

# **TEST REPORT**

FCC Sub6 n26(5) Test for SM-F741U Certification

APPLICANT SAMSUNG Electronics Co., Ltd.

REPORT NO. HCT-RF-2404-FC028-R1

DATE OF ISSUE May 3, 2024

> **Tested by** Jae Ryang Do

Technical Manager Jong Seok Lee



F-TP22-03(Rev.06)

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T E S T R E P O R T	REPORT NO. HCT-RF-2404-FC028-R1 DATE OF ISSUE May 03, 2024 Additional Model SM-F741U1
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-F741U
Date of Test	February 27, 2024 ~ April 19, 2024
FCC ID	A3LSMF741U
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)
FCC Rule Part(s):	§ 22



## **REVISION HISTORY**

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

Revision No.	Date of Issue	Description
0	April 26, 2024	Initial Release
1	May 03, 2024	Revised the date of test (Page 2.)

## 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).

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).



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## **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:	A3LSMF741U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 22
EUT Type:	Mobile phone
Model(s):	SM-F741U
Additional Model(s)	SM-F741U1
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
	826.5 MHz – 846.5 MHz (Sub6 n26 (5 MHz))
	829.0 MHz – 844.0 MHz (Sub6 n26 (10 MHz))
Tx Frequency:	831.5 MHz – 841.5 MHz (Sub6 n26 (15 MHz))
	834.0 MHz – 839.0 MHz (Sub6 n26 (20 MHz))
Date(s) of Tests:	February 27, 2024 ~ April 19, 2024
	Radiated : R3CX20KJSJW
Serial number:	Conducted : 7B5599BDA3507ECE



## **1.1. MAXIMUM OUTPUT POWER**

Mode	Ty Frequency	Emission		El	۶P
(MHz)	Tx Frequency (MHz)	Designator	Modulation	Max. Power (W)	Max. Power (dBm)
		4M50G7D	PI/2 BPSK	0.097	19.85
		4M52G7D	QPSK	0.096	19.83
Sub6 n26 (5)	826.5 - 846.5	4M49W7D	16QAM	0.076	18.82
		4M51W7D	64QAM	0.056	17.47
		4M51W7D	256QAM	0.030	14.81
		8M95G7D	PI/2 BPSK	0.094	19.73
		9M00G7D	QPSK	0.092	19.62
Sub6 n26 (10)	829.0 - 844.0	8M98W7D	16QAM	0.070	18.45
		8M97W7D	64QAM	0.053	17.23
	8M99W7D	256QAM	0.029	14.58	
		13M5G7D	PI/2 BPSK	0.091	19.60
		13M4G7D	QPSK	0.091	19.59
Sub6 n26 (15)	831.5 - 841.5	13M5W7D	16QAM	0.069	18.37
		13M5W7D	64QAM	0.050	16.99
		13M5W7D	256QAM	0.028	14.52
		18M0G7D	PI/2 BPSK	0.092	19.66
		17M9G7D	QPSK	0.090	19.55
Sub6 n26 (20)	834.0 - 839.0	17M9W7D	16QAM	0.071	18.49
		18M0W7D	64QAM	0.052	17.16
		18M0W7D	256QAM	0.029	14.58





## **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 Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Conducted Output Power	- N/A (See SAR Report)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12



## **3.2 RADIATED POWER**

#### **Test Overview**

Radiated tests are performed in the Fully-anechoic chamber.

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

#### **Test Settings**

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

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

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

- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

#### Test Note

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

The power is calculated by the following formula;

 $P_{d}$  (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)

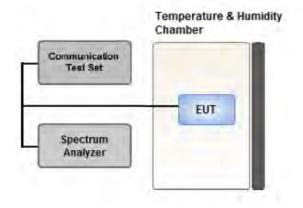
Where:  $\mathsf{P}_{\mathsf{g}}$  is the generator output power into the substitution antenna.

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



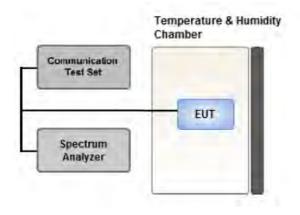
#### Test setup

#### ① CCDF Procedure for PAPR

- 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 %.



## 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

- 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

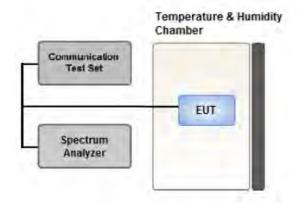
#### **Test Overview**

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.

- 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.

- 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**

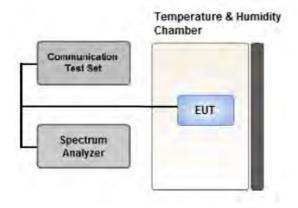
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a 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.



## 3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



#### Test setup

#### **Test Overview**

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

1. Temperature:

The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.

- 2. Primary Supply Voltage:
  - .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.
  - .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

#### **Test Settings**

- 1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter.

Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.



## 3.9 WORST CASE(RADIATED TEST)

- 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.
- The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported. (Worst case: Open mode)
- 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
- We were performed the RSE test in condition of co-location. Mode : Stand alone, Simultaneous transmission scenarios Worst case : Stand alone
- 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-F741U & additional models were tested and the worst case results are reported.

(Worst case : SM-F741U)

[ Worst case ]					
Test Description	Modulatio n	RB size	RB offset	Axis	
	PI/2 BPSK,				
	QPSK,				
Effective Radiated Power	16QAM,	See See	ction 8.1	Х	
	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: 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-F741U & additional models were tested and the worst case results are reported.

(Worst case : SM-F741U)

	[ Worst case	e]			
Test Description	Modulation	Bandwidt h (MHz)	Frequenc y	RB size	RB offset
Occupied Bandwidth	Pi2/BPSK QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	Pi2/BPSK QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
		5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	49
Dand adaa		15	Low	1	0
Band-edge	Pi2/BPSK	15	High	1	74
		20	Low	1	0
			High	1	99
		5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	Pi2/BPSK	5, 10, 15, 20	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	05/22/2024	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/22/2024	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/22/2024	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/22/2024	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	05/22/2024	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/23/2024	Annual
SIGNAL GENERATOR (100 kHz~40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	06/22/2024	Annual
Signal Analyzer(5 Hz~40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/24/2024	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, § 22.917(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§ 2.1046	N/A	See Note1
Peak- to- Average Ratio	§ 22.913(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 2.1055, § 22.355	< 2.5 ppm	PASS

## Note:

1. See SAR Report

2. Conducted test were tested using 5G Wireless Tester.

## 6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Effective Radiated Power	§ 22.913(a)(5)	< 7 Watts max. ERP	PASS
Radiated Spurious and	§ 2.1053,	<43 + 10log10 (P[Watts]) for	DACC
Harmonic Emissions	§ 22.917(a)	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				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 rel Level (dBm) (dBi)		EIRP			
channel	Freq.(MHz)	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	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	EI	RP		RB
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)			w	W	dBm	Size	Offset
		PI/2 BPSK	-30.39	30.51	-10.05	1.39	н		0.081	19.07		
		QPSK	-30.45	30.45	-10.05	1.39	н		0.080	19.01		
826.5		16-QAM	-31.47	29.43	-10.05	1.39	н		0.063	17.99	1	1
		64-QAM	-32.91	27.99	-10.05	1.39	н		0.045	16.55		
		256-QAM	-35.58	25.32	-10.05	1.39	н		0.024	13.88		
	-	PI/2 BPSK	-30.32	30.97	-10.05	1.40	н		0.090	19.52		
	Sub6 n26	QPSK	-30.35	30.94	-10.05	1.40	н		0.089	19.49		
836.5	5 MHz	16-QAM	-31.59	29.70	-10.05	1.40	н	< 7.00	0.067	18.25	1	1
	[15 kHz]	64-QAM	-32.86	28.43	-10.05	1.40	н		0.050	16.98		
		256-QAM	-35.45	25.84	-10.05	1.40	н		0.028	14.39		
		PI/2 BPSK	-30.37	31.31	-10.05	1.41	н		0.097	19.85		
		QPSK	-30.39	31.29	-10.05	1.41	н		0.096	19.83		
846.5		16-QAM	-31.40	30.28	-10.05	1.41	н		0.076	18.82	1	1
		64-QAM	-32.75	28.93	-10.05	1.41	н		0.056	17.47		
		256-QAM	-35.41	26.27	-10.05	1.41		0.030	14.81			

