Bandwidth 17.8	83 MHz		Total Power		33.0 dBm			
Transmit Freq Error x dB Bandwidth	-560.48 kH 19.20 MH		% of OBW Pow x dB	er	99.00 % -26.00 dB			Local
<b>1</b> 7 7 <b>1</b>	May 21, 2024 11:26:42 AM							

### 20 M\_OBW\_Mid\_BPSK\_FullRB





	+					₽	Frequency	
EYSIGHT Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq: 680.500 Avg Hold: 500/500 Radio Std: None	000 MHz	provide and a second se	Frequency 0000 MHz	Settings
Graph v		Ref LvI Offset 26				Span 40.000	MHz	
ale/Div 10.0 dB		Ref Value 40.00	dBm			CF Step 4.0000	o 00 MHz	
0.0	Jamasan	minante	han and the second s	~		Aut Ma		
0.0	w			Lanenpoor	PEAK	Freq Of 0 Hz	fset	
enter 680.50 MHz Res BW 390.00 kHz		#Video BW 1.600	00 MHz	Sweep 1.0	Span 40 MHz 0 ms (1001 pts)			
Metrics v								
Occupied Bandwidth								
17.93	32 MHz		Total Power	32.	4 dBm			
Transmit Freq Error x dB Bandwidth	-571.29 kł 19.31 Mł		% of OBW Pow x dB		9.00 % .00 dB			Loc

### 20 M\_OBW\_Mid\_QPSK\_FullRB





ectrum Analyzer 1 cupied BW EYSIGHT Input: RF			: 16 dB	Trig: Free Run		680.500000 MHz	Cent	Frequency er Frequency	
Coupling: D Align: Auto	Freq F	Corr Prea tef: Int (S) Adaptive	mp. Off	Gate: Off #IF Gain: Low	Avg Hold: 5 Radio Std: 1		680.	500000 MHz	Settings
Graph 🔹			Offset 26.83				Span 40.0	00 MHz	
ale/Div 10.0 dB		Ref Va	ue 40.00 dBi	m			CF S 4.00	tep 0000 MHz	
0.0	ſ	www.hunonaw	adament and a	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~			Auto Man	
0.0 motor monument	mound				hours	mmm	PEAK	Offset	
0.0									
nter 680.50 MHz es BW 390.00 kHz		#Video	BW 1.6000 I	MHz	Sv	Span 40 /eep 1.00 ms (1001			
Metrics <b>v</b>									
Occupied Bandw									
	7.897 MHz			Total Power		31.5 dBm			
Transmit Freq Err x dB Bandwidth	ror	-565.00 kHz 19.08 MHz		% of OBW Pow x dB	er	99.00 % -26.00 dB			Loca
	Adau	24 2024	A.						
	May May	21, 2024 7:26 AM							

### 20 M\_OBW\_Mid\_16QAM\_FullRB





	Input Z: 50 Ω Corr CCorr	Atten: 16 dB Preamp: Off	Trig: Free Run Gate: Off	Center Freq Avg Hold: 50	680.500000 MHz 0/500		er Frequency	Settings
Align: Auto	Freq Ref: Int (S) NFE: Adaptive		#IF Gain: Low	Radio Std: N	lone	680.	500000 MHz	
Graph 🔻	The Prospere	Ref LvI Offset 26				Span 40.0	00 MHz	
ale/Div 10.0 dB		Ref Value 40.00 o	iBm			CF S 4.00	tep 0000 MHz	
0.0	Januar	-or	mmmmulan	-7			Auto Man	
0.0 mathematication of the strength	md			Inerlyn	un u	PEAK 0 Hz	Offset	
0.0								
nter 680.50 MHz es BW 390.00 kHz		#Video BW 1.600	0 MHz	Sw	Span 40 eep 1.00 ms (100			
Netrics V								
Occupied Bandwidth								
17.9	41 MHz		Total Power		30.8 dBm			
Transmit Freq Error x dB Bandwidth	-561.88 19.28 M		% of OBW Pow x dB	ver	99.00 % -26.00 dB			Loc

