# **TEST REPORT**

# FCC/IC Test for NX-1200-K2

APPLICANT JVCKENWOOD Corporation

**REPORT NO.** HCT-RF-1907-FI024

DATE OF ISSUE 26 July 2019

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# HCT Co., Ltd.



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Applicant	JVCKENWOOD Corporation 1-16-2 Hakusan Midori-ku Yokohama-shi Kanagawa 226-8525 Japar
Product Name	VHF TRANSCEIVER
Model(s)	NX-1200-K2
FCC Additional Model(s)	NX-1200-K, NX-1202-K
ISED Additional Model(s)	NX-1200-K
Test Standard Used	Part 2, 22, 74, 90 / RSS- Gen Issue 5, RSS-119 Issue 12
Frequency Range	FCC: 150 MHz - 174 MHz IC: 138 MHz - 144 MHz, 148 MHz - 174 MHz MHz

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

Tested by Kwon Jeong Technical Manager Jong Seok Lee

HCT CO., LTD. Soo Chan Lee



# **REVISION HISTORY**

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

Revision No.	Date of Issue	Description
0	26 July 2019	Initial Release

The measurements shown in this report were made in accordance with the procedures specified in \$ 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)



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# **1. GENERAL INFORMATION**

Manufacturer:	JVCKENWOOD Corporation	
Address:	1-16-2 Hakusan Midori-ku Yokohama-shi Kanagawa 226-8525 Japan	
FCC ID:	K44501000	
ISED:	282F-501000	
EUT Type:	VHF TRANSCEIVER	
Model(s):	NX-1200-K2	
FCC Additional Model(s):	NX-1200-K, NX-1202-K	
ISED Additional Model(s):	NX-1200-K	
Date(s) of Tests:	July 01, 2019 ~ July 26, 2019	
Place of Tests:	HCT Co., Ltd.	
	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do,	
	17383, Rep. of KOREA	



# 2. EUT DESCRIPTION

Power Supply Voltage	DC 7.5V $\pm$ 20%	
Output Power(FCC)	<ul> <li>- 5 W (Power output continuously variable to 1 W) (Max : 5.2 W)</li> <li>- 16K0F3E : 2 W (Power output continuously variable to 1 W)</li> </ul>	
Output Power(IC)	- 5 W (Power output continuously variable to 1 W) (Max : 5.2 W)	
Battery type	KNB-45L Li-Ion Battery Pack (2000mA) KNB-53N Ni-MH Battery Pack (1400mA) KNB-29N Ni-MH Battery Pack (1500mA) KNB-69L Li-ion Battery Pack (2450mA) KNB-82LC (Li-ion Battery Pack)	
Antenna	KRA-22M VHF Low Profile Helical Antenna (146-162 MHz) KRA-22M2 VHF Low Profile Helical Antenna (162-174 MHz) KRA-22M3 VHF Low Profile Helical Antenna (135-150 MHz) KRA-26M VHF Helical Antenna (146-162 MHz) KRA-26M2 VHF Helical Antenna (162-174 MHz) KRA-26M3 VHF Helical Antenna (135-150MHz) KRA-41M VHF Stubby antenna (146-162 MHz) KRA-41M2 VHF Stubby antenna (162-174 MHz) KRA-41M3 VHF Stubby antenna (162-176 MHz)	
Peak Antenna gain	KRA-22M VHF Low Profile Helical Antenna: 0 dBd KRA-22M2 VHF Low Profile Helical Antenna: 0 dBd KRA-22M3 VHF Low Profile Helical Antenna: 0 dBd KRA-26M VHF Helical Antenna: 0 dBd KRA-26M2 VHF Helical Antenna: 0 dBd KRA-26M3 VHF Helical Antenna: 0 dBd KRA-41M VHF Stubby antenna: 0 dBd KRA-41M2 VHF Stubby antenna: 0 dBd KRA-41M3 VHF Stubby antenna: 0 dBd	
Type of Emission	16K0F3E: Analogue 11K0F3E: Analogue 8K30F1E, 8K30F1D, 8K30F7W: NXDN 7K60FXE, 7K60FXD: DMR 4K00F1E, 4K00F1D, 4K00F7W: NXDN 4K00F2D: CWID	
Channel Bandwidth	25 kHz / 6.25 kHz / 12.5 kHz	
Operating Temperature	-30 °C ~ +60 °C	
Frequency Range	150 MHz - 174 MHz (FCC) 138 MHz - 144 MHz, 148 MHz - 174 MHz MHz (IC)	
Test Frequency	138.05 MHz / 150.05 MHz / 162.05 MHz / 173.95 MHz	



