

TEST REPORT

FCC Sub6 n2 Test for TFGMEIBBCD4 Class II Permissive Change

APPLICANT LG Electronics Inc.

REPORT NO. HCT-RF-2409-FC006-R1

DATE OF ISSUE October 7, 2024

> **Tested by** Jung Ki Lim

Ar

Technical Manager Jong Seok Lee

HCT CO., LTD. Bongjai Huh Bongjai Huh 7 CEO

F-TP22-03(Rev.06)

The report shall not be (partly) reproduced except in full without approval of the laboratory. HCT CO., LTD. 2-6, 73, 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea Tel. +82 31 645 6300 Fax. +82 31 645 6401

1/135



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

T E S T R E P O R T	REPORT NO. HCT-RF-2409-FC006-R1 DATE OF ISSUE October 07, 2024 Additional Model TFGMEIBBCD5, TFGMEIBBCD6, TFGMEIBBCD7, TFGMEIBBCD8, TFGMEIBBCD9, TFGMEIBBCDA, TFGMEIBBCDB, TFGMEIBBCDC
Applicant	LG Electronics Inc. 10, MagokJungang-ro, Gangseo-gu, Seoul 07796, Republic of Korea
Product Name Model Name	GM Onstar Gen12 ROW TFGMEIBBCD4
Date of Test	February 27, 2023 ~ October 05, 2023 May 07, 2024 ~ June 19, 2024 (Only 256QAM)
Location of Test	■ Permanent Testing Lab □ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi- do, Republic of Korea)
FCC ID	BEJTFGMEIBBCD4
FCC Classification	PCS Licensed Transmitter (PCB)
Test Standard Used	FCC Rule Part(s): §24
Test Results	PASS



REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	September 26, 2024	Initial Release
1	October 07, 2024	Added the note (Page 5,21,22)

Notice

Content

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

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

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

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

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

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

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





CONTENTS

1. GENERAL INFORMATION	
1.1. MAXIMUM OUTPUT POWER	6
2. INTRODUCTION	7
2.1. DESCRIPTION OF EUT	7
2.2. MEASURING INSTRUMENT CALIBRATION	7
2.3. TEST FACILITY	7
3. DESCRIPTION OF TESTS	8
3.1 TEST PROCEDURE	8
3.2 CONDUCTED OUTPUT POWER	9
3.3 RADIATED TEST	.10
3.3.1 RADIATED POWER	.11
3.3.2 RADIATED SPURIOUS EMISSIONS	.12
3.4 PEAK- TO- AVERAGE RATIO	.14
3.5 OCCUPIED BANDWIDTH	16
3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL	.17
3.7 BAND EDGE	.18
3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	20
3.9 WORST CASE(RADIATED TEST)	.21
3.10 WORST CASE (CONDUCTED TEST)	.22
4. LIST OF TEST EQUIPMENT	.23
5. MEASUREMENT UNCERTAINTY	.24
6. SUMMARY OF TEST RESULTS	25
7. EMISSION DESIGNATOR	.26
8. TEST DATA	.27
8.1 Conducted Output Power	.27
8.2 EQUIVALENT ISOTROPIC RADIATED POWER	.29
8.2.1 External Antenna	29
8.2.2 Internal Antenna	.33
8.3 RADIATED SPURIOUS EMISSIONS	.37
8.3.1 External Antenna	.37
8.3.2 Internal Antenna	.38
8.4 PEAK-TO-AVERAGE RATIO	.39
8.5 OCCUPIED BANDWIDTH	.40
8.6 CONDUCTED SPURIOUS EMISSIONS	41
8.7 BAND EDGE	41
8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE	
9. TEST PLOTS	
10. ANNEX A_ TEST SETUP PHOTO1	



MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics Inc.
Address:	10, Magok Jungang-ro, Gangseo-gu, Seoul 07796, Republic of Korea
FCC ID:	BEJTFGMEIBBCD4
Application Type:	Class II Permissive Change
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§ 24
EUT Type:	GM Onstar Gen12 ROW
Model(s):	TFGMEIBBCD4
Additional Model(s)	TFGMEIBBCD5,TFGMEIBBCD6,TFGMEIBBCD7,TFGMEIBBCD8, TFGMEIBBCD9, TFGMEIBBCDA, TFGMEIBBCDB, TFGMEIBBCDC
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
Modulation:	CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
	1852.5 MHz – 1907.5 MHz : 5 MHz
Tx Frequency:	1855.0 MHz – 1905.0 MHz : 10 MHz
TX Frequency.	1857.5 MHz – 1902.5 MHz : 15 MHz
	1860.0 MHz – 1900.0 MHz : 20 MHz
Date(s) of Tests:	February 27, 2023 ~ October 05, 2023
Date(s) of Tests:	May 07, 2024 ~ June 19, 2024 (Only 256QAM)
Radiated- External Antenna : EBR36018942_#30- Internal Antenna : EBR36018942K_#14- EBR36018942K_#30 (Only 256QAM)	
	Conducted : EBR36018829_#069, EBR36018942K_#30 (Only 256QAM) ANT5 : 86531607
External Antenna	ANT4:86575530
Information	DUT4:85608774

* Note :

- Original Certification : PI/2 BPSK, QPSK, 16QAM, 64QAM (Report No. HCT-RF-2308-FC003)

- C2PC : It was tested only for 256QAM



1.1. MAXIMUM OUTPUT POWER

				EIRP		EIRP	
Mode	Tx Frequency	Emission	Modulation	External Antenna Max. Power Max. Power		Internal Antenna Max. Power Max. Power	
(MHz)	(MHz)	Designator		Max. Power (W)	мах. Power (dBm)	мах. Power (W)	мах. Power (dBm)
		4M49G7D	PI/2 BPSK	0.442	26.45	0.478	26.79
		4M50G7D	QPSK	0.440	26.43	0.456	26.59
Sub6 n2 (5)	1852.5 - 1907.5	4M52W7D	16QAM	0.343	25.35	0.363	25.60
		4M48W7D	64QAM	0.251	24.00	0.267	24.27
		4M61W7D	256QAM	0.163	22.13	0.168	22.25
		8M99G7D	PI/2 BPSK	0.481	26.82	0.436	26.39
		8M96G7D	QPSK	0.478	26.79	0.427	26.30
Sub6 n2 (10)	1855.0 - 1905.0	8M98W7D	16QAM	0.385	25.85	0.350	25.44
	8M94W7D	64QAM	0.280	24.47	0.253	24.03	
		8M97W7D	256QAM	0.175	22.42	0.158	21.98
		13M5G7D	PI/2 BPSK	0.491	26.91	0.414	26.17
		13M5G7D	QPSK	0.489	26.89	0.406	26.09
Sub6 n2 (15)	1857.5 - 1902.5	13M4W7D	16QAM	0.379	25.79	0.329	25.17
		13M4W7D	64QAM	0.298	24.74	0.239	23.78
		13M5W7D	256QAM	0.183	22.63	0.153	21.85
		17M9G7D	PI/2 BPSK	0.455	26.58	0.414	26.17
	17M9G7D	QPSK	0.454	26.57	0.406	26.09	
Sub6 n2 (20)	1860.0 - 1900.0	17M9W7D	16QAM	0.365	25.62	0.329	25.17
		18M0W7D	64QAM	0.285	24.55	0.239	23.79
		17M9W7D	256QAM	0.181	22.57	0.155	21.89



2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a GM Onstar Gen12 ROW with GSM/GPRS/EGPRS/UMTS and LTE, Sub6.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

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





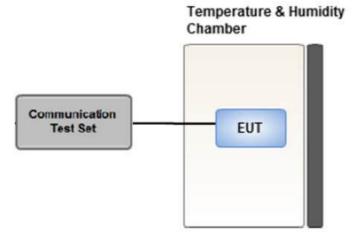
3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- KDB 971168 D01 v03r01 – Section 5.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4
Frequency stability	- ANSI C63.26-2015 – Section 5.6
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 CONDUCTED OUTPUT POWER



Test setup

Test Overview

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

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

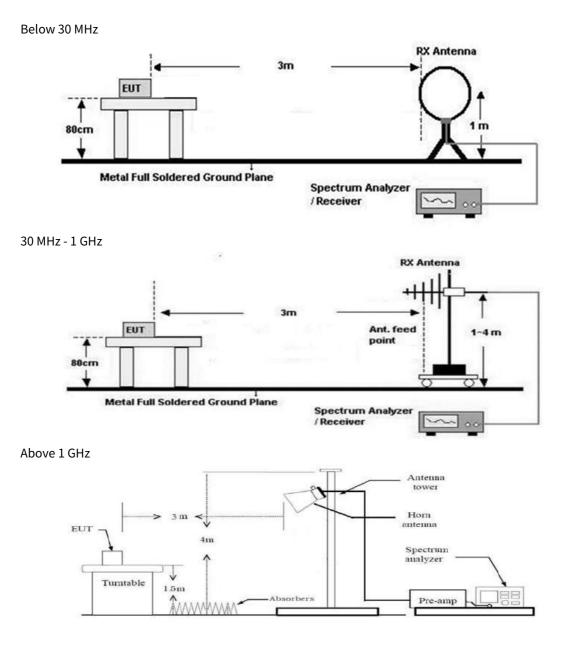


3.3 RADIATED TEST

Test Overview

Radiated tests are performed in the semi-anechoic chamber. The equipment under test is placed on a non-conductive table on semi-anechoic chamber.

Test Configuration



F-TP22-03 (Rev. 06)



3.3.1 RADIATED POWER

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 EUT is placed on a turntable, which is 0.8 m above ground plane. (Below 1 GHz)
- 2. The EUT is placed on a turntable, which is 1.5 m above ground plane. (Above 1 GHz)
- 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 5. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
- 6. 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.
- 7. Total(dBµV/m) = Measured Value(dBµV) + Cable Loss(dB) + Antenna Factor(dB/m) + Distance Factor(D.F)
- 8. EIRP (dBm)
 - = Total (dB μ V/m) + 20 log D $\,-\,$ 104.8 (where D is the measurement distance in meters. D=3)
 - = Total ($dB\mu V/m$) 95.2(dB)
- 9. ERP(dBm) = EIRP(dBm) 2.15(dB)



3.3.2 RADIATED SPURIOUS EMISSIONS

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 10th harmonics from 9 kHz.

Test Note

1. 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

2. 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.

Below 30 MHz

- 1. The loop antenna was placed at a location 3 m from the EUT
- 2. The EUT is placed on a turntable, which is 0.8 m above ground plane.
- 3. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.

4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

- 5. Distance Correction Factor(0.009 MHz 0.490 MHz) = 40log(3 m/300 m) = 80 dB Measurement Distance : 3 m
- 6. Distance Correction Factor(0.490 MHz 30 MHz) = 40log(3 m/30 m) = -40 dB Measurement Distance : 3 m
- 7. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
- 8. EIRP (dBm)
 - = Total ($dB_{\mu}V/m$) + 20 log D 104.8 (where D is the measurement distance in meters. D=3)

```
= Total (dBµV/m) - 95.2(dB)
```

9. ERP(dBm) = EIRP(dBm) - 2.15(dB)



KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Below 1 GHz

- 1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
- 2. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m to find out the highest emissions.
- 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 5. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L)
- 7. Total(dBµV/m) = Measured Value(dBµV) + Cable Loss(dB) + Antenna Factor(dB/m) + Distance Factor(D.F)
- 8. EIRP (dBm)
 - = Total (dB μ V/m) + 20 log D 104.8 (where D is the measurement distance in meters. D=3)
 - = Total (dBµV/m) 95.2(dB)
- 9. ERP(dBm) = EIRP(dBm) 2.15(dB)

Above 1 GHz

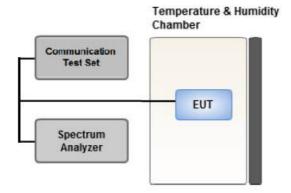
1. The EUT is placed on a turntable, which is 1.5 m above ground plane.