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Freq	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	El	RP		RB
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)			w	W	dBm	Size	Offset
		PI/2 BPSK	-30.40	30.62	-10.05	1.39	н		0.083	19.18		
		QPSK	-30.41	30.61	-10.05	1.39	Н		0.083	19.17		
829.0		16-QAM	-31.57	29.45	-10.05	1.39	н		0.063	18.01	1	50
		64-QAM	-32.86	28.16	-10.05	1.39	Н		0.047	16.72		
		256-QAM	-35.54	25.48	-10.05	1.39	н		0.025	14.04		
	-	PI/2 BPSK	-30.21	31.08	-10.05	1.40	н		0.092	19.63		
	Sub6 n26	QPSK	-30.34	30.95	-10.05	1.40	н		0.089	19.50		
836.5	10 MHz	16-QAM	-31.46	29.83	-10.05	1.40	Н	< 7.00	0.069	18.38	1	50
	[15 kHz]	64-QAM	-32.67	28.62	-10.05	1.40	н		0.052	17.17		
		256-QAM	-35.34	25.95	-10.05	1.40	н		0.028	14.50		
	-	PI/2 BPSK	-30.29	31.19	-10.05	1.41	н		0.094	19.73		
		QPSK	-30.40	31.08	-10.05	1.41	Н		0.092	19.62		
844.0		16-QAM	-31.57	29.91	-10.05	1.41	Н		0.070	18.45	1	26
		64-QAM	-32.79	28.69	-10.05	1.41	н		0.053	17.23		
		256-QAM	-35.44	26.04	-10.05	1.41	Н		0.029	14.58		



Freq	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	Ef	RP		RB
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)			w	W	dBm	Size	Offset
		PI/2 BPSK	-30.32	30.81	-10.05	1.39	Н		0.087	19.37		
		QPSK	-30.36	30.77	-10.05	1.39	Н		0.086	19.33		
831.5		16-QAM	-31.49	29.64	-10.05	1.39	н		0.066	18.20	1	77
		64-QAM	-32.89	28.24	-10.05	1.39	Н		0.048	16.80		
		256-QAM	-35.50	25.63	-10.05	1.39	н		0.026	14.19		
	-	PI/2 BPSK	-30.24	31.05	-10.05	1.40	н		0.091	19.60		
	Sub6 n26	QPSK	-30.25	31.04	-10.05	1.40	н		0.091	19.59		
836.5	15 MHz	16-QAM	-31.47	29.82	-10.05	1.40	Н	< 7.00	0.069	18.37	1	77
	[15 kHz]	64-QAM	-32.85	28.44	-10.05	1.40	н		0.050	16.99		
		256-QAM	-35.32	25.97	-10.05	1.40	н		0.028	14.52		
	-	PI/2 BPSK	-30.44	30.98	-10.05	1.41	н		0.090	19.52		
		QPSK	-30.51	30.91	-10.05	1.41	н		0.088	19.45		
841.5	_	16-QAM	-31.64	29.78	-10.05	1.41	н		18.32	1	39	
		64-QAM	-33.00	28.42	-10.05	1.41	н		0.050	16.96		
		256-QAM	-35.50	25.92	-10.05	1.41	Н		0.028	14.46		



Freq	Mod/ Bandwidth	Modulation	Measured Level	Substitute Level	Ant. Gain	C.L	Pol	Limit	Ef	RP		RB
(MHz)	[SCS (kHz)]		(dBm)	(dBm)	(dBd)			w	W	dBm	Size	Offset
		PI/2 BPSK	-30.26	30.95	-10.05	1.39	Н		0.089	19.51		
		QPSK	-30.39	30.82	-10.05	1.39	н		0.087	19.38		
834.0		16-QAM	-31.45	29.76	-10.05	1.39	Н		0.068	18.32	1	104
		64-QAM	-32.78	28.43	-10.05	1.39	Н		0.050	16.99		
		256-QAM	-35.42	25.79	-10.05	1.39	Н		0.027	14.35		
		PI/2 BPSK	-30.23	31.06	-10.05	1.40	н		0.091	19.61		
	Sub6 n26	QPSK	-30.29	31.00	-10.05	1.40	н		0.090	19.55		
836.5	20 MHz	16-QAM	-31.35	29.94	-10.05	1.40	н	< 7.00	0.071	18.49	1	104
	[15 kHz]	64-QAM	-32.81	28.48	-10.05	1.40	н		0.051	17.03		
		256-QAM	-35.37	25.92	-10.05	1.40	н		0.028	14.47		
		PI/2 BPSK	-30.34	31.11	-10.05	1.40	н		0.092	19.66		
		QPSK	-30.55	30.90	-10.05	1.40	н		0.088	19.45		
839.0		16-QAM	-31.51	29.94	-10.05	1.40	н		0.071	18.49	1	53
		64-QAM	-32.84	28.61	-10.05	1.40		17.16	-			
		256-QAM	-35.42	26.03	-10.05	1.40	Н	0.0	0.029	14.58	8	



#### **8.2 RADIATED SPURIOUS EMISSIONS**

NR Band:	<u>N26</u>
Bandwidth:	5 MHz
Modulation:	PI/2 BPSK
Distance:	<u>3 meters</u>
SCS:	<u>15 kHz</u>

	Freq	Measured	Ant.	Substitut			Result	Limit	F	RB
Ch	(MHz)	Level (dBm)	Gain (dBi)	e Level (dBm)	C.L	Pol	(dBm)	(dBm)	Size	Offset
	1 653.00	-58.23	9.20	-67.14	2.03	V	-59.97	-13.00		
	2 479.50	-59.49	10.20	-62.74	2.45	V	-54.99	-13.00		
165300 (826.5)	3 306.00	-61.59	10.90	-63.63	2.92	V	-55.65	-13.00	1	1
(02000)	4 132.50	-61.47	11.30	-61.32	3.25	V	-53.27	-13.00		
	4 959.00	-61.82	10.90	-57.53	3.58	V	-50.21	-13.00		
	1 673.00	-58.74	9.20	-67.92	2.03	V	-60.75	-13.00		
	2 509.50	-60.40	10.30	-64.93	2.50	V	-57.13	-13.00		
167300 (836.5)	3 346.00	-61.44	10.95	-64.33	2.89	V	-56.27	-13.00	1	1
(00010)	4 182.50	-62.43	11.30	-62.28	3.30	V	-54.28	-13.00		
	5 019.00	-62.84	10.70	-57.78	3.55	V	-50.63	-13.00		
	1 693.00	-56.36	9.40	-64.98	2.00	V	-57.58	-13.00		
	2 539.50	-60.03	10.30	-64.86	2.52	V	-57.08	-13.00		
169300 (846.5)	3 386.00	-61.96	11.00	-64.44	2.94	V	-56.38	-13.00	1	1
(0.000)	4 232.50	-61.17	11.20	-60.25	3.28	V	-52.33	-13.00		
	5 079.00	-63.13	10.70	-57.97	3.61	V	-50.88	-13.00		

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## 8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequenc y (MHz)	Modulatio n	Resource Block Size	Resource Block Offset	Data (dB)
			BPSK			4.37
			QPSK			5.41
	5 MHz		16-QAM	25		6.02
			64-QAM			6.35
			256-QAM			6.46
			BPSK			4.28
		QPSK 16-QAM 50	5.22			
	10 MHz			5.76		
			64-QAM		0	6.15
Sub6 n26		836.5	256-QAM			6.47
Sub6 1126		650.5	BPSK			4.33
			QPSK			5.21
	15 MHz		16-QAM	75		6.01
			64-QAM			6.07
			256-QAM			6.37
			BPSK			4.56
		MHz	QPSK			5.63
	20 MHz		16-QAM	100		6.15
	20 10112		64-QAM			6.43
			256-QAM			6.60

## Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 58  $\sim$  77.