Maximum deviation	16K0F3E: 土 5 kHz 11K0F3E: 土 2.5 kHz
Frequency Stability	± 2.0 ppm
PMN	NX-1200-K, NX-1200-K2
HVIN	NX-1200-K, NX-1200-K2
FVIN	N/A
HMN	N/A



# **3. TEST METHODOLOGY**

TIA-603-E dated March 2016 entitled "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards" were used in the measurement.

# **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the FCC Rules Part 2, 22, 74 and Part 90.

## **3.3 GENERAL TEST PROCEDURES**

#### **Radiated Emissions**

Radiated emission measurements 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. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a positive peak detector.

A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, 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.

The maximum EIRP 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



## **3.4 DESCRIPTION OF TEST MODES**

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting is programmed.

# **4. 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 equipments, which is traceable to recognized national standards.



# **5. FACILITIES AND ACCREDITATIONS**

#### **5.1 FACILITIES**

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, Korea.

#### **5.2 EQUIPMENT**

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



## 6. WORST CASE CONFIGURATION AND MODE

#### Radiated test

- 1. NX-1200-K2 & Additional Models were tested and the worst case results are reported. (Worst case : NX-1200-K2)
- 2. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone + Microphone (High Power/ Low Power)
    - Stand alone + Accessories (High Power/ Low Power)
    - Stand alone + Microphone + Accessories (High Power/ Low Power)
  - Worstcase : Stand alone + Microphone (High Power)
- 3. All type of battery were investigated and the worst case configuration results are reported.
  - Battery type : KNB-45L, KNB-53N, KNB-29N, KNB-69L, KNB-82LC
  - Worstcase : KNB-69L
- 4. All Antenna were investigated and the worst case configuration results are reported.
  - Antenna type : KRA-22M, KRA-22M2, KRA-22M3, KRA-26M, KRA-26M2, KRA-26M3,

KRA-41M, KRA-41M2, KRA-41M3

- Worstcase : KRA-26M, KRA-26M2, KRA-26M3
- 5. Measurements value show only up to 8 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.

#### Conducted test

- 1. NX-1200-K2 & Additional Models were tested and the worst case results are reported. (Worst case : NX-1200-K2)
- 2. Conducted Spurious Emission :
  - All Power of operation were investigated and the worst case configuration results are reported.
    - Power : High Power/ Low Power
    - Worstcase : High Power
- 3. Frequency Stability :
  - All Type of Emission were investigated and the worst case Type results are reported.
    - Worstcase : 16K0F3E, 11K0F3E, 4K00F2D
- 4. Transient Frequency Behavior :
  - All Type of Emission were investigated and the worst case Type results are reported.
    - Worstcase : 16K0F3E, 11K0F3E, 4K00F1E, 4K00F1D, 4K00F7W