- 2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
- 3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
- 5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 7. Total(dBµV/m) = Measured Value(dBµV) + Cable Loss(dB) + Antenna Factor(dB/m) + Distance Factor(D.F)

- 8. EIRP (dBm)
 - = Total (dB μ V/m) + 20 log D $\,-\,$ 104.8 (where D is the measurement distance in meters. D=3)
 - = Total (dBµV/m) 95.2(dB)



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 $\geq 3 \times$ 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 $2 \times to 3 \times the OBW$.
- 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:

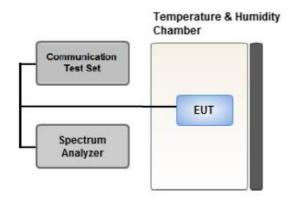
Set \geq [10 × (number of points in sweep) × (transmission period)] for single sweep

(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.
- 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

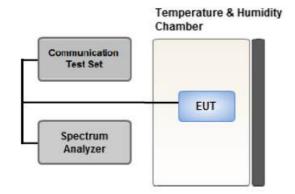
The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured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

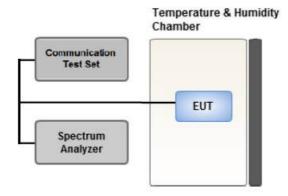
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a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



3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

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

1. Temperature:

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

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

Test Settings

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

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

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





3.9 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported. Mode : SA, NSA
- Worst case : SA

Mode : Internal Antenna, External Antenna (ANT 5, ANT 4, DUT 4)

Worst case : Internal Antenna, External Antenna (ANT 5)

- The worst case is reported with the EUT positioning, modulations, and paging service configurations shown in the test data.
- Please refer to the table below.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported.
- (External Antenna Worst case : 15 MHz)

(Internal Antenna Worst case : 5 MHz)

- TFGMEIBBCD4 & additional models were tested and the worst case results are reported. (Worst case : TFGMEIBBCD4)
- 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.

Test Description	Modulation	RB size	RB offset	Axis
	PI/2 BPSK,			
	QPSK,			
Effective Isotropic Radiated Power	16QAM,	See Section 8.1		Only X
	64QAM,			
	256QAM			
Radiated Spurious Emissions	PI/2 BPSK	See See	ction 8.1	Only X

[External Antenna Worst case]

[Internal Antenna Worst case]

Test Description	Modulation	RB size	RB offset	Axis		
	PI/2 BPSK,					
	QPSK,	QPSK, 16QAM, See Section 8.1 64QAM,		Z		
Effective Isotropic Radiated Power	16QAM,					
	64QAM,					
	256QAM					
Radiated Spurious Emissions	PI/2 BPSK	See Sec	ction 8.1	Y		



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, NSA

Worst case: NSA (5A-n2A)

- All EN-DC mode of operation (=anchor) were investigated and and the worst case results are reported.
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported. Please refer to the table below.
- TFGMEIBBCD4 & additional models were tested and the worst case results are reported. (Worst case : TFGMEIBBCD4)

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

[Worst case]



Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Antenna Position Tower	MA4640/800-XP-ET	Innco systems	N/A	N/A	N/A
Turn Table	DS2000-S	Innco systems	N/A	N/A	N/A
Turn Table	Turn Table	Ets	N/A	N/A	N/A
Controller (Antenna mast & Turn Table)	CO3000	Innco systems	CO3000/1542/ 57580623/G	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM20090001	N/A	N/A
RF Switch System	TMX0132C	TNM System	TM21100002	N/A	N/A
RF Switch System	FBSR-04C HPF1	TNM System	S5L1	03/12/2025	Annual
RF Switch System	FBSR-04C LNA1	TNM System	S5L4	03/12/2025	Annual
RF Switch System	FBSR-04C HPF2	TNM System	S5L5	03/12/2025	Annual
HIGHPASS FILTER	WHKX10-900-1000- 15000-40SS	WAINWRIGHT INSTRUMENTS	16	07/24/2025	Annual
HIGHPASS FILTER	WHNX6.0/26.5G-6SS	WAINWRIGHT INSTRUMENTS	1	12/11/2024	Annual
Power Amplifier	CBL18265035	CERNEX	22966	11/17/2024	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/26/2025	Annual
Loop Antenna (9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Horn Antenna(1 ~ 18 GHz)	HF907	ROHDE & SCHWARZ	103224	05/07/2026	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/09/2025	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/24/2025	Biennial
Trilog Broadband Antenna	VULB 9168	Schwarzbeck	1135	08/19/2026	Biennial
Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	02/19/2025	Annual
DC Power Supply	E3632A	Hewlett Packard	KR01009150	04/18/2025	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/10/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	ROHDE & SCHWARZ	101510	03/28/2025	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/05/2025	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287701	05/16/2025	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/14/2025	Annual
Signal Analyzer (10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
Signal Analyzer (5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note: I. 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, §24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	PASS
Peak- to- Average Ratio	§24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§24.235	Emission must remain in band	PASS

Note:

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

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §24.238(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

Note:

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



7. 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 Conducted Output Power

Dooduidth	SCS/LU-)) OFDM	Modulation	RB	RB	Max.Average Power (dBm)				
Bandwidth	SCS(kHz)		Modulation	Size	Offset	370500	376000	381500		
						1852.5 MHz	1880 MHz	1907.5 MHz		
		DFT-s		1	1	23.59	23.70	23.89		
				1	13	23.50	23.67	23.76		
				1	23	23.56	23.70	23.79		
			pi/2 BPSK	12	0	23.02	23.07	23.17		
				12	7	23.54	23.68	23.82		
F 1411	15			12	13	23.03	23.20	23.37		
5 MHz	15			25	0	23.04	23.17	23.32		
			QPSK	1	1	23.53	23.54	23.68		
			16QAM	1	1	22.47	22.45	22.70		
			64QAM	1	1	21.21	21.19	21.31		
			256QAM	1	1	19.11	19.20	19.39		
		СР	QPSK	1	1	21.97	21.86	22.11		

De e de Édule		05014	DM Modulation		RB	Max.Average Power (dBm)				
Bandwidth	SCS(kHz)	OFDM	Modulation	Size	Offset	371000	376000	381000		
						1855 MHz	1880 MHz	1905 MHz		
				1	1	23.82	23.65	23.80		
				1	26	23.80	23.58	23.79		
				1	50	23.77	23.63	23.71		
			pi/2 BPSK	25	0	23.19	23.07	23.27		
				25	14	23.79	23.60	23.78		
10 1411-	15	DFT-s		25	27	23.25	23.19	23.31		
10 MHz	15			50	0	23.28	23.09	23.30		
			QPSK	1	1	23.68	23.59	23.59		
			16QAM	1	1	22.67	22.56	22.61		
			64QAM	1	1	21.42	21.23	21.43		
			256QAM	1	1	19.16	19.22	19.58		
		СР	QPSK	1	1	22.10	21.98	22.06		

F-TP22-03 (Rev. 06)



Bandwidth	SCS(kHz)	OFDM	Modulation	RB	RB	Max.Average Power (dBm)				
Danuwiuun	SCS(KHZ)		Modulation	Size	Offset	371500	376000	380500		
						1857.5 MHz	1880 MHz	1902.5 MHz		
		DFT-s		1	1	23.87	23.73	23.69		
				1	40	23.77	23.70	23.57		
				1	77	23.75	23.68	23.61		
			pi/2 BPSK	36	0	23.24	23.19	22.59		
				36	22	23.74	23.68	23.60		
15 141-	15			36	43	23.37	23.23	23.02		
15 MHz	15			75	0	23.26	23.19	23.16		
			QPSK	1	1	23.84	23.71	23.61		
			16QAM	1	1	22.81	22.72	22.60		
			64QAM	1	1	21.48	21.42	21.25		
		_	256QAM	1	1	19.14	19.21	19.43		
		СР	QPSK	1	1	22.18	22.16	22.18		

Bandwidth	SCS(///1-2)	OFDM	Modulation	RB	RB	Max.A	Max.Average Power (dBm)				
Danuwiuun	SCS(kHz)	OFDM	Modulation	Size	Offset	372000	376000	380000			
						1860 MHz	1880 MHz	1900 MHz			
				1	1	23.82	23.71	23.71			
		DFT-s		1	53	23.72	23.68	23.65			
				1	104	23.64	23.57	23.36			
			pi/2 BPSK	50	0	23.18	23.23	23.18			
				50	28	23.81	23.70	23.40			
20 141	15			50	56	22.70	23.17	22.64			
20 MHz	15			100	0	23.01	23.18	22.93			
			QPSK	1	1	23.47	23.66	23.61			
			16QAM	1	1	22.40	22.58	22.45			
			64QAM	1	1	21.43	21.31	21.29			
			256QAM	1	1	19.06	19.22	19.37			
		СР	QPSK	1	1	22.14	22.07	22.02			



8.2 EQUIVALENT ISOTROPIC RADIATED POWER

8.2.1 External Antenna

Freq			Measured	A.F+C.L+D.F	Total		Limit	EI	RP	R	В
(MHz)	Bandwidth	Modulation	Level (dBµV)	(dB/m)	(dBµV/m)	Pol	w	W	dBm	Size	Offset
		PI/2 BPSK	89.20	32.45	121.65	V		0.442	26.45		
		QPSK	89.18	32.45	121.63	V		0.440	26.43		
1852.5		16-QAM	88.10	32.45	120.55	V		0.343	25.35	1	23
		64-QAM	86.75	32.45	119.20	V		0.251	24.00		
	_	256-QAM	84.88	32.45	117.33	V	_	0.163	22.13		
		PI/2 BPSK	88.42	32.77	121.19	V		0.397	25.99		
	Sub6 n2/	QPSK	88.33	32.77	121.10	V		0.389	25.90		
1880.0	5 MHz	16-QAM	87.53	32.77	120.30	V	< 2.00	0.324	25.10	1	1
	[15 kHz]	64-QAM	86.15	32.77	118.92	V		0.235	23.72	_	
		256-QAM	84.05	32.77	116.82	V	0.14	0.145	21.62		
		PI/2 BPSK	86.44	33.11	119.55	V		0.272	24.35		
		QPSK	86.37	33.11	119.48	V		0.268	24.28		
1907.5		16-QAM	85.43	33.11	118.54	V		0.216	23.34	1	1
		64-QAM	84.16	33.11	117.27	V	V 0	0.161	22.07		
		256-QAM	82.21	33.11	115.32	V		0.103	20.12		



Freq			Measured	A.F+C.L+D.F	Total		Limit	EI	RP	R	В		
(MHz)	Bandwidth	Modulation	Level	(dB/m)	(dBµV/m)	Pol	w	W	dBm	Size	Offset		
. ,			(dBµV)		(* F* / /								
		PI/2 BPSK	89.55	32.47	122.02	V		0.481	26.82				
		QPSK	89.52	32.47	121.99	V		0.478	26.79				
1855.0		16-QAM	88.58	32.47	121.05	V		0.385	25.85	1	50		
		64-QAM	87.20	32.47	119.67	V		0.280	24.47				
_		256-QAM	85.15	32.47	117.62	V		0.175	22.42				
		PI/2 BPSK	88.72	32.77	121.49	V		0.425	26.29				
	Sub6 n2/	QPSK	88.66	32.77	121.43	V		0.420	26.23				
1880.0	10 MHz	16-QAM	87.48	32.77	120.25	۷	< 2.00	0.320	25.05	1	1		
	[15 kHz]	64-QAM	86.47	32.77	119.24	V		0.253	24.04				
_		256-QAM	84.61	32.77	117.38	V		0.165	22.18				
		PI/2 BPSK	86.40	33.06	119.46	۷		0.266	24.26				
		QPSK	86.38	33.06	119.44	۷		0.265	24.24				
1905.0		16-QAM	85.55	33.06	118.61	۷		0.219	23.41	1	26		
	_	-			64-QAM	84.62	33.06	117.68	٧		0.177	22.48	
		256-QAM	82.74	33.06	115.80	V		0.115	20.60				