### 20 M\_OBW\_Mid\_64QAM\_FullRB





	pling: DC C n: Auto F		Atten: 16 dB Preamp. Off ef LvI Offset 26. ef Value 40.00 d		Center Freq: Avg Hold: 50 Radio Std: N		president and a second second	Frequency 0000 MHz	Settings
Graph eale/Div 10.0 dB 90 0.0 0.0							and the second second	A di Jan	
<b>9</b> 0.0 0.0 0.0		K K	er value 40.00 d	Bm			Long and a state of the	MHZ	
0.0					Ti		CF Step 4.0000	o 00 MHz	
00		formenter	m		7		Aut Ma		
).0 .0 .0	warman of				how	PEAK	Freq Off 0 Hz	fset	
0.0									
nter 680.50 MHz es BW 390.00 kH		#	video BW 1.6000	0 MHz	Swe	Span 40 MHz ep 1.00 ms (1001 pts)			
Metrics Occupied	▼ Bandwidth 17.946 MI	HZ		Total Power		29.0 dBm			
Transmit F x dB Band	req Error	-530.77 kH 19.17 MH		% of OBW Pow x dB	er	99.00 % -26.00 dB			Loc

### 20 M\_OBW\_Mid\_256QAM\_FullRB



ectrum Ana ept SA	* 1991 (SA		F			_		\$	Frequency	
YSIGH1 -≁-	Input RF Coupling Align: Au	DC	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WWWWW</del> AAAAAA		requency 00000 GHz	Settings
ectrum le/Div 10	dB			Ref Level 6.00	dBm	Mk	r1 3.767 8 GHz -74.482 dBm	9.9700	0000 GHz	
	2								ept Span o Span	
									ull Span	
								Start Fre 30.000	eq 000 MHz	
				1			RMS	Stop Fre	eq 000000 GHz	
0 manufater		in the second	والتحييلية ومستطرطة فيتورد والمالين والم	-		والمستعلم والمستعلم فالمتعالم			TO TUNE	
t 30 MHz s BW 1.0	MHz			#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)			
arker Table	1								0000 MHz	
Mode 1 N	Trace	Scale	X 3.767 8 GHz	Y -74.48 dBm	Function	Function Width	Function Value	Aut Ma		
2 N 3	1	f	663.6 MHz	-2.125 dBm				Freq Off 0 Hz	set	
4 5 6								X Axis S Log Lin		Lo
5	2	7	May 21, 2024 11:04:13 AM	$\square$				Signal T		

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



	Input F Couplir Align: A	ng: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WW WW W</del> A A A A A A	Center Frequency 5.015000000 GHz Span	Settings
ipectrum ale/Div 10 c	18 2	•		Ref Level 6.00	dBm	Mk	r1 9.689 9 GHz -73.753 dBm	9.97000000 GHz	
.0								Full Span	
1.0 1.0								Start Freq 30.000000 MHz	
1.0 1.0 1.0			والمحفور والمتعامل والإطرار والمحادث	من شن هرينه بالا	www	والعزرفاني والازر الأمر المراجع	1	Stop Freq 10.000000000 GHz	
art 30 MHz es BW 1.0 I	NHz			#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)		
Marker Table		•						997.000000 MHz	
Mode	Trace	Scale	X 9.689 9 GHz	Y -73.75 dBm	Function	Function Width	Function Value	Man 📃	
1 N 2 N 3	1	f	9.689 9 GHZ 678.5 MHz	-73.75 dBm -2.475 dBm				Freq Offset 0 Hz	
4 5 6								X Axis Scale Log Lin	Lor