# 7. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	ISED Part Section(s)	Test Condition	Test Result
	§ 2.1046,			
Carrier RF Output Power	§ 22.565,	RSS119 (5.4)	CONDUCTED	PASS
	§74.461,	KSSI19 (5.4)	CONDUCTED	FASS
	§ 90.205			
	§ 2.1051			
	§ 22.359,			
Unwanted Emissions	§ 74.462,	RSS119 (5.8)		PASS
	§ 74.535,			
	§ 90.210			
99% Bandwidth(ISED)	NA	RSS119 (5.5)		PASS
	§ 2.1055,			
Carrier Frequency Stability	§ 22.355,	RSS119 (5.3)		PASS
Carrier Frequency Stability	§ 74.464,	KSSI19 (5.5)		PASS
	§90.213(a)		CONDUCTED	
Audio Frequency Response	§ 2.1047(a)	-	CONDUCTED	PASS
Audio Low Pass Filter	§ 2.1047(a)	-		PASS
Modulation Limiting	§ 2.1047(b)	-		PASS
Transient Frequency	§ 74.462,	RSS119 (5.9)		PASS
Behavior	§90.214			
	§2.1049,			
	§ 22.359,	RSS119 (5.8)		
Emission Mask	§ 74.462,		PASS	
	§ 74.535,			
	§ 90.210			
	§ 2.1053			
	§ 22.359,	RSS119 (5.8) RADIATED		
Field Strength of Spurious Radiation	§ 74.462,			PASS
	§ 74.535,		RADIATED	
	§ 90.210			
Receiver Spurious Emissions	NA	RSS-Gen(7)		PASS
Necessary Bandwidth	§ 2.202(g)	-	-	-



Test Description	Test Limit(FCC)	Test Limit(IC)
Carrier RF Output Power	Varies	60W
	6.25 kHz: 55+ 10 log (P)dB	6.25 kHz: 55+ 10 log (P)dB
Unwanted Emissions	12.5 kHz: 50 + 10 log (P)dB	12.5 kHz: 50 + 10 log (P)dB
	25 kHz: 43 + 10 log (P)dB	25 kHz: 43 + 10 log (P)dB
		6.25 kHz: 6 kHz
99% Bandwidth(ISED)	N/A	12.5 kHz: 11.25kHz
		25 kHz: 20 kHz
	6.25 kHz = 2 ppm	6.25 kHz = 2 ppm
Carrier Frequency Stability	12.5 kHz = 5 ppm	12.5 kHz = 5 ppm
	25 kHz = 5 ppm	25 kHz = 5 ppm
Audio Frequency Response	Varies	NI / A
Audio Low Pass Filter	Varies	N/A
	25 kHz = 5 kHz	N1/A
Modulation Limiting	12.5 kHz = 2.5 kHz	N/A
Transient Frequency Behavior	See Note3	See Note3
Emission Mask	See Note2	See Note2
Field Strength of Courieurs	6.25 kHz: 55+ 10 log (P)dB	6.25 kHz: 55+ 10 log (P)dB
Field Strength of Spurious	12.5 kHz: 50 + 10 log (P)dB	12.5 kHz: 50 + 10 log (P)dB
Radiation	25 kHz: 43 + 10 log (P)dB	25 kHz: 43 + 10 log (P)dB
Receiver Spurious Emissions	N/A	See Note1



# Note:

# 1. Receiver Spurious Emissions Limit :

Frequency	Field Strength
(MHz)	(μv/m at 3 meters)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

## 2. Emission Mask Limit :

#### Channel Bandwidth: 25kHz

Displacement Frequency	Minimum Attenuation
(% of Authorized Bandwidth)	(dB)
50 to 100	25 dB
100 to 250	35 dB
>250	43 + 10 log <sub>10</sub> (COP)

#### Channel Bandwidth: 12.5kHz

Channel Spacing (kHz)	Displacement Frequency Range	Minimum Attenuation (dB)
12.5 & 15	>5.625 kHz to 12.5 kHz	7.27(f <sub>d</sub> - 2.88)
	>12.5 kHz	Whichever is less attenuation; 70
		or
		50 + 10 log10(COP)

# Channel Bandwidth: 6.25kHz

Channel Spacing (kHz)	Displacement Frequency Range	Minimum Attenuation (dB)
6.25 & 7.5	>3.0 kHz to 4.6 kHz	Whichever is less attenuation; 65
		or $30 + 16.67(f_d - 3)$
		or $55 + 10 \log_{10}(COP)$
	Greater than 4.6 kHz	Whichever is less attenuation; 65
		or 55 + 10 log10(COP)