Freq			Measured	A.F+C.L+D.F	Total		Limit	EI	RP	R	В
(MHz)	Bandwidth	Modulation	Level (dBµV)	(dB/m)	(dBµV/m)	Pol	w	W	dBm	Size	Offset
		PI/2 BPSK	89.57	32.54	122.11	V		0.491	26.91		
		QPSK	89.55	32.54	122.09	V		0.489	26.89		
1857.5		16-QAM	88.45	32.54	120.99	V		0.379	25.79	1	77
		64-QAM	87.40	32.54	119.94	V		0.298	24.74		
		256-QAM	85.29	32.54	117.83	V		0.183	22.63		
		PI/2 BPSK	89.10	32.77	121.87	V		0.464	26.67		
	Sub6 n2/	QPSK	89.00	32.77	121.77	V		0.454	26.57		
1880.0	15 MHz	16-QAM	88.15	32.77	120.92	V	< 2.00	0.373	25.72	1	1
	[15 kHz]	64-QAM	86.60	32.77	119.37	V		0.261	24.17		
		256-QAM	84.59	32.77	117.36	V		0.164	22.16		
		PI/2 BPSK	87.24	33.05	120.29	V		0.323	25.09		
		QPSK	87.22	33.05	120.27	V		0.322	25.07		
1902.5		16-QAM	86.42	33.05	119.47	V		0.268	24.27	1	1
		64-QAM	85.55	33.05	118.60	V		0.219	23.40		
		256-QAM	83.76	33.05	116.81	V		0.145	21.61		



Freq			Measured	A.F+C.L+D.F	Total		Limit	EI	RP	R	В
(MHz)	Bandwidth	Modulation	Level	(dB/m)	(dBµV/m)	Pol	w	W	dBm	Size	Offset
()			(dBµV)	((0.20	
		PI/2 BPSK	89.10	32.59	121.69	V		0.445	26.49		
		QPSK	89.06	32.59	121.65	V		0.441	26.45		
1860.0		16-QAM	88.02	32.59	120.61	V		0.347	25.41	1	104
		64-QAM	87.00	32.59	119.59	V		0.275	24.39		
		256-QAM	84.98	32.59	117.57	۷		0.172	22.37		
		PI/2 BPSK	89.01	32.77	121.78	V		0.455	26.58		
	Sub6 n2/	QPSK	89.00	32.77	121.77	V		0.454	26.57		
1880.0	20 MHz	16-QAM	88.05	32.77	120.82	V	< 2.00	0.365	25.62	1	1
	[15 kHz]	64-QAM	86.98	32.77	119.75	V		0.285	24.55		
		256-QAM	85.00	32.77	117.77	V		0.181	22.57		
		PI/2 BPSK	87.27	33.07	120.34	V		0.327	25.14		
		QPSK	87.12	33.07	120.19	V		0.316	24.99		
1900.0		16-QAM	86.24	33.07	119.31	۷		0.258		1	1
			64-QAM	85.74	33.07	118.81	V		0.230	23.61	
		256-QAM	83.81	33.07	116.88	V		0.147	21.68		



8.2.2 Internal Antenna

Freq			Measured	A.F+C.L+D.F	Total		Limit	EI	RP	R	В
(MHz)	Bandwidth	Modulation	Level (dBµV)	(dB/m)	(dBµV/m)	Pol	W	W	dBm	Size	Offset
		PI/2 BPSK	89.54	32.45	121.99	۷		0.478	26.79		
		QPSK	89.34	32.45	121.79	۷		0.456	26.59		
1852.5		16-QAM	88.35	32.45	120.80	۷		0.363	25.60	1	12
		64-QAM	87.02	32.45	119.47	V		0.267	24.27		
		256-QAM	85.00	32.45	117.45	V		0.168	22.25		
		PI/2 BPSK	86.53	32.77	119.30	V		0.257	24.10		
	Sub6 n2/	QPSK	86.49	32.77	119.26	V		0.255	24.06		
1880.0	5 MHz	16-QAM	85.64	32.77	118.41	V	< 2.00	0.209	23.21	1	1
	[15 kHz]	64-QAM	84.17	32.77	116.94	۷		0.149	9 21.74		
		256-QAM	82.01	32.77	114.78	۷		0.091	19.58		
		PI/2 BPSK	84.81	33.11	117.92	Н		0.187	22.72		
		QPSK	84.65	33.11	117.76	Н		0.180	22.56		
1907.5		16-QAM	83.57	33.11	116.68	Н		0.141	21.48	1	1
		64-QAM	82.00	33.11	115.11	Н		0.098	19.91		
		256-QAM	80.18	33.11	113.29	۷		0.064	18.09		



Freq			Measured	A.F+C.L+D.F	Total		Limit	EII	RP	R	В
(MHz)	Bandwidth	Modulation	Level	(dB/m)	(dBµV/m)	Pol	w	W	dBm	Size	Offset
			(dBµV)								
		PI/2 BPSK	89.12	32.47	121.59	V	_	0.436	26.39		
		QPSK	89.03	32.47	121.50	V		0.427	26.30		
1855.0		16-QAM	88.17	32.47	120.64	V		0.350	25.44	1	1
		64-QAM	86.76	32.47	119.23	V		0.253	24.03		
		256-QAM	84.71	32.47	117.18	V		0.158	21.98		
		PI/2 BPSK	86.68	32.77	119.45	V		0.266	24.25		
	Sub6 n2/	QPSK	86.62	32.77	119.39	V		0.262	24.19		
1880.0	10 MHz	16-QAM	85.64	32.77	118.41	V	< 2.00	0.209	23.21	1	1
	[15 kHz]	64-QAM	84.29	32.77	117.06	V		0.153	21.86		
		256-QAM	82.33	32.77	115.10	V		0.098	19.90		
		PI/2 BPSK	85.12	33.06	118.18	Н		0.198	22.98		
		QPSK	85.07	33.06	118.13	Н		0.196	22.93		
1905.0		16-QAM	84.11	33.06	117.17	Н		0.157	21.97	1	1
		64-QAM	82.71	33.06	115.77	Н		0.114	20.57		
		256-QAM	80.93	33.06	113.99	V		0.076	18.79		



Freq (MHz)	Bandwidth	Modulation	Measured	A.F+C.L+D.F		Pol	Limit	EIRP		RB	
			Level	(dB/m)			w	W	dBm	Size	Offset
			(dBµV)								
1857.5		PI/2 BPSK	88.83	32.54	121.37	V	0.329 0.239 0.153 0.282 0.277 < 2.00 0.222 0.161 0.107 0.226	26.17			
		QPSK	88.75	32.54	121.29	V		0.406	26.09	1	1
		16-QAM	87.83	32.54	120.37	V		0.329	25.17		
		64-QAM	86.44	32.54	118.98	V		0.239	23.78		
		256-QAM	84.51	32.54	117.05	V		0.153	21.85		
1880.0		PI/2 BPSK	86.94	32.77	119.71	V		0.282	24.51	1	1
	Sub6 n2/	QPSK	86.85	32.77	119.62	V		0.277	24.42		
	15 MHz [15 kHz]	16-QAM	85.90	32.77	118.67	V		0.222	23.47		
		64-QAM	84.50	32.77	117.27	V		0.161	22.07		
		256-QAM	82.73	32.77	115.50	V		20.30			
1902.5		PI/2 BPSK	85.68	33.05	118.73	Н		0.226	23.53		
		QPSK	85.58	33.05	118.63	Н		23.43			
		16-QAM	84.56	33.05	117.61	Н		0.174	22.41	1	1
		64-QAM	83.17	33.05	116.22	Н		0.127	21.02		
		256-QAM	81.13	33.07	114.20	V	0.083	19.17			



Freq (MHz)	Bandwidth	Modulation	Measured	A.F+C.L+D.F	Total (dBμV/m)	Pol	Limit	Limit EIRP		RB	
				(dB/m)			w	W	dBm	Size	Offset
			(dBµV)		(* F* / /						
1860.0		PI/2 BPSK	88.78	32.59	121.37	V	0.406 0.329 0.239	26.17			
		QPSK	88.70	32.59	121.29	V		0.406	26.09	1	1
		16-QAM	87.78	32.59	120.37	V		0.329	25.17		
		64-QAM	86.40	32.59	118.99	V		0.239	23.79		
		256-QAM	84.50	32.59	117.09	V		0.155	21.89		
1880.0		PI/2 BPSK	86.98	32.77	119.75	V	 < 2.00 0.275 0.219 0.166 0.107 0.216 	0.285	24.55	1	1
	Sub6 n2/	QPSK	86.82	32.77	119.59	V		0.275	24.39		
	20 MHz	16-QAM	85.84	32.77	118.61	V		0.219	23.41		
	[15 kHz]	64-QAM	84.63	32.77	117.40	V		0.166	22.20		
	-	256-QAM	82.71	32.77	115.48	V		0.107	20.28		
1900.0		PI/2 BPSK	85.47	33.07	118.54	Н		0.216	23.34	-	
		QPSK	85.43	33.07	118.50	Н		0.214	23.30		
		16-QAM	84.41	33.07	117.48	Н		0.169	22.28	1	1
		64-QAM	83.09	33.07	116.16	Н	0.125 0.080	20.96			
		256-QAM	81.13	33.07	114.20	V		0.080	19.00		



8.3 RADIATED SPURIOUS EMISSIONS

8.3.1 External Antenna

NR Band:	<u>N2</u>
Bandwidth:	<u>15 MHz</u>
Modulation:	PI/2 BPSK
Distance:	3 meters
SCS:	15 kHz

Ch	Ch Freq		A.F+C.L+D.F+H.P.F -A.G	Total	Pol.	Result	Limit	R	B
	(MHz)	(dBµV)	(dB/m)	(dBµV/m)		(dBm)	(dBm)	Size	Offset
	3 715.00	70.48	-11.63	58.85	V	-36.35	-13.00		
	5 572.50	68.74	-7.14	61.60	V	-33.60	-13.00		
371500 (1857.5)	7 430.00	50.84	-0.64	50.20	V	-45.00	-13.00	1	77
	9 287.50	49.31	4.03	53.34	V	-41.86	-13.00		
	11 145.00	48.14	5.70	53.84	V	-41.36	-13.00		
	3 760.00	68.72	-11.58	57.14	V	-38.06	-13.00		
	5 640.00	64.34	-6.86	57.48	V	-37.72	-13.00		
376000 (1880.0)	7 520.00	50.65	-0.81	49.84	V	-45.36	-13.00	1	1
	9 400.00	49.88	3.50	53.38	V	-41.82	-13.00		
	11 280.00	47.58	5.54	53.12	V	-42.08	-13.00		
	3 805.00	71.29	-11.48	59.81	V	-35.39	-13.00		
	5 707.50	65.42	-6.72	58.70	V	-36.50	-13.00		
380500 (1902.5)	7 610.00	50.21	-1.10	49.12	V	-46.09	-13.00	1	1
	9 512.50	49.01	3.75	52.76	V	-42.44	-13.00		
	11 415.00	48.39	5.79	54.18	V	-41.02	-13.00		

F-TP22-03 (Rev. 06)



8.3.2 Internal Antenna

NR Band:	<u>N2</u>
Bandwidth:	5 MHz
Modulation:	PI/2 BPSK
Distance:	3 meters
SCS:	15 kHz

Ch Freq		Measured Level	A.F+C.L+D.F+H.P.F -A.G	Total	Pol.	Result	Limit (dBm)	F	ß
-	(MHz)	(dBµV)	(dB/m)	(dBµV/m)		(dBm)	(dBm)	Size	Offset
	3 705.00	65.03	-11.65	53.38	Н	-41.82	-13.00		
	5 557.50	66.41	-7.25	59.16	Н	-36.04	-13.00		
370500 (1852.5)	7 410.00	55.61	-0.65	54.96	V	-40.24	-13.00	1	12
	9 262.50	50.26	3.78	54.04	Н	-41.16	-13.00		
	11 115.00	50.59	5.81	56.40	V	-38.80	-13.00		
	3 760.00	63.81	-11.58	52.23	Н	-42.97	-13.00		
	5 640.00	60.90	-6.86	54.04	Н	-41.16	-13.00		
376000 (1880.0)	7 520.00	54.51	-0.81	53.70	V	-41.50	-13.00	1	1
	9 400.00	51.44	3.50	54.94	V	-40.26	-13.00		
	11 280.00	52.24	5.54	57.78	V	-37.42	-13.00		
	3 815.00	65.23	-11.47	53.76	Н	-41.44	-13.00		
	5 722.50	57.08	-6.69	50.39	Н	-44.81	-13.00		
381500 (1907.5)	7 630.00	52.55	-1.13	51.42	V	-43.78	-13.00	1	1
	9 537.50	49.24	3.76	53.00	V	-42.20	-13.00		
	11 445.00	50.54	5.97	56.51	V	-38.69	-13.00		



8.4 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
			BPSK			3.84
			QPSK			4.43
	5 MHz		16-QAM	25	-	5.59
			64-QAM		-	6.07
			256-QAM			6.51
			BPSK			4.01
	10 MHz	1880.0	QPSK			4.59
			16-QAM	50	-	5.54
			64-QAM		-	5.96
Sub6			256-QAM		0	6.67
n2			BPSK			4.16
			QPSK			4.77
	15 MHz		16-QAM			5.71
			64-QAM			6.12
			256-QAM			6.65
			BPSK			3.88
			QPSK			4.53
	20 MHz		16-QAM	100		5.54
	10 MHz 15 MHz		64-QAM			6.02
			256-QAM			6.68

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 67 \sim 86.