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



oectrum		Freq Ref: Int (S) NFE: Adaptive		Gate: Off IF Gain: Low Sig Track: Off	Trig: Free Run	A <del>ww ww w</del>	Center Frequence 5.015000000 GI	
ectrum e/Div 10 dB	•		Ref Level 6.00 o	dBm	Mk	r1 9.699 9 GHz -74.593 dBm	0.010000000011	
) ) )							Full Span Start Freq 30.000000 MHz	
	منعهميميم	a in S. J. Housing and Market and Market	الم الماني المريد الم	والاريكان المناسبة	والمرافل بالمراجع	1 	Stop Freq 10.00000000 (	GHz
t 30 MHz s BW 1.0 MHz arker Table	•		#Video BW 3.0	MHz	Sweep <sup>,</sup>	Stop 10.000 GHz ~18.7 ms (20001 pts)		
Mode Tra	feel a	X 9.699 9 GHz	Y -74.59 dBm	Function F	unction Width	Function Value	Auto Man Freq Offset	
2 N 1 3 4 5 6	f	693.5 MHz	-2.217 dBm				0 Hz X Axis Scale	-

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



ept SA		- 1 C	+ Input Ζ: 50 Ω	#Atten: 16 dB	PNO: Fast				Frequency	
YSIGH - <b>→</b> -	Couplin Align: A	ng: DC	Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS 1 2 3 4 5 6 A WW WW W A A A A A A A	5.0150	Frequency 00000 GHz	Settings
ectrum		•				Mk	r1 9.690 9 GHz	Span 9.9700	0000 GHz	
le/Div 10	dB 2			Ref Level 6.00	dBm		-73.875 dBm		ept Span ro Span	
								F	ull Span	
								Start Fr 30.000	eq 000 MHz	
0							ما بر ما بر کار ایک ما	Stop Fre 10.000	eq 000000 GHz	
t 30 MHz			(A LU CHING ) / AN HUNDE AND	#Video BW 3.0	MHz		Stop 10.000 GHz		TO TUNE	
s BW 1.0 arker Table						Sweep	~18.7 ms (20001 pts)	and the second second	) 0000 MHz	
Mode	Trace	Scale	x	Y	Function	Function Width	Function Value	Au Ma		
1 N	1	f	9.690 9 GHz	-73.87 dBm	runcuon		r uncuon value			
2 N 3	1	f	663.6 MHz	-2.142 dBm				Freq Of 0 Hz	iset	
5								X Axis S Lo Lir	9	Lo
6							A CALL STOLEN AND A C			

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



	Input: F Couplin Align: A	ig: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO:Fast Gate:Off IF Gain:Low Sig Track:Off	Trig: Free Run	ver (RMS <mark>123456</mark> A <del>WW WW W</del> A A A A A A	Center Frequency 5.015000000 GHz Span	Setting
bectrum Ie/Div 10 df		•		Ref Level 6.00	dBm	Mkr	1 3.780 7 GHz -73.410 dBm	9.97000000 GHz	
0 0 0								Full Span Start Freq 30.000000 MHz	
	-			1	-	بالأور هارية الزرمان بعلي	RMS . في الله راديم الله المحيد الله والله	Stop Freq 10.00000000 GHz	
t 30 MHz s BW 1.0 M arker Table	Hz	•		#Video BW 3.0	MHz	Sweep -	Stop 10.000 GHz -18.7 ms (20001 pts)	CF Step 997.000000 MHz	
Mode 1 N 2 N	Trace 1	Scale f	X 3.780 7 GHz 676.1 MHz	Y -73.41 dBm -2.415 dBm	Function	Function Width	Function Value	Auto Man Freq Offset	
3 4 5 6								0 Hz X Axis Scale Log Lin	Lo

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



YSIGHT	Input F Couplin Align: A	ig: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WW WW W</del> A A A A A A	Center Frequency 5.015000000 GHz	Setting
ectrum e/Div 10 c	ів 2			Ref Level 6.00	dBm	Mk	r1 9.927 2 GHz -74.634 dBm	0.0700000000112	
								Full Span Start Freq 30.000000 MHz	
						الرداني ال <sub>ح</sub> نارية الرومي		Stop Freq 10.00000000 GHz AUTO TUNE	
30 MHz BW 1.0 P Irker Table	MHz	Y		#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)		
Mode 1 N 2 N 3	Trace 1 1	Scale f f	X 9.927 2 GHz 688.5 MHz	Y -74.63 dBm -2.509 dBm	Function	Function Width	Function Value	Man Freq Offset 0 Hz	
5 5								X Axis Scale Log Lin	L