Channel Bandwidth	Time Intervals	Maximum Frequency Difference	Transient Duration Limit (ms)		
(kHz)	(Notes 1, 2)	(kHz)	138-174 MHz	406.1-512 MHz	
	t <sub>1</sub>	±25	5	10	
25	t <sub>2</sub>	±12.5	20	25	
	t3	±25	5	10	
	t <sub>1</sub>	±12.5	5	10	
12.5	t <sub>2</sub>	±6.25	20	25	
	t3	±12.5	5	10	
	t1	±6.25	5	10	
6.25	t <sub>2</sub>	±3.125	20	25	
	t3	±6.25	5	10	

3. Transient Frequency Behavior Limit :





# 8. TEST RESULT

## 8.1 Carrier Output Power

#### Definition

The conducted carrier power output rating for a transmitter is the power available at the output terminals of the transmitter when the output terminals are connected to the standard transmitter load.

## TEST CONFIGURATION



TEST PROCEDURE

According to 2.2.1 in TIA-603-E Standard.

- a) Connect the equipment as illustrated.
- b) Measure the transmitter output power during the defined duty cycle(see 1.3.2).Correct for all losses in the RF path.
- c) The value recorded in step b) is the conducted carrier output power rating.



	<b>–</b> (	Channel	Test		Carrier Output Power			
Certification	Type of	Bandwidth	Frequency	High	n Power	Low F	Power	
	Emission	(kHz)	(MHz)	dBm	W	dBm	W	
			150.05	32.69	1.86	29.86	0.97	
FCC	16K0F3E	25	162.05	32.52	1.79	30.21	1.05	
			173.95	32.73	1.87	29.68	0.93	
			138.05	36.63	4.61	29.97	0.99	
	1680525	25	150.05	36.62	4.59	29.86	0.97	
IC	16K0F3E	25	162.05	36.60	4.57	30.21	1.05	
			173.95	36.40	4.37	29.68	0.93	
			138.05	36.61	4.58	29.95	0.99	
	11//0525	10 5	150.05	36.62	4.59	29.83	0.96	
FCC/IC	11K0F3E	12.5	162.05	36.62	4.59	30.13	1.03	
			173.95	36.48	4.45	29.67	0.93	
	0//20515	12.5	138.05	36.99	5.00	30.33	1.08	
	8K30F1E,		150.05	36.87	4.87	30.21	1.05	
FCC/IC	8K30F1D, 8K30F7W		162.05	36.72	4.70	30.01	1.00	
	ONSURIW		173.95	36.68	4.65	30.00	1.00	
			138.05	36.99	5.00	30.35	1.08	
	7K60FXD,	10 5	150.05	36.84	4.83	30.20	1.05	
FCC/IC	7K60FXE	12.5	162.05	36.75	4.73	30.07	1.02	
			173.95	36.75	4.73	30.02	1.00	
	41/00515		138.05	36.95	4.95	30.30	1.07	
	4K00F1E,	C DE	150.05	36.82	4.81	30.22	1.05	
FCC/IC	4K00F1D,	6.25	162.05	36.72	4.70	29.99	1.00	
	4K00F7W		173.95	36.66	4.64	30.01	1.00	
			138.05	36.90	4.90	29.99	1.00	
	41400505	6.05	150.05	36.68	4.66	29.91	0.98	
FCC/IC	4K00F2D	6.25	162.05	36.78	4.76	30.02	1.00	
			173.95	36.64	4.61	30.24	1.06	