F-TP22-03 (Rev. 06)



8.5 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)	
			BPSK			4.4884	
			QPSK			4.4978	
	5 MHz		16-QAM	25		4.5166	
			64-QAM			4.4769	
			256-QAM			4.6126	
			BPSK			8.9873	
			QPSK			8.9637	
	10 MHz			16-QAM	50		8.9766
			64-QAM			8.9394	
Sub6		1000.0	256-QAM		0	8.9732	
n2		1880.0	BPSK	75	0	13.464	
			QPSK		_	13.476	
	15 MHz		16-QAM			13.416	
			64-QAM			13.404	
			256-QAM			13.450	
			BPSK			17.895	
			QPSK			17.913	
20 MHz	20 MHz		16-QAM	100		17.846	
			64-QAM			17.974	
			256-QAM			17.877	

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 47 ~ 66.

F-TP22-03 (Rev. 06)



Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
		1852.5	3.9841	30.200	-80.544	-50.344	
	5	1880.0	4.9233	30.200	-79.773	-49.573	
		1907.5	3.7827	30.200	-80.584	-50.384	
		1855.0	9.0778	30.815	-81.019	-50.204	
	10	1880.0	3.7513	30.200	-77.888	-47.688	
Sub6		1905.0	9.9975	30.815	-79.767	-48.952	12.00
n2		1857.5	4.0509	30.200	-79.631	-49.431	-13.00
	15	1880.0	4.9467	30.200	-79.905	-49.705	
		1902.5	4.0364	30.200	-80.888	-50.688	
		1860.0	8.5539	30.815	-80.007	-49.192	
	20	1880.0	9.1281	30.815	-80.623	-49.808	
		1900.0	9.1311	30.815	-81.085	-50.270	

8.6 CONDUCTED SPURIOUS EMISSIONS

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 111 ~ 134.

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

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

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

8.7 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 87 ~ 110.



8.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Bandwidth:		BandWidth:
------------	--	------------

Voltage(100 %):

LIMIT:

5 MHz 13.500 VDC Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	ppm
	100 %	+20(Ref)	1852 499 992	0.0	0.000 000	0.000
-	100 %	-30	1852 499 985	-7.3	0.000 000	-0.004
-	100 %	-20	1852 499 985	-7.1	0.000 000	-0.004
-	100 %	-10	1852 499 985	-6.8	0.000 000	-0.004
_	100 %	0	1852 499 985	-7.0	0.000 000	-0.004
1852.5	100 %	+10	1852 499 985	-6.9	0.000 000	-0.004
	100 %	+30	1852 499 985	-7.5	0.000 000	-0.004
	100 %	+40	1852 499 985	-7.7	0.000 000	-0.004
	100 %	+50	1852 499 984	-7.8	0.000 000	-0.004
	85 %	+20	1852 499 984	-8.1	0.000 000	-0.004
-	115 %	+20	1852 499 984	-7.8	0.000 000	-0.004
	100 %	+20(Ref)	1907 499 999	0.0	0.000 000	0.000
	100 %	-30	1907 499 999	-0.9	0.000 000	0.000
	100 %	-20	1907 499 998	-1.2	0.000 000	-0.001
	100 %	-10	1907 499 998	-1.9	0.000 000	-0.001
	100 %	0	1907 499 997	-2.4	0.000 000	-0.001
1907.5	100 %	+10	1907 499 997	-2.7	0.000 000	-0.001
-	100 %	+30	1907 499 996	-3.1	0.000 000	-0.002
	100 %	+40	1907 499 995	-4.1	0.000 000	-0.002
	100 %	+50	1907 499 995	-4.5	0.000 000	-0.002
	85 %	+20	1907 499 990	-9.4	0.000 000	-0.005
	115 %	+20	1907 499 992	-7.5	0.000 000	-0.004



- BandWidth:
- Voltage(100 %):
- LIMIT:

10 MHz

13.500 VDC

Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm	
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)		
	100 %	+20(Ref)	1854 999 994	0.0	0.000 000	0.000	
	100 %	-30	1854 999 991	-2.9	0.000 000	-0.002	
	100 %	-20	1854 999 992	-1.9	0.000 000	-0.001	
	100 %	-10	1854 999 993	-1.3	0.000 000	-0.001	
	100 %	0	1854 999 996	1.7	0.000 000	0.001	
1855.0	100 %	+10	1854 999 996	1.9	0.000 000	0.001	
	100 %	+30	1854 999 998	4.1	0.000 000	0.002	
	100 %	+40	1854 999 998	4.5	0.000 000	0.002	
	100 %	+50	1854 999 981	-12.7	-0.000 001	-0.007	
	85 %	+20	1854 999 983	-11.1	-0.000 001	-0.006	
	115 %	+20	1854 999 983	-10.4	-0.000 001	-0.006	
	100 %	+20(Ref)	1904 999 996	0.0	0.000 000	0.000	
	100 %	-30	1904 999 991	-5.0	0.000 000	-0.003	
	100 %	-20	1904 999 991	-5.5	0.000 000	-0.003	
	100 %	-10	1904 999 991	-4.9	0.000 000	-0.003	
	100 %	0	1904 999 990	-5.8	0.000 000	-0.003	
1905.0	100 %	+10	1904 999 990	-6.1	0.000 000	-0.003	
	100 %	+30	1904 999 990	-6.1	0.000 000	-0.003	
	100 %	+40	1904 999 988	-7.6	0.000 000	-0.004	
	100 %	+50	1904 999 988	-8.0	0.000 000	-0.004	
	85 %	+20	1904 999 987	-9.4	0.000 000	-0.005	
	115 %	+20	1904 999 985	-11.1	-0.000 001	-0.006	



- BandWidth:
- Voltage(100 %):
- LIMIT:

15 MHz

13.500 VDC

Emission must remain in band

Test. Frequncy	Voltage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
	100 %	+20(Ref)	1857 500 015	0.0	0.000 000	0.000
	100 %	-30	1857 500 025	10.5	0.000 001	0.006
	100 %	-20	1857 500 023	8.9	0.000 000	0.005
	100 %	-10	1857 500 023	8.0	0.000 000	0.004
	100 %	0	1857 500 020	5.9	0.000 000	0.003
1857.5	100 %	+10	1857 500 018	3.2	0.000 000	0.002
	100 %	+30	1857 500 017	2.4	0.000 000	0.001
	100 %	+40	1857 500 032	17.5	0.000 001	0.009
	100 %	+50	1857 500 031	16.0	0.000 001	0.009
	85 %	+20	1857 500 029	14.4	0.000 001	0.008
	115 %	+20	1857 500 026	11.3	0.000 001	0.006
	100 %	+20(Ref)	1902 500 008	0.0	0.000 000	0.000
	100 %	-30	1902 500 015	7.4	0.000 000	0.004
	100 %	-20	1902 500 012	3.6	0.000 000	0.002
	100 %	-10	1902 500 010	2.2	0.000 000	0.001
	100 %	0	1902 500 010	2.4	0.000 000	0.001
1902.5	100 %	+10	1902 500 006	-1.7	0.000 000	-0.001
	100 %	+30	1902 500 024	16.0	0.000 001	0.008
	100 %	+40	1902 500 023	14.6	0.000 001	0.008
	100 %	+50	1902 500 019	10.8	0.000 001	0.006
	85 %	+20	1902 500 019	10.9	0.000 001	0.006
	115 %	+20	1902 500 016	8.5	0.000 000	0.004



- BandWidth:
- Voltage(100 %):
- LIMIT:

20 MHz

13.500 VDC

Emission must remain in band

Test.	Voltage	Tomp	Fraguanar		Deviation	
Frequncy	vollage	Temp.	Frequency	Frequency	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	Error (Hz)	(%)	
	100 %	+20(Ref)	1859 999 990	0.0	0.000 000	0.000
	100 %	-30	1859 999 976	-13.7	-0.000 001	-0.007
	100 %	-20	1859 999 992	2.4	0.000 000	0.001
	100 %	-10	1859 999 990	0.5	0.000 000	0.000
	100 %	0	1859 999 987	-2.9	0.000 000	-0.002
1860.0	100 %	+10	1859 999 984	-5.3	0.000 000	-0.003
	100 %	+30	1859 999 983	-7.1	0.000 000	-0.004
	100 %	+40	1859 999 979	-10.2	-0.000 001	-0.006
	100 %	+50	1859 999 977	-12.4	-0.000 001	-0.007
	85 %	+20	1859 999 981	-8.8	0.000 000	-0.005
	115 %	+20	1859 999 983	-6.8	0.000 000	-0.004
	100 %	+20(Ref)	1900 000 007	0.0	0.000 000	0.000
	100 %	-30	1900 000 013	6.6	0.000 000	0.003
	100 %	-20	1899 999 994	-12.6	-0.000 001	-0.007
	100 %	-10	1900 000 012	5.8	0.000 000	0.003
-	100 %	0	1899 999 993	-13.1	-0.000 001	-0.007
1900.0	100 %	+10	1900 000 011	4.6	0.000 000	0.002
=	100 %	+30	1900 000 010	3.7	0.000 000	0.002
-	100 %	+40	1900 000 010	3.4	0.000 000	0.002
=	100 %	+50	1900 000 010	3.0	0.000 000	0.002
=	85 %	+20	1900 000 011	4.8	0.000 000	0.003
=	115 %	+20	1900 000 010	3.5	0.000 000	0.002



Report No. HCT-RF-2409-FC006-R1

9. TEST PLOTS





Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 BPSK RB 25_0)





Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 QPSK RB 25_0)





Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 16QAM RB 25_0)





Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 64QAM RB 25_0)



Spectrum Analyzer 1	+				Ampli	tude 🔻 🔛
EYSIGHT Input RF L +++ Coupling DC Align Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Adaptive	Atten: 10 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 1.880000000 GHz Avg Hold: 500/500 Radio Std: None	Ref Value 40.00 dBm	Y Scale
PASS Graph v	F	Ref Lvi Offset 2			Scale/Div 10.0 dB	Attenuatio
cale/Div 10.0 dB	-	Ref Value 40.00	abm		Y Axis Unit dBm	Signal Pat
10.0	/		والمروابية المراجع المروابية المراجع	***	Ref Level Offset 27.89 dB	
10.0 20.0 30.0 Marine harris and a second a second	/			hoursell for an		
40.0					Ref Position Top	
enter 1.880000 GHz Res BW 100.00 kHz		Video BW 390.	00 kHz	Span 10 1 Sweep 16.7 ms (1001		
Metrics T						
Occupied Bandwidth 4,612	6 MHz		Total Power	31.0 dBm		
Transmit Freq Error x dB Bandwidth	-91.176 kH 4.950 MH		% of OBW Pow x dB	ver 99.00 % -26.00 dB		Loca
		~				
1001	May 27, 2024 7:24:47 PM				< <u> </u>	

Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 256QAM RB 25_0)





Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 BPSK RB 50_0)





Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 QPSK RB 50_0)





Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 16QAM RB 50_0)





Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 64QAM RB 50_0)