## 8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequenc y (MHz)	Modulatio n	Resource Block Size	Resource Block Offset	Data (MHz)			
			BPSK			4.5037			
			QPSK	QPSK	QPSK		4.5145		
	5 MHz		16-QAM	25		4.4845			
			64-QAM			4.5132			
			256-QAM			4.5104			
			BPSK			8.9479			
			QPSK			8.9987			
	10 MHz		16-QAM	50		8.9747			
			64-QAM			8.9660			
Sub6 n26		02C F	256-QAM		0	8.9888			
SUD0 1120		836.5	BPSK		0	13.453			
			QPSK	-		13.437			
	15 MHz		16-QAM	75		13.498			
			64-QAM			13.465			
			256-QAM			13.488			
			BPSK			17.947			
			QPSK			17.938			
	20 MHz		16-QAM	100		17.920			
			64-QAM			17.958			
			256-QAM			17.978			

## Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 38  $\sim$  57.



Band	Band Width (MHz)	Frequenc y (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measuremen t Maximum Data (dBm)	Result (dBm)	Limit (dBm)
		826.5	3.8021	30.700	-73.771	-43.071	
	5	836.5	3.7707	30.700	-74.729	-44.029	
		846.5	3.7962	30.700	-74.587	-43.887	
		829.0	9.6959	31.315	-74.515	-43.200	
	10	836.5	9.4202	31.315	-74.255	-42.940	
		844.0	8.3111	31.315	-73.659	-42.344	12.00
Sub6 n26		831.5	3.8146	30.700	-74.536	-43.836	-13.00
	15	836.5	4.0145	30.700	-74.169	-43.469	
		841.5	4.9691	30.700	-75.120	-44.420	
		834.0	3.7887	30.700	-74.470	-43.770	-
	20	836.5	8.3270	31.315	-74.925	-43.610	
		839.0	5.2014	31.315	-74.135	-42.820	

## **8.5 CONDUCTED SPURIOUS EMISSIONS**

## Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 102 ~ 113.

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	27.994
1 - 5	30.700
5 - 10	31.315
10 - 15	31.840
15 - 20	32.213
Above 20	32.855

## 8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 78 ~ 101.



## 8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

BandWidth:	<u>5 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
Deviation Limit:	$\pm~$ 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
	100 %	+20(Ref)	836 499 997	0.0	0.000 000	0.000
	100 %	-30	836 499 993	-4.0	0.000 000	-0.005
	100 %	-20	836 499 992	-4.6	-0.000 001	-0.005
	100 %	-10	836 499 993	-4.2	-0.000 001	-0.005
026 5	100 %	0	836 499 993	-4.0	0.000 000	-0.005
836.5	100 %	+10	836 499 991	-6.1	-0.000 001	-0.007
	100 %	+30	836 499 993	-4.2	0.000 000	-0.005
	100 %	+40	836 499 992	-4.6	-0.000 001	-0.006
	100 %	+50	836 499 992	-5.0	-0.000 001	-0.006
	Batt. Endpoint	+20	836 499 992	-5.2	-0.000 001	-0.006



BandWidth:	<u>10 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
Deviation Limit:	$\pm$ 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz) (Hz)		(%)	
	100 %	+20(Ref)	836 500 004	0.0	0.000 000	0.000
	100 %	-30	836 500 007	3.4	0.000 000	0.004
	100 %	-20	836 500 004	0.6	0.000 000	0.001
	100 %	-10	836 500 006	2.8	0.000 000	0.003
026 5	100 %	0	836 500 006	2.3	0.000 000	0.003
836.5	100 %	+10	836 500 008	4.5	0.000 001	0.005
	100 %	+30	836 500 005	1.8	0.000 000	0.002
	100 %	+40	836 500 007	3.8	0.000 000	0.005
	100 %	+50	836 500 007	3.6	0.000 000	0.004
	Batt. Endpoint	+20	836 500 007	3.2	0.000 000	0.004



BandWidth:	<u>15 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
Deviation Limit:	$\pm$ 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm	
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)		
	100 %	+20(Ref)	836 500 002	0.0	0.000 000	0.000	
	100 %	-30	836 500 004	1.7	0.000 000	0.002	
	100 %	-20	836 500 004	1.7	0.000 000	0.002	
	100 %	-10	836 500 003	1.3	0.000 000	0.002	
026 5	100 %	0	836 500 003	1.1	0.000 000	0.001	
836.5	100 %	+10	836 500 003	0.7	0.000 000	0.001	
	100 %	+30	836 500 005	2.6	0.000 000	0.003	
	100 %	+40	836 500 003	0.7	0.000 000	0.001	
	100 %	+50	836 500 004	2.2	0.000 000	0.003	
	Batt. Endpoint	+20	836 500 004	2.3	0.000 000	0.003	



BandWidth:	<u>20 MHz</u>
Voltage(100 %):	3.880 VDC
Batt. Endpoint:	3.300 VDC
Deviation Limit:	$\pm$ 0.000 25 % or 2.5 ppm

Test. Frequncy	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
	100 %	+20(Ref)	836 500 000	0.0	0.000 000	0.000
	100 %	-30	836 500 000	-0.4	0.000 000	0.000
	100 %	-20	836 499 999	-0.7	0.000 000	-0.001
	100 %	-10	836 499 999	-0.8	0.000 000	-0.001
026 5	100 %	0	836 499 999	-0.8	0.000 000	-0.001
836.5	100 %	+10	836 499 999	-0.9	0.000 000	-0.001
	100 %	+30	836 499 999	-1.1	0.000 000	-0.001
	100 %	+40	836 499 999	-1.3	0.000 000	-0.002
	100 %	+50	836 499 998	-1.6	0.000 000	-0.002
	Batt. Endpoint	+20	836 499 998	-1.5	0.000 000	-0.002



## 8.8 UPLINK CARRIER AGGREGATION

#### Test Note

- 1. All tests were evaluated for the two bands using various combinations of RB size, RB offset, modulation, and channel bandwidth.
- 2. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

- 3. The worst case is reported with the modulations, RB sizes and offsets.
  - N26A(ANT A)-N66A(ANT I)

(PCC - Modulation: BPSK, RB: 1, RB Offset: 1, SCC - Modulation: BPSK, RB: 1, RB Offset: 80)

#### Radiated Spurious Emissions

DCC	500	P	cc	SCC		
PCC	SCC	BW(MHz)	Channel	BW(MHz)	CC Channel 349000	
N26A(ANT A)	N66A(ANT I)	5	165300	30	349000	

## 8.8.1 RADIATED SPURIOUS EMISSIONS

#### N26A(ANT A)(PCC)- N66A(ANT I)(SCC)

Freq.(MHz )	Measure d Level [dBm]	Ant. Gain (dBi)	Substitut e Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
1 653.00	-59.60	9.20	-68.51	2.03	V	-61.34	-13.00
2 479.50	-59.33	10.20	-62.58	2.45	V	-54.83	-13.00
3 306.00	-62.44	10.90	-64.48	2.92	V	-56.50	-13.00

Freq.(MHz )	Measure d Level [dBm]	Ant. Gain (dBi)	Substitut e Level [dBm]	C.L	Pol.	Result (dBm)	Limit (dBm)
3 490.00	-61.55	11.20	-62.99	3.00	V	-54.79	-13.00
5 235.00	-62.77	11.10	-57.84	3.70	V	-50.44	-13.00
6 980.00	-64.20	10.90	-51.49	4.30	V	-44.89	-13.00