# TEST RESULTS(Carrier Output Power)



# TEST RESULTS(ERP)

		Channel	Test		E	ERP		
Certification	Type of	Bandwidth	Frequency	High	Power	Low F	Power	
	Emission	(kHz)	(MHz)	dBm	W	dBm	W	
			150.05	32.69	1.86	29.86	0.97	
FCC	16K0F3E	25	162.05	32.52	1.79	30.21	1.05	
			173.95	32.73	1.87	29.68	0.93	
			138.05	36.63	4.61	29.97	0.99	
	1000000	25	150.05	36.62	4.59	29.86	0.97	
IC	16K0F3E	25	162.05	36.60	4.57	30.21	1.05	
			173.95	36.40	4.37	29.68	0.93	
			138.05	36.61	4.58	29.95	0.99	
	111/0525	10 E	150.05	36.62	4.59	29.83	0.96	
FCC/IC	11K0F3E	12.5	162.05	36.62	4.59	30.13	1.03	
			173.95	36.48	4.45	29.67	0.93	
	0//20515	12.5	138.05	36.99	5.00	30.33	1.08	
FCC/IC	8K30F1E,		150.05	36.87	4.87	30.21	1.05	
	8K30F1D,	8K30F1D, 8K30F7W	12.5	162.05	36.72	4.70	30.01	1.00
	ONSULIN		173.95	36.68	4.65	30.00	1.00	
			138.05	36.99	5.00	30.35	1.08	
FCC/IC	7K60FXD,	12.5	150.05	36.84	4.83	30.20	1.05	
FCC/IC	7K60FXE	12.5	162.05	36.75	4.73	30.07	1.02	
			173.95	36.75	4.73	30.02	1.00	
			138.05	36.95	4.95	30.30	1.07	
FCC/IC	4K00F1E, 4K00F1D,	6.25	150.05	36.82	4.81	30.22	1.05	
		0.25	162.05	36.72	4.70	29.99	1.00	
	4K00F7W		173.95	36.66	4.64	30.01	1.00	
			138.05	36.90	4.90	29.99	1.00	
		C DE	150.05	36.68	4.66	29.91	0.98	
FCC/IC	4K00F2D	6.25	162.05	36.78	4.76	30.02	1.00	
			173.95	36.64	4.61	30.24	1.06	

Note:

1. ERP = Carrier Output Power + Peak Antenna gain



# 8.2 Carrier Frequency Stability

#### Definition

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

#### TEST CONFIGURATION



#### TEST PROCEDURE

According to 2.2.2 in TIA-603-E Standard.

- a) Connect the equipment as illustrated.
- b) Operate the equipment in standby conditions for 15 minutes before proceeding.
- c) Record the carrier frequency of the transmitter as MCFMHz
- d) Calculate the ppm frequency error by the following: ppm error = (( $MCF_{MHz} / ACF_{MHz}$ )-1)\*10<sup>6</sup>

where

 $MCF_{MHz}$  is the Measured Carrier Frequency in MHz  $ACF_{MHz}$  is the Assigned Carrier Frequency in MHz

e) The value recorded in step d) is the carrier frequency stability.