RL ++++ Align: Au	DC Co to Fre	ut Z: 50 Ω rr CCorr ¤q Ref: int (S)	Atten: 10 dB Preamp: Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 1.880000000 GHz Avg Hold: 500/500 Radio Std: None	Ref Value 40.00 dBm	Y Scale
Graph	NF		ef LvI Offset 27			Scale/Div 10.0 dB	Attenuatio
cale/Div 10.0 dB		R	ef Value 40.00 (dBm		Y Axis Unit dBm	Signal Pa
20.0 10.0 0.00		and the second second		Manager and	~	Ref Level Offset 27.89 dB	
10.0	anna f				PE		
40.0						Ref Position Top	
Center 1.88000 GHz Res BW 200.00 kHz		#	Video BW 820.0	00 kHz	Span 20 M Sweep 1.00 ms (1001 p	ts) On	
2 Metrics						Off	
Transmit Freq	8.9732 MH: Error	-187.34 kH;		Total Power % of OBW Pow	28.0 dBm wer 99.00 %		
	h	9.645 MHz		x dB	-26.00 dB		Loca

Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 256QAM RB 50_0)





Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 BPSK RB 75_0)



EYSIGHT Input RI L Align Ai	DC Corr CCorr		Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 1.880000000 Avg Hold: 500/500 Radio Std: None	GHz	Center Frequency 1.880000000 GHz	Settings
Graph cale/Div 10.0 dB		Ref LvI Offset 28 Ref Value 40.00				Span 30.000 MHz	
0 00 000						CF Step 3.000000 MHz	
						Man	
0.0 0.0 0.0 0.0	var de la companya de			have	PEW	Freq Offset 0 Hz	
enter 1.88000 GHz Res BW 300.00 kHz		#Video BW 1.20	00 MHz	Sweep 1.00 ms	an 30 MHz (1001 pts)		
Occupied Ban	dwidth 13.476 MHz		Total Power	31.2 dB	m		
	Error -356.69	kHz	% of OBW Pov	ver 99.00	% #B		

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 QPSK RB 75_0)



EYSIGHT Input: RF Coupling DC Align Auto PASS		Atten 10 dB Preamp. Off	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 1.88000000 GHz Avg Hold: 500/500 Radio Std: None	Center Frequency 1.880000000 GHz Span	Settings
Graph v cale/Div 10.0 dB		f LvI Offset 28.00 f Value 40.00 dB			30.000 MHz	
og 0.0					CF Step 3.000000 MHz	
0.0	Juna		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Auto Man	
0.0 0.0 0.0 0.0 0.0	northy .			PEAK	Freq Offset 0 Hz	
0.0 enter 1.88000 GHz Res BW 300.00 kHz	#V	ideo BW 1.2000 I	MHz	Span 30 MH Sweep 1.00 ms (1001 pts		
Metrics Y						
Occupied Bandwidth	416 MHz		Total Power	30.0 dBm		
Occupied Bandwidti 13.	416 MH2		% of OBW Powe	er 99.00 %		1.00

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 16QAM RB 75_0)





Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 64QAM RB 75_0)



Y Scale	ef Value 0.00 dBm	0000 GHz	r Freg. 1.88000000 old: 500/500 Std: None	Avg	Trig: Free Run Gate: Off #IF Gain: Low	Atten: 10 dB Preamp: Off		Corr Freq	Input RF Coupling DC Align Auto	
Attenuatio Signal Pat	cale/Div 0.0 dB Axis Unit					Lvi Offset 27. Value 40.00 d	R		, dB	Graph
	Axis Unit Bm							=		.og 30.0
	ef Level Offset ?7.89 dB			m	disestration to trans	all and the second s	and a state of the second	7		20.0 10.0 0.00
	On Off	PEAK	Www.hoppomen	1						10.0
	ef Position op		- 0. 54 50 m 10 m 10 m 10 m					~~~~	hour - Contraction	30.0 40.0 50.0
	uto Scaling On		S Sweep 1.00 m) MHz	deo BW 1.200	#\			enter 1.8800 Res BW 300.
•	Off								Ť	Metrics
		1 dBm	28.1 dl		Total Power			i I50 MHz	ied Bandwidth 13.4	Occu
		00 %	99.00 -26.00	ower	% of OBW Po x dB		-369.92 kHz 14.38 MHz		nit Freq Error landwidth	

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 256QAM RB 75_0)





Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 BPSK RB 100_0)





Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 QPSK RB 100_0)





Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 16QAM RB 100_0)



EYSIGHT Input RF Coupling De Align Auto		Atten 10 dB Trig. Free Preamp Off Gate Off #IF Gain.	Avg Hold: 500/500	1.880000000 GHz	Settings
Graph v cale/Div 10.0 dB		f Lvi Offset 28.00 dB f Value 40.00 dBm		Span 40.000 MHz	
20.0 10.0				CF Step 4.000000 MHz Auto Man	
0.00 10.0 20.0 30.0 40.0	unit		In Marken Marken	Freq Offset 0 Hz	
enter 1.88000 GHz Res BW 390.00 kHz	#V	deo BW 1.6000 MHz	14 Span 4 Sweep 1.00 ms (100		
Metrics • Occupied Bandwi	ith 7.974 MHz	Total Po	wer 29.6 dBm		
	or -571.86 kHz	% of OE x dB	3W Power 99.00 %		Loca

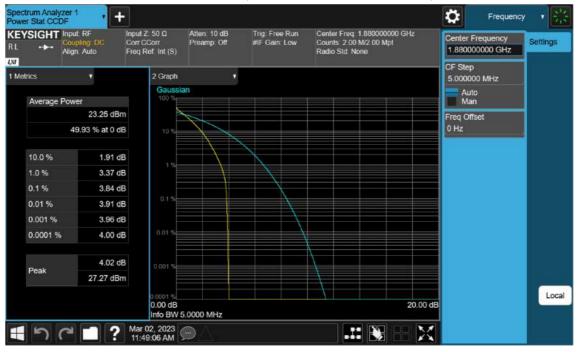
Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 64QAM RB 100_0)



Spectrum Analyzer 1 Occupied BW	+			Amplitu	de 🔻 👯
RL +++ Align Auto		n 10 dB Trig Free Run mp: Off Gate: Off #IF Gain: Low	Center Freq. 1.880000000 GHz AvglHold: 500/500 Radio Std: None	Ref Value 40.00 dBm	Y Scale
1 Graph v	Ref Lv	Offset 27.89 dB		Scale/Div 10.0 dB	Attenuation
Scale/Div 10.0 dB	Ref Va	lue 40.00 dBm		Y Axis Unit dBm	Signal Pati
20.0	for the second s		Ares	Ref Level Offset 27.89 dB	
10.0 20.0 30.0 Mada market market	land -		PEAK	On Off	
40.0				Ref Position Top	
Center 1.88000 GHz Res BW 390.00 kHz	#Video	BW 1.6000 MHz	Span 40 MHz Sweep 1.00 ms (1001 pts)	On	
2 Metrics 🔹 🔻				of	
Occupied Bandwidth 17.87	77 MHz	Total Power	28.3 dBm		
Transmit Freq Error x dB Bandwidth	-569.15 kHz 18.96 MHz	% of OBW Pov x dB	ver 99.00 % -26.00 dB		Local
	May 27, 2024	A.			
	May 27, 2024 7:27:20 PM		👪 👪 📥 🔀		

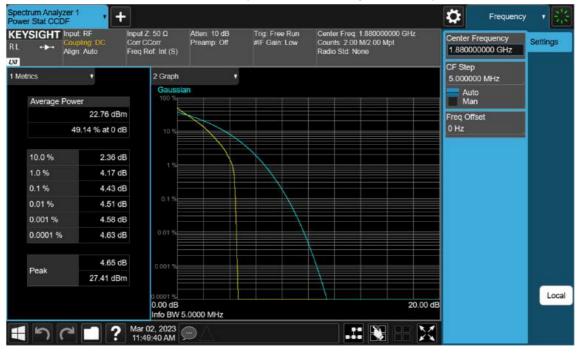
Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 256QAM RB 100_0)





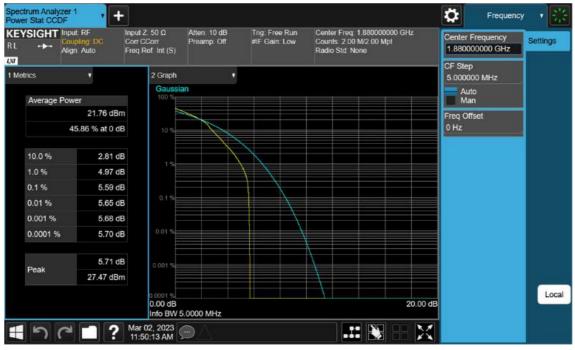
Sub6 n2. PAR Plot (5 M BW Ch.376000 BPSK RB 25_0)





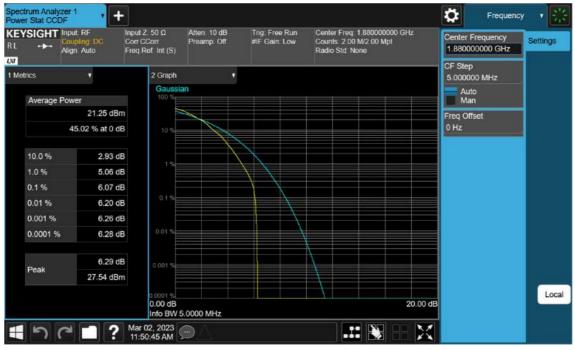
Sub6 n2. PAR Plot (5 M BW Ch.376000 QPSK RB 25_0)





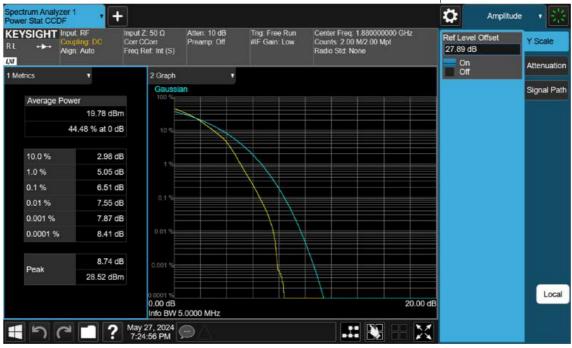
Sub6 n2. PAR Plot (5 M BW Ch.376000 16QAM RB 25_0)





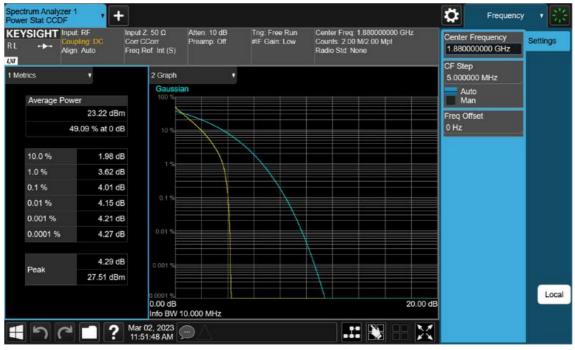
Sub6 n2. PAR Plot (5 M BW Ch.376000 64QAM RB 25_0)





Sub6 n2. PAR Plot (5 M BW Ch.376000 256QAM RB 25_0)





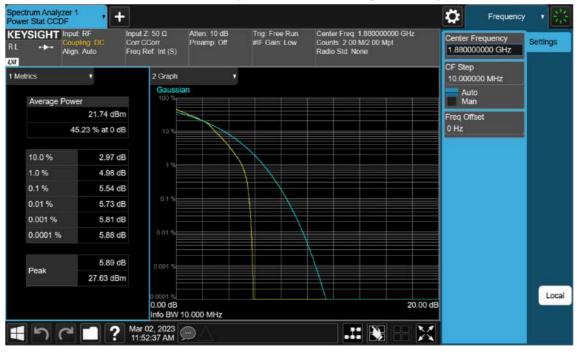
Sub6 n2. PAR Plot (10 M BW Ch.376000 BPSK RB 50_0)





Sub6 n2. PAR Plot (10 M BW Ch.376000 QPSK RB 50_0)





Sub6 n2. PAR Plot (10 M BW Ch.376000 16QAM RB 50_0)