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



YSIGH	nput F	RF	Input Z: 50 Ω	#Atten: 16 dB	PNO: Fast	#Avg Type: Po	wer (RMS 1 2 3 4 5 6	Center Fre		
+	Couplin Align: A		Corr CCorr Freq Ref. Int (S)	Preamp: Off	Gate: Off IF Gain: Low	Trig: Free Run		5.015000		Settings
		110	NFE: Adaptive		Sig Track: Off			Span		
ectrum						MK	r1 3.782 7 GHz	9.970000	00 GHz	
le/Div 10	dB 2			Ref Level 6.00	dBm		-73.939 dBm	Swep Zero	t Span Span	
0								Ful	Span	
0								Start Freq 30.00000	0 MHz	
0				1	tate of Albert	and advant add tob	RMS	Stop Freq 10.00000	0000 GHz	
	internation be	and a second						AUTO	TUNE	
t 30 MHz s BW 1.0	MHz			#Video BW 3.0	MHz	Sween	Stop 10.000 GHz ~18.7 ms (20001 pts)	CF Step		
arker Table		•				Uncep	1017 1115 (20001 pto)	997.0000	00 MHz	
								Auto		
Mode 1 N	Trace	Scale	X 3.782 7 GHz	Y -73.94 dBm	Function	Function Width	Function Value	Man		
2 N 3	1	f	663.6 MHz	-1.942 dBm				Freq Offse 0 Hz	t	
4 5 6								X Axis Sca Log	ile	Lo
								Lin		

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



ectrum le/Div 10 dB	•			IF Gain: Low Sig Track: Off		A <del>ww ww w</del>	5.015000000 GHz	Setting
) 12			Ref Level 6.00	dBm	Mk	r1 5.227 9 GHz -73.893 dBm	Span 9.97000000 GHz Swept Span Zero Span	
							Full Span	
							Start Freq 30.000000 MHz	
	من العام المراجع الم	يطيرون ومعاولة والتراجع		ا مالى الارالي		RMS	Stop Freq 10.000000000 GHz	
t 30 MHz s BW 1.0 MH:	z		#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)	AUTO TUNE CF Step	
arker Table	•						997.000000 MHz	
Mode Tr	ace Scale	X 5.227 9 GHz	Y -73.89 dBm	Function	Function Width	Function Value	Auto Man	
2 N 3	1 f	673.6 MHz	-1.824 dBm				Freq Offset 0 Hz	
5 							X Axis Scale Log Lin	L

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



YSIGHT	Input F Couplin Align: A	ig: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WWWW</del> AAAAAA		requency 0000 GHz	Settings
pectrum ale/Div 10 d		•		Ref Level 6.00		Mk	r1 9.964 1 GHz -73.980 dBm	Swe	000 GHz pt Span Span	
								Fu	ll Span	
0								Start Free 30.0000		
0 0 0 0 rost-ukteer 1		10 10 10 10 10 10 10 10 10 10 10 10 10 1	م مین اینده بر اینده بر اینده بر اینده بر اینده بر اینده بر اینده اینده اینده بر اینده بر اینده بر اینده بر اینده	الم الخليرية في الم	المستعلم المستعلم	م النام الم	R.1.	Stop Free 10.0000	1 00000 GHz	
t 30 MHz s BW 1.0 N				#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)		O TUNE	
arker Table		•							000 MHz	
1 N 2 N	Trace 1 1	Scale f f	X 9.964 1 GHz 683.5 MHz	Y -73.98 dBm -2.430 dBm	Function	Function Width	Function Value	Auto Man Freq Offs 0 Hz		
3 4 5 6								X Axis So Log	ale	Lo