Report No. HCT-RF-2404-FC028-R1

# 9. TEST PLOTS





## Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.167300 BPSK\_RB 25\_0)



Spectrum Analy Docupted BW		+					٥	Frequency	1 1
	Align Auto	Input Z: 50 Q Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten 16 dB Preamp Off	Trig: Free Run Gale: Off #IF Gain: Low	Center Freq. 836 500 Avg/Hold: 500/500 Radio Std: None	UUUU MHZ		Frequency 0000 MHz	Séttings
Graph			Ref LvI Offset 27				Span 10.000	MHz	
cale/Div 10.0	dB		Ref Value 40.00	dBm			CF Step 1.00000		Local
10.0		jama.					Aut Mai		
0 00					Linn	PEAK	Freq Off 0 Hz	set	
30-0									
-50 0 Center 836.500 #Res BW 100.0			#Video BW 390.	00 kHz	Sweep 16	Span 10 MHz 7 ms (1001 pts)			
2 Metrics									
Occup	bied Bandwidth								
	4.5	145 MHz		Total Power	30	.8 dBm			
	mit Freq Error Bandwidth	-13.977   5.224 N		% of OBW Pov x dB		99.00 % 6.00 dB			
10	all	2 Mar 04, 2024							
		1:17:48 PM					-		

# Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.167300 QPSK\_RB 25\_0)





### Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.167300 16QAM\_RB 25\_0)





## Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.167300 64QAM\_RB 25\_0)





# Sub6 n26. Occupied Bandwidth Plot (5 M BW Ch.167300 256QAM\_RB 25\_0)





### Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.167300 BPSK\_RB 50\_0)





### Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.167300 QPSK\_RB 50\_0)





### Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.167300 16QAM\_RB 50\_0)





## Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.167300 64QAM\_RB 50\_0)





## Sub6 n26. Occupied Bandwidth Plot (10 M BW Ch.167300 256QAM\_RB 50\_0)





#### Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.167300 BPSK RB 75\_0)



L Align Auto	Input Z: 50 Q Atten 1 Corr CCorr Preamp Freq Ref. Int (S) NFE Adaptive			Séttings
Graph	Ref Lvi C	offset 27.50 dB ≥ 40.00 dBm	Span 30.000 MHz	
00 0.0 0.0			CF Step 3,00000 MHz Auto Man	
000 000 000 000 000 000			PEAM. 0 Hz	
enter 836.50 MHz Res BW 300.00 kHz	#Video B	W 1.2000 MHz Sw	Span 30 MHz veep 1.00 ms (1001 pts)	
Metrics	1 437 MHz	Total Power	31.3 dBm	
	-394.02 kHz 14.57 MHz	% of OBW Power x dB	99.00 % -26.00 dB	Los

# Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.167300 QPSK RB 75\_0)





### Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.167300 16QAM RB 75\_0)



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. 836-500 Avg Hold: 500/500 Radio Std: None	0000 MHz	Contraction of the local division of the loc	requency 000 MHz	Settings
Graph T		Ref LvI Offset 27				Span 30,000	MHz	
cale/Div 10.0 dB		Ref Value 40.00 (	dBm	~		CF Step 3.00000 Auto Mar	5	
0 00 10 0 20 0 30 0 40 0	1			human	PEAK	Freq Offs 0 Hz	set	
Center 836.50 MHz #Res BW 300.00 kHz	4	#Video BW 1.200	00 MHz	Sweep 1.0	Span 30 MHz 0 ms (1001 pts)			
Metrics Occupied Bandwidth 13,46	35 MHz		Total Power	29	.8 dBm			
Transmit Freq Error x dB Bandwidth	-379.75 ki 14.49 Mi		% of OBW Pov x dB		99.00 % 5.00 dB			Lo
	Mar 04, 2024 1:31:08 PM	-						

# Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.167300 64QAM RB 75\_0)



	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 Avg Hold_50 Radio Std_N		iz.	Contraction of the local division of the loc	Frequency 0000 MHz	Settings
Graph v		Ref LvI Offset 27					Span 30,000	MHz	
cale/Div 10.0 dB	from	Ref Value 40.00 (	dBm				CF Step 3.00000 Aut Mar	00 MHz	
0 00 10.0 20 0 30 0 40 0	/			time		PEAK	Freq Off 0 Hz	set	
Center 836.50 MHz Res BW 300.00 kHz	+	#Video BW 1.200	0 MHz	Św	Spar eep 1.00 ms (1	n 30 MHz 1001 pts)			
Metrics Occupied Bandwidth 13.48	8 MHz		Total Power		27.6 dBm	i i i			
Transmit Freq Error x dB Bandwidth	-358.26 ki 14.49 Mi		% of OBW Pov x dB	ver	99.00 % -26.00 dB				Lo
5017	Mar 04, 2024 1:31:30 PM					X			

# Sub6 n26. Occupied Bandwidth Plot (15 M BW Ch.167300 256QAM RB 75\_0)





### Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.167300 BPSK RB 100\_0)





### Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.167300 QPSK RB 100\_0)





### Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.167300 16QAM RB 100\_0)



	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE Adaptive	Atten: 16 dB Preamp: Off	Ting: Free Run Gate: Oif #IF Gain: Low	Centor Freq. 836 Avg Hold: 500/5 Radio Std: None	00	and the second s	Frequency 0000 MHz	Settings		
Graph T	,	Ref LvI Offset 27				Span 40.000	MHz			
cale/Div 10.0 dB		Ref Value 40.00	dBm			CF Step 4.00000 Aut Mar	00 MHz			
0 00 10 0 20 0 30 0 40 0				hourse	PEAL PEAL	Freq Off 0 Hz	set			
enter 836.50 MHz Res BW 390.00 kHz	+ +	Video BW 1.600	00 MHz	Sweep	Span 40 MH 1.00 ms (1001 pts					
Metrics	58 MHz		Total Power		29.8 dBm					
Transmit Freq Error x dB Bandwidth	-530.53 kH 19.18 MH		% of OBW Pov x dB	ver	99.00 % -26.00 dB			Lo		
50	Mar 04, 2024 1:37:12 PM				N X					

# Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.167300 64QAM RB 100\_0)



Settings	Center Frequency 836.500000 MHz	0 MHz		Avgl	Trig Free Run Gate Off #IF Gain Low	Atten: 16 dB Preamp: Off	nput Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	a DG	SIGHT Input Columnation PASS
	Span 40,000 MHz					Ref LvI Offset 2		-	ph
	CF Step 4.000000 MHz Auto Man				JBm	Ref Value 40.00	p		e/Div 10.0 dB
	Freq Offset 0 Hz	PEAK.	international and the second	Ì				minerth	
		Id 500/500     8       Std: None     8       Std: None     8       Gl     4       Gl     4       Gl     4       Span 40 MHz     8       Span 40 MHz     9       Sweep 1.00 ms (1001 pts)     99.00 %       -26.00 dB     9		0 MHz	Video BW 1.60	1		er 836,50 MHz BW 390.00 kH	
		dBm	27.8 dE		Total Power		IHz	ndwidth 17.978	rics Occupied E
Lo				wer	% of OBW Po x dB		-587.11 kl 19.08 Mł		Transmit F x dB Band
		- X					Mar 04, 2024 1:37:35 PM	1 2	50

# Sub6 n26. Occupied Bandwidth Plot (20 M BW Ch.167300 256QAM RB 100\_0)





### Sub6 n26. PAR Plot (5 M BW Ch.167300 BPSK\_RB 25\_0)





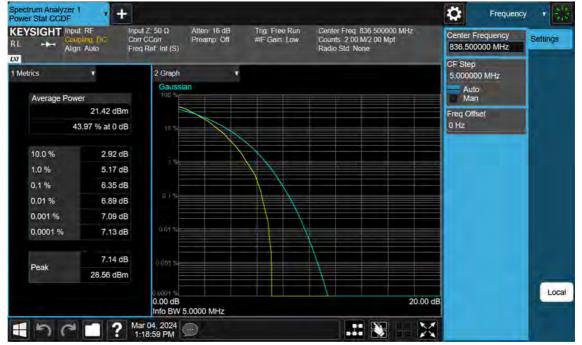
### Sub6 n26. PAR Plot (5 M BW Ch.167300 QPSK\_RB 25\_0)