Sub6 n2. PAR Plot (10 M BW Ch.376000 64QAM RB 50_0)





Sub6 n2. PAR Plot (10 M BW Ch.376000 256QAM RB 50_0)





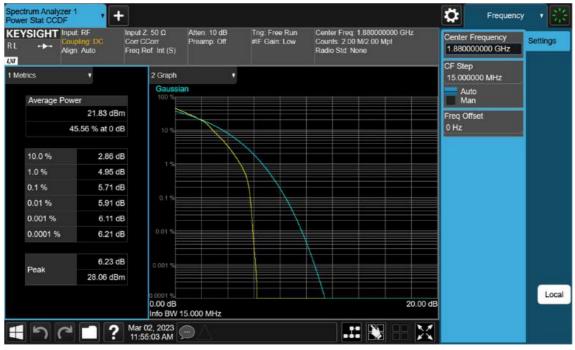
Sub6 n2. PAR Plot (15 M BW Ch.376000 BPSK RB 75_0)





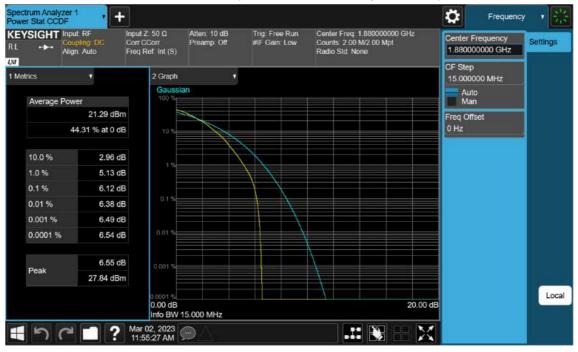
Sub6 n2. PAR Plot (15 M BW Ch.376000 QPSK RB 75_0)





Sub6 n2. PAR Plot (15 M BW Ch.376000 16QAM RB 75_0)





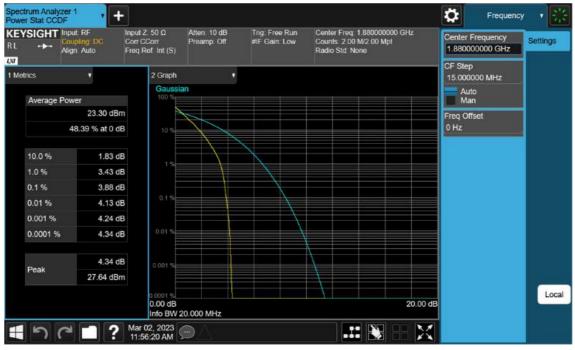
Sub6 n2. PAR Plot (15 M BW Ch.376000 64QAM RB 75_0)





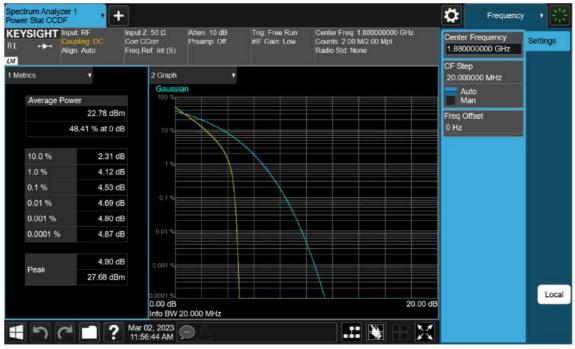
Sub6 n2. PAR Plot (15 M BW Ch.376000 256QAM RB 75_0)





Sub6 n2. PAR Plot (20 M BW Ch.376000 BPSK RB 100_0)





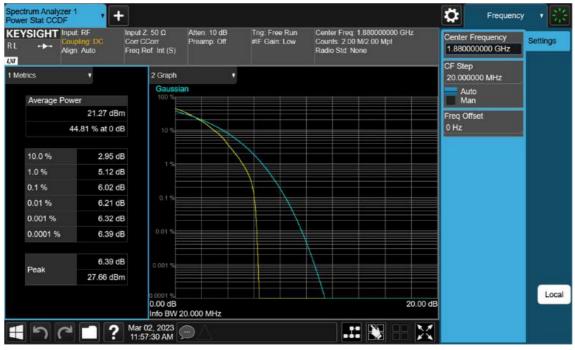
Sub6 n2. PAR Plot (20 M BW Ch.376000 QPSK RB 100_0)





Sub6 n2. PAR Plot (20 M BW Ch.376000 16QAM RB 100_0)





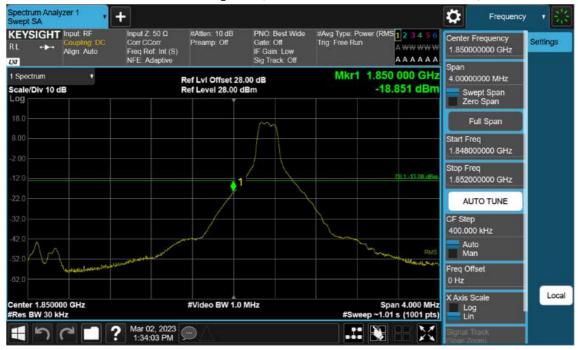
Sub6 n2. PAR Plot (20 M BW Ch.376000 64QAM RB 100_0)





Sub6 n2. PAR Plot (20 M BW Ch.376000 256QAM RB 100_0)





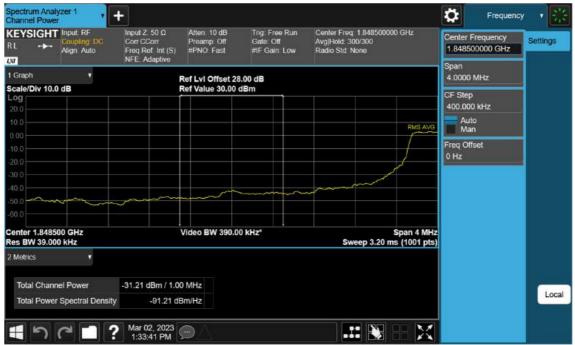
Sub6 n2. Lower Band Edge Plot (5 M BW Ch.370500 BPSK_RB1_Offset 0) -1



L Coupling DC Align Auto	Input Z 50 0 #Atten: 10 dB Corr CCorr Preamp Off Freq Ref. Int (S) NFE: Adaptive	PNO Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS12345) Trig: Free Run A & W W W A	1.03000000 GHz
Spectrum v cale/Div 10 dB	Ref LvI Offset 2 Ref Level 28.00		Mkr1 1.850 000 GH -30.234 dBn	Z 4.00000000 MHz
				Full Span
			RIM	Start Freq 1.848000000 GHz
2.0			DI.113.00 (B)	Stop Freq 1.852000000 GHz
2.0		1		AUTO TUNE
				CF Step 400.000 kHz
20	~~			Auto Man
2.0				Freq Offset 0 Hz
enter 1.850000 GHz Res BW 51 kHz	#Video BW 1	60 kHz	Span 4.000 MH #Sweep ~1.01 s (1001 pts	

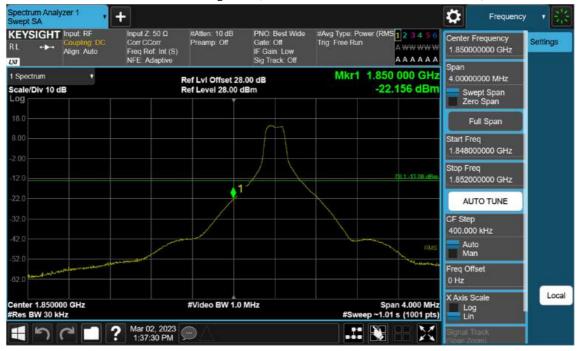
Sub6 n2. Lower Band Edge Plot (5 M BW Ch.370500 BPSK_RB25_Offset 0) -2





Sub6 n2. Lower Extended Band Edge Plot (5 M BW Ch.370500 BPSK_RB25_0) -3





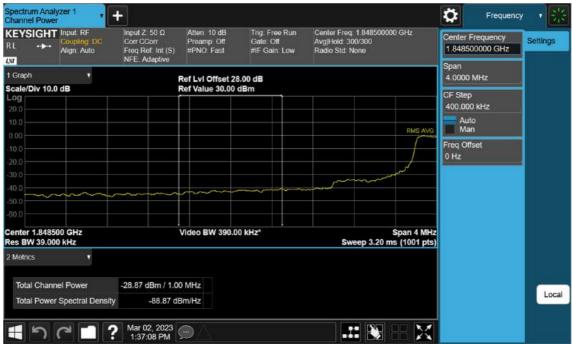
Sub6 n2. Lower Band Edge Plot (10 M BW Ch.371000 BPSK_RB1_Offset 0) -1



CEYSIGHT Input RF Coupling DC Aign Auto		n: 10 dB PNO: Best Wid np: Off Gate: Off IF Gain: Low Sig Track: Off	e #Avg Type. Power (RMS <mark>123456</mark> Trig: Free Run A WW WW A A A A A A	1.030000000 GH2
Spectrum v cale/Div 10 dB		Offset 28.00 dB el 28.00 dBm	Mkr1 1.850 000 GHz -27.908 dBm	4.00000000 MHz
				Full Span
2.00			RMS	Start Freq 1.848000000 GHz
12.0			C1.1 -13.00 dBm	Stop Freq 1.852000000 GHz
22.0		_1/		AUTO TUNE
32.0				CF Step 400.000 kHz
42.0				Auto Man
62.0				Freq Offset 0 Hz
enter 1.850000 GHz Res BW 100 kHz	#Vide	o BW 300 kHz	Span 4.000 MHz #Sweep ~1.01 s (1001 pts	
	Mar 02, 2023	<u>(</u>		Skipal Track

Sub6 n2. Lower Band Edge Plot (10 M BW Ch.371000 BPSK_RB50_Offset 0) -2





Sub6 n2. Lower Extended Band Edge Plot (10 M BW Ch.371000 BPSK_RB50_0) -3



EYSIGHT Input RF Coupling DC Align Auto	Input Z 50 Ω Corr CCorr Freq Ref. Int (S) NFE. Adaptive	#Atten: 10 dB Preamp: Off	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 Trig: Free Run A WWW A A A A A	1.85000000 GHz	Settings
Spectrum v cale/Div 10 dB		tef LvI Offset 28.0 tef Level 28.00 de		Mkr1 1.850 000 GH -23.194 dBr	Z 4.0000000 MHz	
			m		Full Span	
					Start Freq 1.848000000 GHz	
2.0				C) L 1 - 13 ON 48	Stop Freq 1.852000000 GHz	
2.0		1			AUTO TUNE	
					CF Step 400.000 kHz	
20				RM	Auto Man	
2.0 Martin and a state of the s					Freq Offset 0 Hz	
enter 1.850000 GHz Res BW 30 kHz		#Video BW 1.0 M	ЛНz	Span 4.000 Mł #Sweep ~1.01 s (1001 pt		Loc

Sub6 n2. Lower Band Edge Plot (15 M BW Ch.371500 BPSK_RB1_Offset 0) -1



EYSIGHT Input: RF Coupling DC Align Auto		tten: 10 dB samp: Off	PNO. Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type. Power Trig. Free Run	(RMS <mark>123456) AWWWWW</mark> AAAAAA	Center Frequency 1.850000000 GHz Span	Settings
Spectrum v cale/Div 10 dB		vi Offset 28.0 evel 28.00 dB			.850 000 GHz -32.558 dBm	4.00000000 MHz Swept Span Zero Span	
						Full Span	
					RMS	Start Freq 1.848000000 GHz	ź
2.0					C)1.113.00.dBm	Stop Freq 1.852000000 GHz	2
2.0		47	/			AUTO TUNE	
2.0		\rightarrow				CF Step 400.000 kHz	
20						Auto Man	
						Freq Offset 0 Hz	
enter 1.850000 GHz Res BW 150 kHz	#Vi	deo BW 470 k	Hz	#Sweep	Span 4.000 MHz ~1.01 s (1001 pts)	X Axis Scale Log Lin	Loc