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



	E least DE	Input Z: 50 Q	#Atten: 16 dB	PNO: Fast	#Aug Tuno: Do		\$		
YSIGH ·≁·	Input: RF Coupling: DC Align: Auto	Corr CCorr Freq Ref. Int (S) NFE: Adaptive	Preamp: Off	Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS 1 2 3 4 5 6 A WW WW W A A A A A A	Center Fre 5.015000		Setting
	11	NFL. Auapuve		Sig Hack, Oil			Span		
ectrum	•				MK	r1 9.146 6 GHz	9.970000	00 GHz	
e/Div 10			Ref Level 6.00	dBm		-74.352 dBm		ot Span	
J V	2						Zero	Span	
)							Ful	l Span	
ý							Start Freq		
							30.00000	0 MHz	
)						3 <b>4</b>	Stop Freq		
ő —						RMS	10.00000	0000 GHz	
0 martinetter		and the second designed and a second designed and the second designed as the second designe		وتعالم والجالكي فاقص الجين	and a stand and	الإدارية المحاطية الإراقية المراقع			
			#Video BW 3.0	MH7		Stop 10.000 GHz	AUTO	O TUNE	
t 30 MHz									
	MHz		#1060 811 5.0		Sweep	~18.7 ms (20001 pts)	CF Step		
s BW 1.0	MHz v		#VIGEO BIV 5.0		Sweep		CF Step 997.0000	00 MHz	
s BW 1.0 arker Table	٠					~18.7 ms (20001 pts)	997.0000 Auto	00 MHz	
t 30 MHz s BW 1.0 arker Table Mode			Y	Function F	Sweep function Width		997.0000	00 MHz	
s BW 1.0 arker Table Mode 1 N	Trace Scale	9.146 6 GHz	Y -74.35 dBm	Function F		~18.7 ms (20001 pts)	997.0000 Auto		
arker Table Mode 1 N 2 N	٠		Y -74.35 dBm	Function F		~18.7 ms (20001 pts)	997.0000 Auto Man		
s BW 1.0 arker Table Mode 1 N 2 N 3 4	Trace Scale	9.146 6 GHz	Y -74.35 dBm	Function F		~18.7 ms (20001 pts)	997.0000 Auto Man Freq Offse 0 Hz	et	Lo
s BW 1.0 arker Table Mode 1 N 2 N 3 4 5	Trace Scale	9.146 6 GHz	Y -74.35 dBm	Function F		~18.7 ms (20001 pts)	997.0000 Auto Man Freq Offse 0 Hz X Axis Sca	et	Lo
s BW 1.0 arker Table Mode 1 N	Trace Scale	9.146 6 GHz	Y -74.35 dBm	Function F		~18.7 ms (20001 pts)	997.0000 Auto Man Freq Offse 0 Hz	et	Lo

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



	Input F Couplin Align: A	ig: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WWWW</del> W AAAAAA	Center Frequency 5.015000000 GHz Span	Setting
bectrum Ie/Div 10 d		•		Ref Level 6.00	dBm	Mk	r1 8.266 2 GHz -73.447 dBm	9.97000000 GHz	
								Full Span	
								Start Freq 30.000000 MHz	
	aladaren der	ويفر ومعرور المناول	مىلىكى بىرىمايىلىدى تەرىپىرىنىي	المذعورة وياحت المح		ية المراجعة المراجع ال	Al RMS	Stop Freq 10.000000000 GHz	
t 30 MHz s BW 1.0 I	NHz			#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)		
arker Table		*						997.000000 MHz	
Mode	Trace	Scale	X	Y -73.45 dBm	Function	Function Width	Function Value	Man	
1 N 2 N 3	1	f	8.266 2 GHz 671.1 MHz	-2.207 dBm				Freq Offset 0 Hz	
4 5 6								X Axis Scale Log Lin	Lo