# Sub6 n26. PAR Plot (5 M BW Ch.167300 16QAM\_RB 25\_0)





# Sub6 n26. PAR Plot (5 M BW Ch.167300 64QAM\_RB 25\_0)





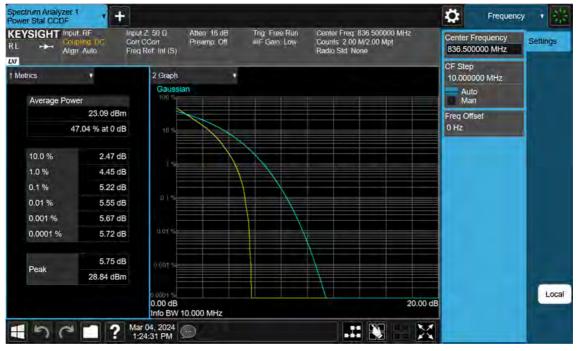
### Sub6 n26. PAR Plot (5 M BW Ch.167300 256QAM\_RB 25\_0)





### Sub6 n26. PAR Plot (10 M BW Ch.167300 BPSK\_RB 50\_0)





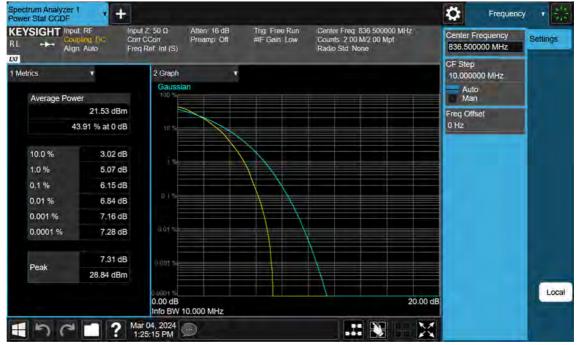
# Sub6 n26. PAR Plot (10 M BW Ch.167300 QPSK\_RB 50\_0)





### Sub6 n26. PAR Plot (10 M BW Ch.167300 16QAM\_RB 50\_0)





# Sub6 n26. PAR Plot (10 M BW Ch.167300 64QAM\_RB 50\_0)





## Sub6 n26. PAR Plot (10 M BW Ch.167300 256QAM\_RB 50\_0)





### Sub6 n26. PAR Plot (15 M BW Ch.167300 BPSK RB 75\_0)





### Sub6 n26. PAR Plot (15 M BW Ch.167300 QPSK RB 75\_0)





# Sub6 n26. PAR Plot (15 M BW Ch.167300 16QAM RB 75\_0)





### Sub6 n26. PAR Plot (15 M BW Ch.167300 64QAM RB 75\_0)





## Sub6 n26. PAR Plot (15 M BW Ch.167300 256QAM RB 75\_0)





#### Sub6 n26. PAR Plot (20 M BW Ch.167300 BPSK RB 100\_0)





### Sub6 n26. PAR Plot (20 M BW Ch.167300 QPSK RB 100\_0)





### Sub6 n26. PAR Plot (20 M BW Ch.167300 16QAM RB 100\_0)





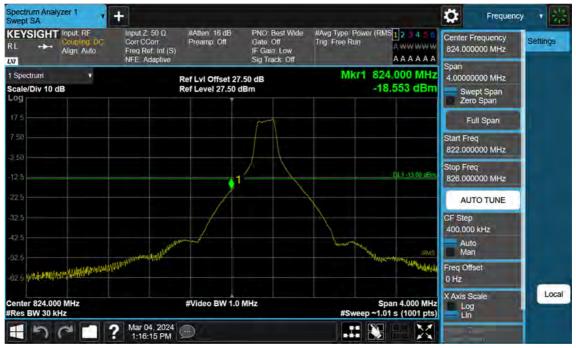
### Sub6 n26. PAR Plot (20 M BW Ch.167300 64QAM RB 100\_0)





### Sub6 n26. PAR Plot (20 M BW Ch.167300 256QAM RB 100\_0)





### Sub6 n26. Lower Band Edge Plot (5 M BW Ch.165300 BPSK\_RB 1\_Offset 0)





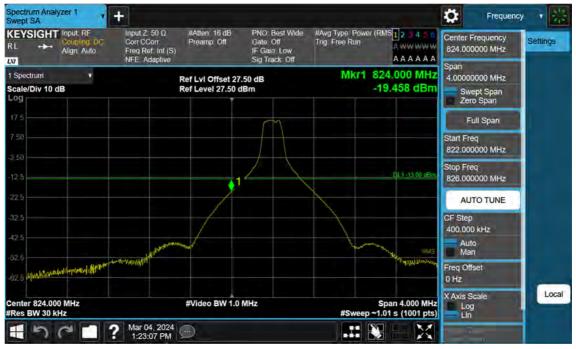
### Sub6 n26. Lower Band Edge Plot (5 M BW Ch.165300 BPSK\_RB 25\_Offset 0)



L Align: Auto	Input Z: 50 Q 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 (RMS1234 Trig: Free Run A.WW) A A A A	B21.000000 MHz	Séttings
Spectrum v cale/Div 10 dB		Ref LvI Offset 27. Ref Level 27.50 d		Mkr1 822.068 -34.121 c	4.00000000 11112	
7 5					Full Span	
50					Start Freq 819.000000 MHz	
2.5				171.5 -13 (	Stop Freq 823.000000 MHz	
2.5					AUTO TUNE	
2.5					CF Step 400.000 kHz	
2.5					Man Man	
2.6					Freq Offset 0 Hz	-
enter 821.000 MHz Res BW 100 kHz		#Video BW 300	kHz	Span 4.000 #Sweep ~1.01 s (100		Lo

# Sub6 n26. Lower Extended Band Edge Plot (5 M BW Ch.165300 BPSK\_RB 25\_0)





### Sub6 n26. Lower Band Edge Plot (10 M BW Ch.165800 BPSK\_RB 1\_Offset 0)



KEYSIGHT Input. RF Coupling DC Align: Auto	Input Z: 50 Q 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 Pov Trig: Free Run	ver (RMS 1 2 3 4 5 6 A WW WW W A A A A A A A	Center Frequency 824.000000 MHz	Sétting
Spectrum v cale/Div 10 dB og		Ref LvI Offset 27 Ref Level 27.50 d		Mkr	824.000 MHz -27.501 dBm	Span 4.00000000 MHz Swept Span Zero Span	
7.5						Full Span	
2 50					RMS	Start Freq 822.000000 MHz	
12.5					131-1 -13 00 oBm	Stop Freq 826.000000 MHz	
22.5		1	/			AUTO TUNE	
32.5						CF Step 400.000 kHz	
52.5						Auto Man	
32.0						Freq Offset 0 Hz	
enter 824.000 MHz Res BW 100 kHz		#Video BW 300	kHz	#Swee	Span 4.000 MHz p ~1.01 s (1001 pts)	X Axis Scale Log Lin	La
501	? Mar 04, 2024 1:22:29 PM	9			N X		

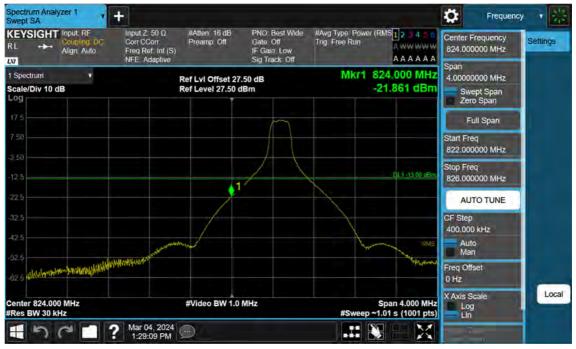
# Sub6 n26. Lower Band Edge Plot (10 M BW Ch.165800 BPSK\_RB 50\_Offset 0)