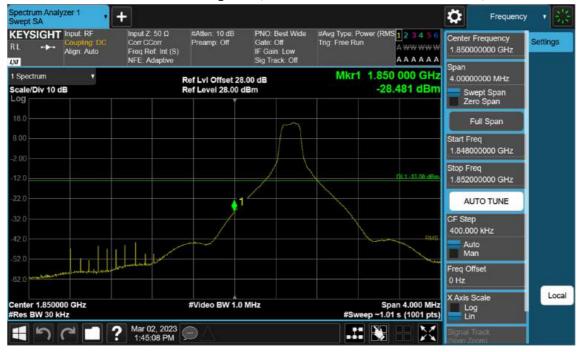
Sub6 n2. Lower Band Edge Plot (15 M BW Ch.371500 BPSK_RB75_Offset 0) -2





Sub6 n2. Lower Extended Band Edge Plot (15 M BW Ch.371500 BPSK_RB75_0) -3





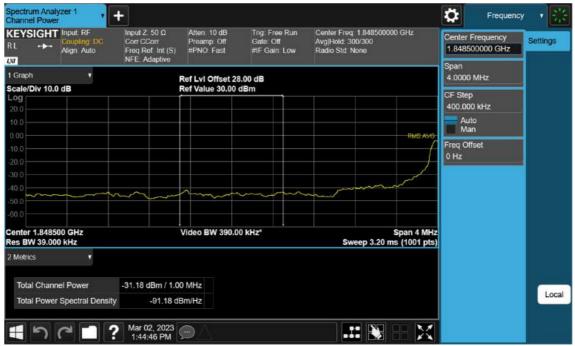
Sub6 n2. Lower Band Edge Plot (20 M BW Ch.372000 BPSK_RB1_Offset 0) -1



L +++ Coupling DC C Align Auto F	nput Z 50 Ω #Atten: 10 dB Corr CCorr Preamp: Off Freq Ref. Int (S) VFE: Adaptive	PNO: Best Wide Gate: Off IF Gain: Low Sig Track: Off	#Avg Type. Power (RMS12345) Trig Free Run A WW WW A A A A A A	1.03000000 GHz
Spectrum v cale/Div 10 dB	Ref LvI Offset 2 Ref Level 28.00		Mkr1 1.850 000 GH -31.672 dBn	Z 4.0000000 MHz
				Full Span
2.00			RM	Start Freq 1.848000000 GHz
12:0			CH 1 -13.00 /09/	Stop Freq 1.852000000 GHz
22.0		1		AUTO TUNE
2.0		50		CF Step 400.000 kHz
12 0 52 0				Auto Man
32:0				Freq Offset 0 Hz
enter 1.850000 GHz Res BW 200 kHz	#Video BW 62	0 kHz	Span 4.000 MH #Sweep ~1.01 s (1001 pts	

Sub6 n2. Lower Band Edge Plot (20 M BW Ch.372000 BPSK_RB100_Offset 0) -2





Sub6 n2. Lower Extended Band Edge Plot (20 M BW Ch.372000 BPSK_RB100_0) -3





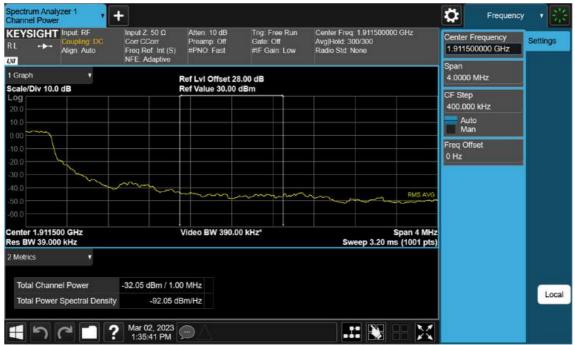
Sub6 n2. Upper Band Edge Plot (5 M BW Ch.381500 BPSK_RB1_Offset 24) -1





Sub6 n2. Upper Band Edge Plot (5 M BW Ch.381500 BPSK_RB25_Offset 0) -2





Sub6 n2. Upper Extended Band Edge Plot (5 M BW Ch.381500 BPSK_RB25_0) -3





Sub6 n2. Upper Band Edge Plot (10 M BW Ch.381000 BPSK_RB1_Offset 51) -1



L +++ Coupling DC Align Auto	Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 10 dB Preamp: Off	PNO. Best Wide Gate: Off IF Gain Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 Trig: Free Run A & A & A A A	1.91000000 GHZ
Spectrum v cale/Div 10 dB		f LvI Offset 28.0 f Level 28.00 dB		Mkr1 1.910 356 GH -33.147 dBr	Z 4.0000000 MHz
8.0					Full Span
00					Start Freq 1.908000000 GHz
2.0				C)(1 -13.00 (#	Stop Freq 1.912000000 GHz
2.0					AUTO TUNE
				RM	CF Step 400.000 kHz
20					Auto Man
2.0					Freq Offset 0 Hz
enter 1.910000 GHz tes BW 100 kHz	#	Video BW 300 k	Hz	Span 4.000 MH #Sweep ~1.01 s (1001 pt	

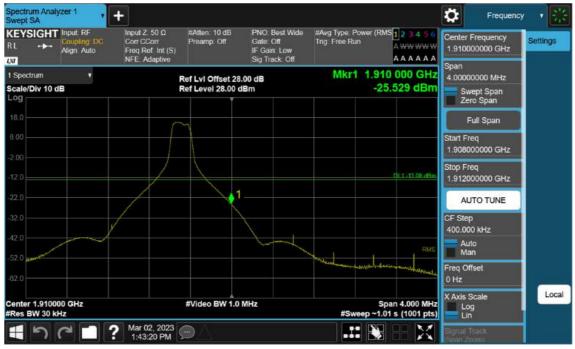
Sub6 n2. Upper Band Edge Plot (10 M BW Ch.381000 BPSK_RB50_Offset 0) -2



D1	Input RF Coupling DC Align Auto	Input Z 50 Ω Corr CCorr Freq Ref Int (S) NFE: Adaptive	Atten 10 dB Preamp Off #PNO Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq 1.9115000 Avg Hold: 300/300 Radio Std: None	10 GHz	Center Frequency 1.911500000 GHz Span	Settings
Graph cale/Div 10.0	√ dB		Ref LvI Offset 28 Ref Value 30.00 (4.0000 MHz	
.og							CF Step 400.000 kHz	
10.0							Auto Man	
10.0							Freq Offset 0 Hz	
30.0			mm			RMS AVG		
10.0 50.0						HMS AVG		
enter 1.91150			Video BW 390.0			Coop d Mile		
			VIDEO BW 390.0	JKHZ	Sweep 3.20 m	Span 4 MHz ns (1001 pts)		
	÷							
es BW 39.000 Metrics								
es BW 39.000		-26.89 dBm / 1.0	0 MHz					lor
Res BW 39.000 Metrics Total Channe		Reisbelickeiten Alter						Loc

Sub6 n2. Upper Extended Band Edge Plot (10 M BW Ch.381000 BPSK_RB50_0) -3





Sub6 n2. Upper Band Edge Plot (15 M BW Ch.380500 BPSK_RB1_Offset 78) -1





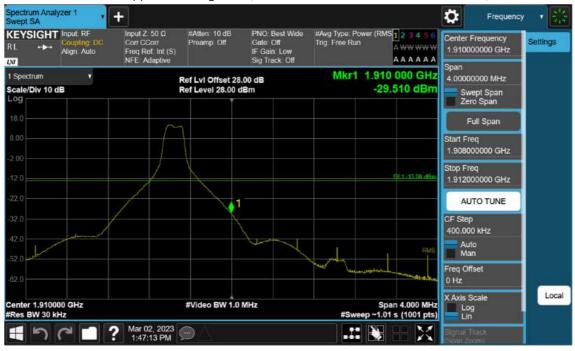
Sub6 n2. Upper Band Edge Plot (15 M BW Ch.380500 BPSK_RB75_Offset 0) -2



	nput RF Soupling DC Nign Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	Atten: 10 dB Preamp: Off #PNO: Fast	Trig: Free Run Gate: Off #IF Gain: Low	Center Freq. 1.9115000 Avg[Hold: 300/300 Radio Std: None	000 GHz	Center Frequency 1.911500000 GHz	Settings
Graph Scale/Div 10.0 d			Ref LvI Offset 28 Ref Value 30.00 (Span 4.0000 MHz	
.og 20.0 10.0			, Ref Value 30.00 f				CF Step 400.000 kHz Auto Man	
							Freq Offset 0 Hz	
30 0 40.0 50.0				~~~~~~		RMS AVG		
80.0 Center 1.911500 Res BW 39.000			Video BW 390.0) kHz*	Sweep 3.20	Span 4 MHz ms (1001 pts)		
Metrics	8							
Total Channel Total Power S	Power	-32.97 dBm / 1.0 y -92.97 dB						Loc
15	9	Mar 02, 2023 1:42:56 PM	$\Theta \triangle$			X		

Sub6 n2. Upper Extended Band Edge Plot (15 M BW Ch.380500 BPSK_RB75_0) -3





Sub6 n2. Upper Band Edge Plot (20 M BW Ch.380000 BPSK_RB1_Offset 105) -1



KEYSIGHT Input RF Coupling DC Align Auto	Input Z 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 10 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 1.910000000 GHz Span	Setting
Spectrum v cale/Div 10 dB		ef LvI Offset 28.0 ef Level 28.00 dB		Mkr1 1.910 -31.	000 GHz 433 dBm	4.0000000 MHz Swept Span Zero Span	
						Full Span	
2.00						Start Freq 1.908000000 GHz	
12.0					101 1 -13.00 dBm	Stop Freq 1.912000000 GHz	
22,0		1			RMS.	AUTO TUNE	
32.0					519.3	CF Step 400.000 kHz	
20						Auto Man	
32:0						Freq Offset 0 Hz	
enter 1.910000 GHz Res BW 200 kHz		#Video BW 620 k	(Hz	Spa #Sweep ~1.01	n 4.000 MHz s (1001 pts)	X Axis Scale Log Lin	Lo
	Mar 02, 2023 1:46:38 PM	ÐA				Signal Track	

Sub6 n2. Upper Band Edge Plot (20 M BW Ch.380000 BPSK_RB100_Offset 0) -2





Sub6 n2. Upper Extended Band Edge Plot (20 M BW Ch.380000 BPSK _RB100_0) -3





Sub6 n2. Conducted Spurious_1 (370500ch_5 MHz_BPSK_RB 1_1)



Spectrum Analyz Swept SA	zer 1	+					Ö	Marker	1 22
KL	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten: 0 dB Preamp: Off	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#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	Select Mar Marker 1	ker	
1 Spectrum			<u>t-</u>		Mkr1	19.794 74 GHz	Marker Fre 19.794744		Settings
Scale/Div 10 dE			Ref Level -20.00	dBm		-87.089 dBm	Peak	Search	Peak Search
							Next	Peak	Pk Search Config
							Next F	Pk Right	Properties
60.0							Next	Pk Left	Marker Function
70.0							Minim	ım Peak	Marker+
							Pk-Pk	Search	Counter
90.0	and the state of the	THE REAL PROPERTY IN	an alto the owned the		and the state of the state	the langer lands	Marke	er Delta	
-100		and the state build			المعانية المتعاول مية المعانية المالية		Mkr	⊶CF	
								RefLvi	
Start 10.000 GH #Res BW 1.0 M			#Video BW 3.0	MHz	Sweep	Stop 20.000 GHz ~20.4 ms (40000 pts)	Continuou: Search On Off	s Peak	Local
15		Mar 02, 2023 1:50:26 PM	A				Oir		

Sub6 n2. Conducted Spurious_2 (370500ch_5 MHz_BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (376000ch_5 MHz_BPSK_RB 1_1)