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



EYSIG	HT	Input F Couplir Align: A	g: DC	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type. Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WW WW W</del> A A A A A A	Center Frequ 5.01500000	Setu	ings
Spectrum cale/Div			•		Ref Level 6.00	dBm	Mk	r1 3.802 1 GHz -73.946 dBm	0.07000000	span	
.00 4.0 4.0	-								Full S	pan	
34.0 44.0 54.0									Start Freq 30.000000 1	ИНz	
64.0 74.0 84.0		ر م		المراجع والمحالية وح	1	-	• • • • • • • • • • • • • • • • • • •	RMS	Stop Freq 10.0000000	00 GHz	
tart 30 M Res BW 1	IHz	IHz			#Video BW 3.0	MHz	Sweep -	Stop 10.000 GHz ~18.7 ms (20001 pts)		UNE	
Marker Ta			•					-	997.000000 Auto	MHz	
Moi 1 N		Trace	Scale	X 3.802 1 GHz	Y -73.95 dBm	Function	Function Width	Function Value	Man		
2 N 3		1	f	678.5 MHz	-2.670 dBm				Freq Offset 0 Hz		
4 5 6									X Axis Scale Log Lin		Lo
15	) (	2		May 21, 2024 11:30:48 AM					Signal Track		

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



KEYSIGHT RL +++ M	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Close Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	ower (RMS <mark>1</mark> 234 A WWV A A A A	₩₩ 6 A A A	enter Frequency 62.950000 MHz pan	Settings
Spectrum cale/Div 10 d	B		Ref LvI Offset 26 Ref Level 26.83 d		Mkr1	663.000 0 M -22.744 d	MHZ 1	pan 00.000000 kHz Swept Span Zero Span	
6.8								Full Span	
.83								tart Freq 62.900000 MHz	
3.2						DL1 -13.0		top Freq i63.000000 MHz	
3.2				****	***		Raise	AUTO TUNE	
3.2		had alway alway of the little of					100	F Step 0.000 kHz	
i3.2 i3.2								Auto Man	
33.2							1000	req Offset Hz	
art 662.90000 Res BW 30 kH			#Video BW 100	kHz	#Sv	Stop 663.00000 veep 1.00 s (100	MHz	Axis Scale Log Lin	Loc
5		May 21, 2024 11:03:31 AM						ignal Track pan Zoom)	

### 5 M\_Band Edge\_Low\_BPSK\_1RB(1)



RL     Imput: RF       RL     Imput: RF       Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Rur	ower (RMS <mark>123456</mark> AWWWWW AAAAAA	Center Frequency 661.450000 MHz Span	Settings
Spectrum v cale/Div 10 dB		Ref LvI Offset 26 Ref Level 26.83 d		Mkr1	662.900 0 MHz -26.002 dBm	2.90000000 MHz	
6.8						Full Span	
.83						Start Freq 660.000000 MHz	
3.2					DL1 -13.00 dBm	Stop Freq 662.900000 MHz	
3.2					R.T.	AUTO TUNE	
13.2						290.000 kHz	
3.2						Man Freq Offset	
63.2						0 Hz X Axis Scale	Loc
art 660.000 MHz Res BW 100 kHz		#Video BW 300	kHz	#Swe	Stop 662.900 MHz eep ~1.01 s (1001 pts)	Log	
500	May 21, 2024 11:03:51 AM	$\bigcirc \triangle$				Signal Track (Span Zoom)	