EYSIGHT 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 Wide Gate Off IF Gain Low Sig Track Off	#Avg Type: Power (RMS Trig: Free Run	A WW WWW A A A A A A A	Center Frequency 821.000000 MHz	Setting
Spectrum v sale/Div 10 dB		Ref LvI Offset 27. Ref Level 27.50 dl		Mkr1 819 -35	.952 MHz .961 dBm	Span 4.00000000 MHz Swept Span Zero Span	
7.5						Full Span	
50						Start Freq 819.000000 MHz	
2.5					1)1-1-13 00 dBm	Stop Freq 823.000000 MHz	
2.5						AUTO TUNE	
2.5	1				RMS	CF Step 400.000 kHz	
2.5						Auto Man	
2.6						Freq Offset 0 Hz	-
enter 821.000 MHz tes BW 100 kHz		#Video BW 300	kHz	Spa #Sweep ~1.01	an 4.000 MHz   s (1001 pts)	X Axis Scale Log Lin	Lo

# Sub6 n26. Lower Extended Band Edge Plot (10 M BW Ch.165800 BPSK\_RB 50\_0)





### Sub6 n26. Lower Band Edge Plot (15 M BW Ch.166300 BPSK\_RB 1\_Offset 0)



	Corr CCorr Preamp Freq Ref. Int (S) NFE Adaptive	Off Gate Off IF Gain Low Sig Track Off	#Avg Type: Power (RMS12345 Trig: Free Run A WW WW A A A A A	A
Spectrum v sale/Div 10 dB		ffset 27.50 dB 27.50 dBm	Mkr1 824.000 Mt -27.945 dB	4.0000000 11112
75				Full Span
50			R	Start Freq 822.000000 MHz
2.5			13L4 -13.00 a	Stop Freq 826.000000 MHz
2:5		12		AUTO TUNE
2.5				CF Step 400.000 kHz
2.5				Auto Man
2.6				Freq Offset 0 Hz
enter 824.000 MHz les BW 150 kHz	#Video I	BW 470 kHz	Span 4.000 M #Sweep ~1.01 s (1001 p	

# Sub6 n26. Lower Band Edge Plot (15 M BW Ch.166300 BPSK\_RB 75\_Offset 0)



	out, RF oupling, BG gn: Auto	Input Z: 50 Q 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: Pr Trig: Free Rui	ower (RMS123456 A www.www. A A A A A A A	Center Frequency 821.000000 MHz	Sétting
Spectrum cale/Div 10 dB og	-		Ref LvI Offset 27. Ref Level 27.50 d		Mki	1 821.264 MHz -33.306 dBm	Span 4.00000000 MHz Swept Span Zero Span	
7 5							Full Span	
2 50							Start Freq 819.000000 MHz	
12.5						1)L3 -13 00 dBm.	Stop Freq 823.000000 MHz	
22.5				<u>1</u>			AUTO TUNE	
32.5						RMS	CF Step 400.000 kHz	
52.5							Auto Man	
32.6							Freq Offset 0 Hz	
enter 821.000 M Res BW 100 kHz			#Video BW 300	kHz	#Swe	Span 4.000 MHz eep ~1.01 s (1001 pts)	X Axis Scale Log Lin	La
50		Mar 04, 2024 1:28:48 PM	Ð					

# Sub6 n26. Lower Extended Band Edge Plot (15 M BW Ch.166300 BPSK\_RB 75\_0)





### Sub6 n26. Lower Band Edge Plot (20 M BW Ch.166800 BPSK\_RB 1\_Offset 0)



EYSIGHT Input RF Coupling DC Align: Auto	Input Z: 50 Ω Corr CCorr Freg 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 1 2 3 4 Trig: Free Run A wwww A A A A A	824.000000 MHz
Spectrum v sale/Div 10 dB		Ref LvI Offset 27. Ref Level 27.50 d		Mkr1 824.000 M -30.227 dE	
7 5					Full Span
50				R	Start Freq 822.000000 MHz
2.5				DL1-13.00 s	Stop Freq 826.00000 MHz
2:5		1			AUTO TUNE
2.5		-			CF Step 400.000 kHz
2.5					Auto Man
2.6					Freq Offset 0 Hz
enter 824.000 MHz tes BW 200 kHz		#Video BW 620	kHz	Span 4.000 N #Sweep ~1.01 s (1001 p	

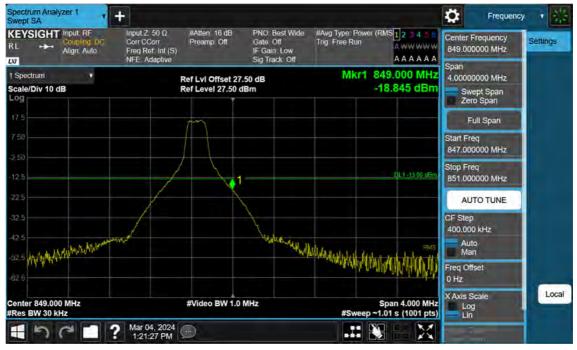
# Sub6 n26. Lower Band Edge Plot (20 M BW Ch.166800 BPSK\_RB 100\_Offset 0)



	ing DO	Input Z 50 Q 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 Pov Trig Free Run	ver (RMS 1 2 3 4 5 6 A www.www. A A A A A A A	Center Frequency 821.000000 MHz	Sétting
Spectrum cale/Div 10 dB	•		Ref LvI Offset 27. Ref Level 27.50 d		Mkr	822.836 MHz -39.615 dBm	Span 4.00000000 MHz Swept Span Zero Span	
17.5							Full Span	
2 50							Start Freq 819.000000 MHz	
12.5						1)1.1 -13 00 aBim	Stop Freq 823.000000 MHz	
22.5							AUTO TUNE	
42.5						1.3	CF Step 400.000 kHz	
52.5							Auto Man	
32.6							Freq Offset 0 Hz	
enter 821.000 MHz Res BW 100 kHz			#Video BW 300	kHz	#Swee	Span 4.000 MHz p ~1.01 s (1001 pts)	X Axis Scale Log Lin	La
50	2	Mar 04, 2024 1:34:50 PM				N X		

# Sub6 n26. Lower Extended Band Edge Plot (20 M BW Ch.166800 BPSK\_RB 100\_0)





### Sub6 n26. Upper Band Edge Plot (5 M BW Ch.169300 BPSK\_RB 1\_Offset 24)





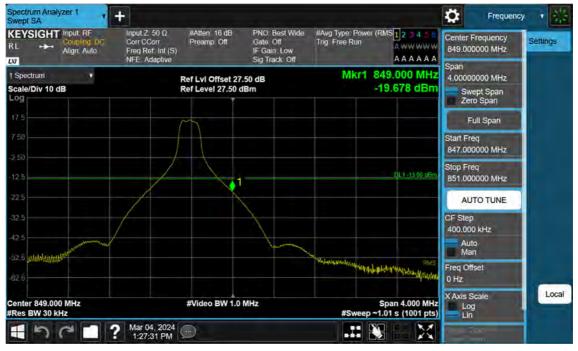
#### Sub6 n26. Upper Band Edge Plot (5 M BW Ch.169300 BPSK\_RB 25\_Offset 0)



EYSIGHT Input RF Couping BC 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		3456 WWWW AAAA	Center Frequency 852.000000 MHz	Séttings
Spectrum v cale/Div 10 dB		Ref LvI Offset 27. Ref Level 27.50 d		Mkr1 850.19 -31.63		Span 4.00000000 MHz Swept Span Zero Span	
7 5						Full Span	
50						Start Freq 850.000000 MHz	
2.5					-13.00 dBm	Stop Freq 854.000000 MHz	1
2.5						AUTO TUNE	
25	and the second	~				CF Step 400.000 kHz	
2.5					RMS	Auto Man	
2.6					and	Freq Offset 0 Hz	
enter 852.000 MHz Res BW 100 kHz		#Video BW 300	kHz	Span 4. #Sweep ~1.01 s (1	000 MHz 1001 pts)	X Axis Scale Log Lin	Loc