L +++ Coupling DC Con Align Auto Free	ut Z: 50 Ω #Atten: 0 dB r CCorr Preamp: Off g Ref. Int (S) E: Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off		2 3 4 5 6 wwwww A A A A A	Select Marker Marker 1	
Spectrum v			Mkr1 19.930	50 GHz	Marker Frequency 19.930498262 GHz	Settings
cale/Div 10 dB	Ref Level -20.00) dBm	-86.84	13 dBm	Peak Search	Peak Search
					Next Peak	Pk Searc Config
					Next Pk Right	Propertie
0.0					Next Pk Left	Marker Function
0.0					Minimum Peak	Marker
					Pk-Pk Search	Counter
0.0 mart as 1477 is shown is reaching the second	and the state of the second data and	an a shift and the state of the second state of the second state of the second state of the second state of the	a second when each month in terms	BIR BIR BIR	Marker Delta	
100	and the state of t	No. II. Conception of the local diversion of	A DESCRIPTION OF THE OWNER OF THE		Mkr→CF	
					Mkr→Ref Lvl	
art 10.000 GHz Res BW 1.0 MHz	#Video BW 3.0	MHz	Stop 20 Sweep ~20.4 ms (4	0.000 GHz 40000 pts)	Continuous Peak Search On	Loca

Sub6 n2. Conducted Spurious_2 (376000ch_5 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (381500ch_5 MHz_ BPSK_RB 1_1)



L +++ Coupling DC Co Align Auto Fre	put Z 50 Ω #Atten: 0 dB prr CCorr Preamp. Off eq Ref. Int (S) E: Adaptive	PNO Fast Gate Off IF Gain High Sig Track Off	#Avg Type: Power (RMS 1 2 3 4 Trig: Free Run A & WW WV A A A A A	15.00000000 GHz
Spectrum v cale/Div 10 dB	Ref Level -20.	00 dBm	Mkr1 19.493 49 G -87.598 dE	HZ 10.0000000 GHz
				Full Span
10.0				Start Freq 10.000000000 GHz
50.0				Stop Freq 20.000000000 GHz
				AUTO TUNE
	the second se	de Etherstein der der son er	n a di la bina su di piata na sessi ditana dal materi di mangan	CF Step 1.00000000 GHz Auto Man
				Freq Offset 0 Hz
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3	.0 MHz	Stop 20.000 C Sweep ~20.4 ms (40000)	

Sub6 n2. Conducted Spurious_2 (381500ch_5 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (371000ch_10 MHz_ BPSK _RB 1_1)



KEYSIGHT Input: RF Coupling: DC Align: Auto	Input Z 50 0 #Atten: 0 dB Corr CCorr Preamp: Off Freq Ref. Int (S) NFE: Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A WW WW A A A A A A	Center Frequency 15.000000000 GHz Span	Settings
Spectrum v cale/Div 10 dB	Ref Level -20.0	00 dBm	Mkr1 19.528 49 GHz -86.989 dBm	10.0000000 GHz Swept Span Zero Span	
				Full Span	
50.0				Start Freq 10.000000000 GHz	
				Stop Freq 20.000000000 GHz	
70.0				AUTO TUNE	
80.0 90.0 100				CF Step 1.00000000 GHz Auto Man	
				Freq Offset 0 Hz	
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3.	0 MHz	Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)	X Axis Scale Log Lin	Loc
1 n C 1	Mar 02, 2023		📰 🔛 🗄 🔀	Signal Track	

Sub6 n2. Conducted Spurious_2 (371000ch_10 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (376000ch_10 MHz_ BPSK_RB 1_1)



L +++ Coupling DC Corr Align Auto Free	at Z 50 Ω #Atten: 0 dB r CCorr Preamp: Off q Ref. Int (S) Σ Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Awg Type: Power (RMS123456 Trig: Free Run A www.www A A A A A A	13.00000000 GHz
Spectrum v cale/Div 10 dB	Ref Level -20.00	dBm	Mkr1 19.449 24 GH: -86.857 dBm	10.0000000 GHz
				Full Span
10.0				Start Freq 10.000000000 GHz
0.0				Stop Freq 20.000000000 GHz
				AUTO TUNE
10 0 10 0 10 0		animalian na dalaman		CF Step 1.000000000 GHz Auto Man
				Freq Offset 0 Hz
art 10.000 GHz Res BW 1.0 MHz	#Video BW 3.0	MHz	Stop 20.000 GH Sweep ~20.4 ms (40000 pts	

Sub6 n2. Conducted Spurious_2 (376000ch_10 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (381000ch_10 MHz_ BPSK_RB 1_1)



	Z 50 Ω #Atten: 0 dB CCorr Preamp Off Ref. Int (S) Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Avg Type. Power (RMS <mark>123456</mark> Trig: Free Run A A A A A A	Center Frequency 15.00000000 GHz Span	tings
Spectrum v cale/Div 10 dB	Ref Level -20.00	dBm	Mkr1 19.028 98 GHz -87.543 dBm	10.0000000 GHz	
				Full Span	
10.0				Start Freq 10.000000000 GHz	
				Stop Freq 20.000000000 GHz	
				AUTO TUNE	
	and the second state and the second state of the second state	र्षमा स्टब्स् सम्बद्धाः स्ट्रास्ट्रास्ट	1 An and Angeler at the state of the	CF Step 1.00000000 GHz Auto Man	
				Freq Offset 0 Hz	
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3.0	MHz	Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)		Loc

Sub6 n2. Conducted Spurious_2 (381000ch_10 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (371500ch_15 MHz_ BPSK_RB 1_1)



Spectrum Analyzer 1 Swept SA	- +			Frequency 🔹	32
KEYSIGHT Input: RF RL +++ Coupling Align Auto	DC Corr CCorr Pream	n:0 dB PNO:Fast np:0ff Gate:0ff IF Gain:High Sig Track:0ff	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A WW WW A A A A A A	Center Frequency 15.00000000 GHz Span	js
1 Spectrum v Scale/Div 10 dB	Ref Le	vel -20.00 dBm	Mkr1 19.936 00 GHz -86.359 dBm	10.0000000 GHz Swept Span Zero Span	
-30,0				Full Span	
				Stop Freq	
70.0				20.000000000 GHz AUTO TUNE	
80.0 90.0			To the second	CF Step 1.000000000 GHz Auto	
-100				Man Freq Offset 0 Hz	
Start 10.000 GHz #Res BW 1.0 MHz	-291-5823	o BW 3.0 MHz	Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)	X Axis Scale	ocal
- う へ	Mar 02, 2023 2:00:25 PM		📰 🔡 🖬 🔀	Signal Track (Soan Zoom)	

Sub6 n2. Conducted Spurious_2 (371500ch_15 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (376000ch_15 MHz_ BPSK_RB 1_1)



L +++ Coupling DC Corr Align Auto Freq	Z 50 Q #Atten: 0 dB CCorr Preamp: Off Ref Int (S) Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Avg Type: Power (RMS123456 Trig: Free Run A WW WWW A A A A A A	13.00000000 GHz	Settings
Spectrum v cale/Div 10 dB	Ref Level -20.00) dBm	Mkr1 19.513 74 GHz -87.113 dBm	10.0000000 GHz	
				Full Span	
10.0				Start Freq 10.000000000 GHz	
50.0				Stop Freq 20.000000000 GHz	
				AUTO TUNE	
	all the second second being a literated by the second second second second second second second second second s	All dineiles täst dung diem	1 dentifier either either in either in either	CF Step 1.000000000 GHz Auto Man	
				Freq Offset 0 Hz	-
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3.0	MHz	Stop 20.000 GH: Sweep ~20.4 ms (40000 pts		Loc

Sub6 n2. Conducted Spurious_2 (376000ch_15 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (380500ch_15 MHz_ BPSK_RB 1_1)



Spectrum Analyzer 1	+			Frequency	- 27
RL ···· Align Auto	Input Z: 50 Ω #Atten: 0 dB Corr CCorr Preamp: Off Freq Ref. Int (S) NFE: Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Avg Type: Power (RMS 2 3 4 5 6 Trig: Free Run A WWWW A A A A A A	Center Frequency 15.000000000 GHz Span	Settings
Spectrum v scale/Div 10 dB	Ref Level -20.0	0 dBm	Mkr1 19.488 99 GHz -86.823 dBm	10.0000000 GHz Swept Span Zero Span	
				Full Span	
10.0 50.0				Start Freq 10.000000000 GHz	
				Stop Freq 20.000000000 GHz	
				AUTO TUNE	
30.0 30.0 100		1971 - 1971 - Davids Lafe, 1988 - Andrew Allen - Marine		CF Step 1.000000000 GHz Auto Man	
				Freq Offset 0 Hz	
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3.0) MHz	Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)	X Axis Scale Log Lin	Loca
1731	Mar 02, 2023 2:03:32 PM		🗶 🔣 🏪	Signal Track (Scan Zoom)	

Sub6 n2. Conducted Spurious_2 (380500ch_15 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (372000ch_20 MHz_ BPSK_RB 1_1)



Align Auto Freq	Z 50 Ω #Atten: 0 dB CCorr Preamp: Off Ref. Int (S) Adaptive	PNO:Fast Gate:Off IF Gain:High Sig Track:Off	#Avg Type: Power (RMS <mark>123456</mark> Trig: Free Run A A A A A A	Center Frequency 15.000000000 GHz Span	Settings
Spectrum v cale/Div 10 dB	Ref Level -20.00	dBm	Mkr1 19.491 49 GHz -86.605 dBm	10.0000000 GHz Swept Span Zero Span	
				Full Span	
0.0				Start Freq 10.000000000 GHz	
				Stop Freq 20.000000000 GHz	
				AUTO TUNE	
		aller son and a son for all the party of the p		CF Step 1.000000000 GHz Auto Man	
				Freq Offset 0 Hz	
art 10.000 GHz tes BW 1.0 MHz	#Video BW 3.0	MHz	Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)	X Axis Scale Log Lin	Loc

Sub6 n2. Conducted Spurious_2 (372000ch_20 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (376000ch_20 MHz_ BPSK_RB 1_1)



KEYSIGHT Input: RF Coupling: DC Align: Auto	Input Z 50 0 #Atten: 0 dB Corr CCorr Preamp: Off Freq Ref. Int (S) NFE: Adaptive	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Awg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A WW WW A A A A A A	Center Frequency 15.000000000 GHz Span	Settings
Spectrum v cale/Div 10 dB	Ref Level -20.	00 dBm	Mkr1 19.901 00 GHz -87.112 dBm	10.0000000 GHz	
				Full Span	
40.0				Start Freq 10.000000000 GHz	
				Stop Freq 20.000000000 GHz	
70.0				AUTO TUNE	
80.0 90.0		HI LA UNI HIN Y MAN AN AN		CF Step 1.000000000 GHz Auto Man	
				Freq Offset 0 Hz	
tart 10.000 GHz Res BW 1.0 MHz	#Video BW 3	.0 MHz	Stop 20.000 GHz Sweep ∼20.4 ms (40000 pts)	X Axis Scale Log	Loc
500	? Mar 02, 2023			Signal Track	

Sub6 n2. Conducted Spurious_2 (376000ch_20 MHz_ BPSK_RB 1_1)





Sub6 n2. Conducted Spurious_1 (380000ch_20 MHz_ BPSK_RB 1_1)



Spectrum Analyzer 1 Swept SA				🔅 Frequency 🔹 💡
RL +++ Align Auto	Input Z 50 Ω #Atten: 0 d Corr CCorr Preamp: 0 Freq Ref. Int (S) NFE: Adaptive		ype: Power (RMS <mark>123456</mark> ree Run A WWWW A A A A A A	Center Frequency 15.000000000 GHz Span
1 Spectrum Scale/Div 10 dB Log	Ref Level -		Nkr1 19.203 48 GHz -86.719 dBm	10.0000000 GHz Swept Span Zero Span
-30,0				Full Span
				10.000000000 GHz Stop Freq
70.0				20.000000000 GHz
and the second s	a sala si na kata da pita da kinada sala kinad	en an en alle arte arte arte arte arte arte arte art		CF Step 1.000000000 GHz Auto Man
-100				Freq Offset 0 Hz
Start 10.000 GHz #Res BW 1.0 MHz	#Video BV		Stop 20.000 GHz Sweep ~20.4 ms (40000 pts)	X Axis Scale
ト	2:16:01 PM		🎞 🕃 🕂 🔀	Signal Track (Séan Zeomi

Sub6 n2. Conducted Spurious_2 (380000ch_20 MHz_BPSK_RB 1_1)



10. ANNEX A_ TEST SETUP PHOTO

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

No.	Description		
1	HCT-RF-2409-FC006-P		