### 5 M\_Band Edge\_Low\_BPSK\_1RB(2)



CEYSIGHT Input: RF Coupling: Du Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RI Trig: Free Run	MS <mark>123456</mark> A WW WW W A A A A A A	Center Frequency 663.000000 MHz Span	Settings
Spectrum v cale/Div 10 dB		Ref LvI Offset 26. Ref Level 26.83 d			2.992 MHz 6.570 dBm	4.00000000 MHz Swept Span Zero Span	
6.8			11 Mar		RMS	Full Span	
.83			/			Start Freq 661.000000 MHz	
3.2		1	/		DL1 -13.00 dBm	Stop Freq 665.000000 MHz	
3.2		Lange Carl Street Street F				AUTO TUNE	
3.2						CF Step 400.000 kHz	
3.2						Man Freq Offset	
53.2						0 Hz X Axis Scale	Loc
enter 663.000 MHz Res BW 100 kHz		#Video BW 300	kHz	#Sweep ~1.	pan 4.000 MHz 01 s (1001 pts)	Loa	
ットー	May 21, 2024 11:02:49 AM	$\square$		እ		Signal Track (Span Zoom)	

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



KEYSIGHT Input L +++ Coupl Align:	ing: DC	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RM Trig: Free Run	S <mark>1 2 3 4 5 6</mark> A <del>WW WW W</del> A A A A A A A	Center Frequency 657.000000 MHz	Settings
Spectrum cale/Div 10 dB	•		Ref LvI Offset 26. Ref Level 10.00 d			0.936 MHz 6.606 dBm	Span 8.0000000 MHz Swept Span Zero Span	
							Full Span	
0.0						DL1 -13.00 dBm	Start Freq 653.000000 MHz	
0.0						R.	Stop Freq 661.000000 MHz	
							AUTO TUNE	
			-	and the second s			CF Step 800.000 kHz	
0.0 0.0		and strange	w de la calencia de l				Auto Man	
0.0							Freq Offset 0 Hz	
art 653.000 MHz Res BW 100 kHz			#Video BW 300	kHz		o 661.000 MHz 1 s (1001 pts)	X Axis Scale Log Lin	Loc
ット	2?	May 21, 2024 11:03:08 AM					Signal Track (Span Zoom)	

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



L + Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Close Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power Trig: Free Run	(RMS123456 AWWWWW AAAAAA	Center Frequency 698.050000 MHz Span	Settings
Spectrum v cale/Div 10 dB		ef LvI Offset 26 ef Level 26.83 d			98.000 1 MHz -25.767 dBm	Span 100.000000 kHz Swept Span Zero Span	
3.83						Full Span Start Freq 698.00000 MHz	
3.17					DL1 -13.00 dBm	Stop Freq 698.100000 MHz	
13.2 1 13.2					RMS	AUTO TUNE CF Step 10.000 kHz Auto Man	
33.2 33.2 tart 698.00000 MHz Res BW 30 kHz		#Video BW 100	kHz		op 698.10000 MHz 0 1.00 s (1001 pts)	Freq Offset 0 Hz X Axis Scale	Loo

# 5 M\_Band Edge\_High\_BPSK\_1RB(1)



EYSIGHT Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Pe Trig: Free Rur	ower (RMS <mark>12 3 4 5 6</mark> A WW WW W A A A A A A A	Center Frequency 699.050000 MHz Span	Settings
Spectrum v cale/Div 10 dB		Ref LvI Offset 26 Ref Level 26.83 d		Mkr1	698.100 0 MHz -29.279 dBm	1.90000000 MHz	
5.8						Full Span	
3.17						Start Freq 698.100000 MHz	
3.2					DL1 -13.00 dBm	Stop Freq 700.000000 MHz	
3.2 1						AUTO TUNE	
3.2					RMS	CF Step 190.000 kHz	
i3.2						Man Freq Offset	
53.2						0 Hz X Axis Scale	Loc
art 698.1000 MHz Res BW 100 kHz		#Video BW 300	kHz	#Sv	Stop 700.0000 MHz veep 1.00 s (1001 pts)	Log	
- n C	? May 21, 2024 11:09:22 AM	$\square$				Signal Track (Span Zoom)	