# Sub6 n26. Upper Extended Band Edge Plot (5 M BW Ch.169300 BPSK\_RB 25\_0)





#### Sub6 n26. Upper Band Edge Plot (10 M BW Ch.168800 BPSK\_RB 1\_Offset 49)



NEE Adaptive Sig Track Off A A A A A A   1 Spectrumi Ref Lvi Offset 27.50 dB Mkr1 849.004 MHz -34.919 dBm   Scale/Div 10 dB Ref Level 27.50 dBm -34.919 dBm   17 5 Span -34.919 dBm   17 5 Span -34.919 dBm   17 5 Span Span   17 5 Span -34.919 dBm   17 5 Span Span   18 20 Span Span   19 20 Span Span   10 30 0 eff Span Span   11 30 0 eff Span Span	
7 50     Start Freq       2 50     011-33.00 mFm       12 5     011-33.00 mFm       32 5     011-33.00 mFm       CF Step     CF Step	
2 50 12 5 12 5 12 5 12 5 1 1 12 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
12.5 Stop Freq B51.00000 MH 22.5 AUTO TUNI 32.5 CF Step	z
1 RMS CF Step	z
400,000 KHz	
42.5	
Freq Offset 0 Hz	
enter 849.000 MHz #Video BW 300 kHz Span 4.000 MHz Log Res BW 100 kHz #Sweep ~1.01 s (1001 pts)	

# Sub6 n26. Upper Band Edge Plot (10 M BW Ch.168800 BPSK\_RB 50\_Offset 0)



EYSIGHT Input. RF Coupling DC Align: Auto	Input Z: 50 Q 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. Pow Trig: Free Run	er (RMS <mark>123456</mark> A www.ww A A A A A A A	Center Frequency 852.000000 MHz	Sétting
Spectrum v cale/Div 10 dB		Ref LvI Offset 27.5 Ref Level 27.50 dE		Mkr1	850.028 MHz -35.586 dBm	Span 4.00000000 MHz Swept Span Zero Span	
75						Full Span	
50						Start Freq 850.000000 MHz	
2.5					1)L1 -13 00 dBm	Stop Freq 854.000000 MHz	
2.5						AUTO TUNE	
25 1						CF Step 400.000 kHz	
2.5					TMS	Auto Man	
2.0						Freq Offset 0 Hz	
enter 852.000 MHz Res BW 100 kHz		#Video BW 300	kHz	#Swee	Span 4.000 MHz p ~1.01 s (1001 pts)	X Axis Scale Log Lin	Lo

# Sub6 n26. Upper Extended Band Edge Plot (10 M BW Ch.168800 BPSK\_RB 50\_0)





#### Sub6 n26. Upper Band Edge Plot (15 M BW Ch.168300 BPSK\_RB 1\_Offset 74)



Spectrum     Ref Lvl Offset 27.50 dB     Mkr1 850.260 MHz     Span       Scale/Div 10 dB     Ref Lvel 27.50 dB     -29.965 dBm     -29.965 dBm     Swept Span       175     -     -     -     -29.965 dBm     Zetro Span       750     -     -     -     Start Freq     847.000000 MHz       250     -     -     -     -     Start Freq     847.000000 MHz       225     -     -     -     -     -     -     Start Freq     847.000000 MHz       225     - <t< th=""><th></th><th>ut RF Ipling DC in Auto</th><th>Input Z: 50 Q Corr CCorr Freq Ref. Int (S NFE: Adaptive</th><th>#Atten 16 dB Preamp: Off )</th><th>PNO Best Wide Gate Off IF Gain Low Sig Track Off</th><th>#Avg Type: Po Trig: Free Run</th><th>wer (RMS 1 2 3 4 5 6 A www.www. A A A A A A A</th><th>Center Frequency 849.000000 MHz</th><th>Sétting</th></t<>		ut RF Ipling DC in Auto	Input Z: 50 Q 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 1 2 3 4 5 6 A www.www. A A A A A A A	Center Frequency 849.000000 MHz	Sétting
7 50 2 50 12 5 12 5 1	cale/Div 10 dB	•				Mkr		4.00000000 MHz Swept Span	
2 50 12 5 12 5 1	17.5							Full Span	
12.5 DILI-13.00 dfm 851.000000 MHz 12.5 DILI-13.00 dfm 851.000000 MHz 12.5 DILI-13.00 dfm 851.000000 MHz CF Step 400.000 kHz Auto Man Freq Offset								the second se	
32.5 RMS CF Step 400.000 kHz 52.6 Field Fi							1)1-1 -13.00 dBm		
42.5 42.5 52.5 Freq Offset							1	Solver Short	
52.5 Freq Offset									
Freq Offset									
enter 849.000 MHz #Video BW 470 kHz Span 4.000 MHz Log Res BW 150 kHz #Sweep ~1.01 s (1001 pts)		łz		#Video BW 470	kHz	#Swe		Log	Lo

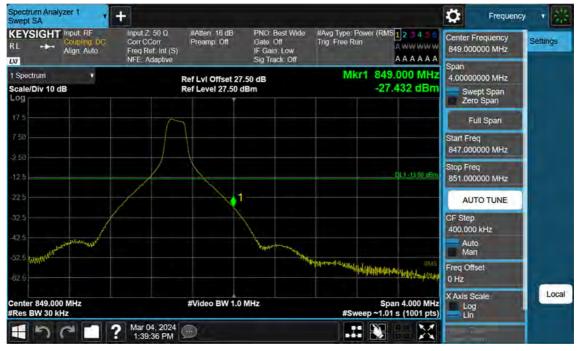
# Sub6 n26. Upper Band Edge Plot (15 M BW Ch.168300 BPSK\_RB 75\_Offset 0)



Spectrum v cale/Div 10 dB			A A A A A	A 852.000000 MHz
	Ref Lvi Offset 27. Ref Level 27.50 d		Mkr1 850.264 MH -31.651 dB	
75				Full Span
50				Start Freq 850.000000 MHz
2.5			T)1.4 -13.00 x8	Stop Freq 854.000000 MHz
2:5				AUTO TUNE
2.5				CF Step 400.000 kHz
25			Rh	Auto Man
2.6				Freq Offset 0 Hz
enter 852,000 MHz tes BW 100 kHz	#Video BW 300	kHz	Span 4.000 M #Sweep ~1.01 s (1001 p	

# Sub6 n26. Upper Extended Band Edge Plot (15 M BW Ch.168300 BPSK\_RB 75\_0)





#### Sub6 n26. Upper Band Edge Plot (20 M BW Ch.167800 BPSK\_RB 1\_Offset 99)



	orr CCorr Preamp: Off reg Ref. Int (S) IFE: Adaptive	Gate Off IF Gain Low Sig Track Off	#Avg Type: Power (RMS12345 Trig: Free Run A wwww A A A A A	849.000000 MHz
Spectrum • sale/Div 10 dB	Ref Lvi Offset 27. Ref Level 27.50 d		Mkr1 849.116 Mi -35.127 dB	
75				Full Span
50				Start Freq 847.000000 MHz
2.5			T)[.1 -13.00 d	Stop Freq 851.000000 MHz
2.5		.1		AUTO TUNE
2.5			R	CF Step 400.000 kHz
2.5				Auto Man
2.6				Freq Offset 0 Hz
enter 849.000 MHz es BW 200 kHz	#Video BW 620	kHz	Span 4.000 M #Sweep ~1.01 s (1001 p	