# 5 M\_Band Edge\_High\_BPSK\_1RB(2)



KEYSIGHT Input R RL +++ Coupling Align: Ai	DC Corr CCorr	Preamp: Off nt (S)	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off		2 3 4 5 6	Center Frequency 698.000000 MHz	Settings
Spectrum cale/Div 10 dB og		Ref Lvi Offset 26 Ref Level 26.83 c			08 MHz 78 dBm	Span 4.00000000 MHz Swept Span Zero Span	
6.8						Full Span	
83	and the particular state of the					Start Freq 696.000000 MHz	
3.2					<u>.1 -13.00 dBm</u>	Stop Freq 700.000000 MHz	
3.2					RMS	AUTO TUNE	
3.2						CF Step 400.000 kHz	
53.2						Auto Man	
33.2						Freq Offset 0 Hz	
enter 698.000 MHz Res BW 100 kHz		#Video BW 300	kHz	Span #Sweep ~1.01 s	4.000 MHz (1001 pts)	X Axis Scale Log Lin	Loc
50	May 21, 1 11:08:19	2024 💬 🛆				Signal Track (Span Zoom)	

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



KEYSIGHT     Input: RF       Coupling: DC:     Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS Trig: Free Run	1 2 3 4 5 6 A WW WW W A A A A A A A	Center Frequency 704.000000 MHz	Settings
Spectrum v cale/Div 10 dB		Ref LvI Offset 26 Ref Level 10.00 d		Mkr1 700 -22.	.024 MHz 310 dBm	Span 8.00000000 MHz Swept Span Zero Span	
0.0					DL1 -13.00 dBm	Full Span Start Freq 700.000000 MHz	
0.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					Stop Freq 708.000000 MHz	
0.0					RMS	CF Step 800.000 kHz Auto Man	
0.0						Freq Offset 0 Hz X Axis Scale	Loo
tart 700.000 MHz Res BW 100 kHz	#Video BW 300 kHz May 21, 2024				Stop 708.000 MHz #Sweep ~1.01 s (1001 pts)		

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



	it RF ipling: DC n: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Close Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A WW WWW A A A A A A		A WW WW W	Center Frequency 662.950000 MHz Span	Seturgs
Spectrum cale/Div 10 dB	•		Ref LvI Offset 26 Ref Level 26.83 d		Mkr1		9 8 MHz 641 dBm	100.000000 kHz Swept Span Zero Span	
.83								Full Span Start Freg	
3.17								662.900000 MHz	
13.2							0L1 -13.00 dBm	Stop Freq 663.000000 MHz	
33.2							Ruis	AUTO TUNE CF Step	
13.2								10.000 kHz Auto Man	
53.2								Freq Offset 0 Hz	
tart 662.90000 MH Res BW 30 kHz	rt 662.90000 MHz #Video BW 100 kHz es BW 30 kHz			#Sv	Stop 663.00000 MHz #Sweep 1.00 s (1001 pts)		X Axis Scale Log Lin	Lo	
しょう		May 21, 2024 11:11:16 AM						Signal Track (Span Zoom)	

# 10 M\_Band Edge\_Low\_BPSK\_1RB(1)



	nput: RF ioupling: DC lign: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten: 16 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123456</mark> A <del>WWWWW</del> AAAAAA	Center Frequency 661.450000 MHz Span	Settings
Spectrum cale/Div 10 dB			Ref LvI Offset 26 Ref Level 26.83 d		Mkr1	662.897 1 MHz -31.436 dBm	2.90000000 MHz Swept Span Zero Span	
6.8							Full Span	
.83							Start Freq 660.000000 MHz	
3.2						DL1 -13.00 dBm	Stop Freq 662.900000 MHz	
3.2						R.1	AUTO TUNE	
13.2		_				- manual internation	290.000 kHz	
3.2							Man Freq Offset	
53.2							0 Hz X Axis Scale	Loc
tart 660.000 MHz #Video BW 300 kHz Res BW 100 kHz				Stop 662.900 MHz ep ~1.01 s (1001 pts)	Log Lin			
ちつ						Signal Track (Span Zoom)		

# 10 M\_Band Edge\_Low\_BPSK\_1RB(2)