# Sub6 n26. Upper Band Edge Plot (20 M BW Ch.167800 BPSK\_RB 100\_Offset 0)



KEYSIGH RL ++- M	Coupling DC Align Auto	Input Z: 50 Q 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: Pov Trig: Free Run	ver (RMS 1 2 3 4 5 6 A WW WW W A A A A A A A	Center Frequency 852.000000 MHz	Séttings
Spectrum cale/Div 10 og	∙ d₿		Ref LvI Offset 27. Ref Level 27.50 d		Mkr1	850.492 MHz -39.744 dBm	Span 4.00000000 MHz Swept Span Zero Span	
7.5							Full Span	
2 50							Start Freq 850.000000 MHz	
12:5						101-1 -13 00 dBm	Stop Freq 854.000000 MHz	
12:5							AUTO TUNE	
\$2.5	¢1						CF Step 400.000 kHz	
\$2.5						PMS	Auto Man	
2.6							Freq Offset 0 Hz	
enter 852.00 Res BW 100			#Video BW 300	kHz	#Swee	Span 4.000 MHz p ~1.01 s (1001 pts)	X Axis Scale Log Lin	Lo
5		Mar 04, 2024 1:39:13 PM	Ð			N X		

# Sub6 n26. Upper Extended Band Edge Plot (20 M BW Ch.167800 BPSK\_RB 100\_0)





#### Sub6 n26. Conducted Spurious Plot (165300ch\_5 MHz\_BPSK\_RB 1\_0)





#### Sub6 n26. Conducted Spurious Plot (167300ch\_5 MHz\_BPSK\_RB 1\_0)





### Sub6 n26. Conducted Spurious Plot (169300ch\_5 MHz\_BPSK\_RB 1\_0)





#### Sub6 n26. Conducted Spurious Plot (165800ch\_10 MHz\_BPSK\_RB 1\_0)





#### Sub6 n26. Conducted Spurious Plot (167300ch\_10 MHz\_BPSK\_RB 1\_0)





#### Sub6 n26. Conducted Spurious Plot (168800ch\_10 MHz\_BPSK\_RB 1\_0)



Spectrum Analy Swept SA	yzer 1	+					Ö.	Frequency	* 20
KEYSIGHT RL ++-	Input RF Coupling Align: Auto		#Atten 16 dB Preamp Off )	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: P Trig: Free Rui	ower (RMS 1 2 3 4 5 6 A www.www A A A A A A A	5.0150	Frequency 00000 GHz	Séttings
Spectrum Scale/Div 10 d	ів 2		Ref Level 6,00	dBm	MI	r1 3.814 6 GHz -74.536 dBm	Sw	0000 GHz ept Span o Span	
14.0							F	uli Span	
34.0 44.0							Start Fre 30.000	eq DOO MHz	
54.0 64.0 74.0			1	the selfice sease of the data of the		RMS	Stop Fre 10.000	eq 000000 GHz	
tart 30 MHz	1. 1. 1. 1.		#Video BW 3.0			Stop 10.000 GHz	AU	TO TUNE	
Res BW 1.0 Marker Table	//Hz	-			Sweep	~18.7 ms (20001 pts)	CF Step	0000 MHz	
Mode	Trace S	cale X	Ý		Function Width	Function Value	Aut Ma		
1 N 2 N 3	1	1 3.814 6 G 1 824.6 M					Freq Off 0 Hz	iset	-
4 5 6							X Axis S Loç Lin	1	Loca
う	3	Mar 04, 2024				N - X		_	

# Sub6 n26. Conducted Spurious (166300ch\_15 MHz\_BPSK\_RB 1\_0)



Spectrum Analy Swept SA	yzer 1	+					¢	Frequency	* 3
KEYSIGHT	Input. RF Coupling DC Align: Auto	Input Z 50 Q 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: Pr Trig: Free Rui	wer (RMS 1 2 3 4 5 6 A wwww A A A A A A A	5.01500	requency 0000 GHz	Séttings
Spectrum cale/Div 10 d	в 2		Ref Level 6,00	dBm	M	r1 4.014 5 GHz -74.169 dBm	Swe	000 GHz pt Span o Span	
14.0							FL	II Span	
14.0 14,0							Start Fre 30.0000	and the second se	
i4.0 i4.0 i4.0			1			IRMS	Stop Fre 10.0000	9 00000 GHz	
tart 30 MHz			#Video BW 3.0	MHz		Stop 10.000 GHz	AUT	TO TUNE	
Res BW 1.0 M Marker Table	/Hz T					~18.7 ms (20001 pts)	Auto		
Mode 1 N	Trace Scal	e X 4.014 5 GHz	Y -74,17 dBm	Function	Function Width	Function Value	Mar		
2 N 3	i i	829.6 MHz					Freq Off 0 Hz	iet	-
4 5 6							X Axis S Log Lin		Loc
15	2	? Mar 04, 2024 1:32:05 PM							

# Sub6 n26. Conducted Spurious (167300ch\_15 MHz\_BPSK\_RB 1\_0)





### Sub6 n26. Conducted Spurious (168300ch\_15 MHz\_BPSK\_RB 1\_0)



Spectrum Anal Swept SA	yzer 1	+					Ö	Frequency	* 3
	Input RF Coupling DC Align Auto	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 Rui	ower (RMS 1 2 3 4 5 6 A www.www A A A A A A A	5.0150	requency 00000 GHz	Settings
Spectrum cale/Div 10 c	.⊪ 2		Ref Level 6.00	dBm	Mk	r1 3.788 7 GHz -74.470 dBm	Sw	0000 GHz ept Span o Span	
4.0							F	ull Span	
14.0 14,0							Start Fre 30.000	eq DOO MHz	
54.0 54.0 74.0						RMS	Stop Fre 10.000	q 000000 GHz	
tart 30 MHz			#Video BW 3.0	MHz		Stop 10.000 GHz	AU	TO TUNE	
Res BW 1.0 I Marker Table		. u.				~18.7 ms (20001 pts)	997.00 Aut	0000 MHz	
Mode 1 N	Trace Scal	3.788 7 GH		Function	Function Width	Function Value	Ma Freq Off		
2 N 3	1 f	824.6 MH	z -4.448 dBm				0 Hz		-
4 5 6							X Axis S Loç Lin		Loc
5	2	? Mar 04, 2024 1:35:34 PM	$\odot$		<b>P</b> +		÷		

# Sub6 n26. Conducted Spurious (166800ch\_20 MHz\_BPSK\_RB 1\_0)



Spectrum Anal Swept SA	yzer 1	-	t					Ö 🖻	requency v
	Align A	1 DG	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: P Trig: Free Ru	ower (RMS 1 2 3 4 5 6 A www.www A A A A A A A	Center Freque	
1 Spectrum Scale/Div 10 d	iB ♦2	•		Ref Level 6.00	dBm	MI	r1 8.327 0 GHz -74.925 dBm	Span 9.97000000 C Swept Sp Zero Spa	an
4 00 14.0 24.0	Y <b>2</b>							Full Spa	
-34.0 -44,0								Start Freq 30.000000 M	Hz
-54.0 -64.0 -74.0							T RMS	Stop Freq 10.00000000	0 GHz
-84.0 start 30 MHz				#Video BW 3.0	MHz		Stop 10.000 GHz	AUTO TU	INE
Res BW 1.0 I 5 Marker Table		•		Warren e M.		Sweep	~18.7 ms (20001 pts)	997.000000 N	ИНz
Mode	Trace	Scale	X	Y	Function	Function Width	Function Value	Auto Man	
1 N 2 N 3	1	i	8.327 0 GHz 827.1 MHz					Freq Offset 0 Hz	
4 5 6								X Axis Scale Log Lin	
15	3		Mar 04, 2024 1:38:10 PM					5 · · · · ·	

# Sub6 n26. Conducted Spurious (167300ch\_20 MHz\_BPSK \_RB 1\_0)





#### Sub6 n26. Conducted Spurious (167800ch\_20 MHz\_BPSK\_RB 1\_0)



# **10. ANNEX A\_ TEST SETUP PHOTO**

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

No.	Description
1	HCT-RF-2404-FC028-P