# TEST RESULTS

# (1) Frequency Stability (Temperature Variation)

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	138.050172105	0.0000000	0.0000	
		-30	138.050166903	-0.0000052	-0.0377	
		-20	138.050145446	-0.0000267	-0.1931	
		-10	138.050128254	-0.0000439	-0.3176	
	High Power	0	138.050178929	0.000068	0.0494	
		+10	138.050150305	-0.0000218	-0.1579	
		+30	138.050150620	-0.0000215	-0.1556	
		+40	138.050177387	0.0000053	0.0383	
16K0F3E		+50	138.050167200	-0.0000049	-0.0355	2.0
TOKOLZE		+20(Ref)	138.050176980	0.0000000	0.0000	2.0
		-30	138.050158831	-0.0000181	-0.1315	
		-20	138.050143932	-0.0000330	-0.2394	
		-10	138.050129662	-0.0000473	-0.3428	
	Low Power	0	138.050135016	-0.0000420	-0.3040	
		+10	138.050149263	-0.0000277	-0.2008	
		+30	138.050173163	-0.0000038	-0.0276	
		+40	138.050148096	-0.0000289	-0.2092	
		+50	138.050126089	-0.0000509	-0.3686	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	150.050179745	0.0000000	0.0000	
		-30	150.050191391	0.0000116	0.0776	
		-20	150.050193038	0.0000133	0.0886	
		-10	150.050184227	0.0000045	0.0299	
	High Power	0	150.050173225	-0.0000065	-0.0435	
		+10	150.050171984	-0.0000078	-0.0517	_
		+30	150.050144696	-0.0000350	-0.2336	
		+40	150.050157514	-0.0000222	-0.1482	
10/0525		+50	150.050167136	-0.0000126	-0.0840	2.0
16K0F3E		+20(Ref)	150.050149554	0.0000000	0.0000	2.0
		-30	150.050179399	0.0000298	0.1989	
		-20	150.050152381	0.0000028	0.0188	
		-10	150.050146436	-0.0000031	-0.0208	
	Low Power	0	150.050189745	0.0000402	0.2679	
		+10	150.050172302	0.0000227	0.1516	-
		+30	150.050164322	0.0000148	0.0984	
		+40	150.050168711	0.0000192	0.1277	
		+50	150.050158522	0.0000090	0.0598	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	162.050206308	0.0000000	0.0000	
		-30	162.050175435	-0.0000309	-0.1905	
		-20	162.050175351	-0.0000310	-0.1910	
		-10	162.050209131	0.0000028	0.0174	
	High Power	0	162.050213205	0.0000069	0.0426	
		+10	162.050196231	-0.0000101	-0.0622	_
		+30	162.050198112	-0.0000082	-0.0506	
		+40	162.050193318	-0.0000130	-0.0802	
10/0525		+50	162.050171634	-0.0000347	-0.2140	2.0
16K0F3E		+20(Ref)	162.050207490	0.0000000	0.0000	2.0
		-30	162.050187453	-0.0000200	-0.1236	
		-20	162.050197603	-0.0000099	-0.0610	
		-10	162.050225663	0.0000182	0.1121	
	Low Power	0	162.050171561	-0.0000359	-0.2217	
		+10	162.050196062	-0.0000114	-0.0705	-
		+30	162.050225874	0.0000184	0.1134	
		+40	162.050215879	0.0000084	0.0518	
		+50	162.050200747	-0.0000067	-0.0416	



173.95	MHz
110.00	1.11.12

Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	173.950216242	0.0000000	0.0000	
		-30	173.950185351	-0.0000309	-0.1776	
		-20	173.950223499	0.0000073	0.0417	
		-10	173.950167780	-0.0000485	-0.2786	
	High Power	0	173.950216616	0.0000004	0.0022	
		+10	173.950194009	-0.0000222	-0.1278	-
		+30	173.950190322	-0.0000259	-0.1490	
		+40	173.950214332	-0.0000019	-0.0110	
16K0F3E		+50	173.950186517	-0.0000297	-0.1709	2.0
TOKOLZE		+20(Ref)	173.950166892	0.0000000	0.0000	2.0
		-30	173.950160089	-0.0000068	-0.0391	
		-20	173.950189249	0.0000224	0.1285	
		-10	173.950153733	-0.0000132	-0.0756	
	Low Power	0	173.950151995	-0.0000149	-0.0856	
		+10	173.950163885	-0.0000030	-0.0173	
		+30	173.950177816	0.0000109	0.0628	
		+40	173.950178543	0.0000117	0.0670	
		+50	173.950176017	0.0000091	0.0525	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	138.050178894	0.0000000	0.0000	
		-30	138.050147965	-0.0000309	-0.2240	
		-20	138.050171607	-0.0000073	-0.0528	
		-10	138.050134088	-0.0000448	-0.3246	
	High Power	0	138.050176224	-0.0000027	-0.0193	
		+10	138.050148944	-0.0000300	-0.2170	
		+30	138.050163621	-0.0000153	-0.1106	
		+40	138.050147529	-0.0000314	-0.2272	
11//0525		+50	138.050122681	-0.0000562	-0.4072	2.0
11K0F3E		+20(Ref)	138.050149485	0.0000000	0.0000	2.0
		-30	138.050127225	-0.0000223	-0.1612	
		-20	138.050141537	-0.0000079	-0.0576	
		-10	138.050131781	-0.0000177	-0.1282	
	Low Power	0	138.050124725	-0.0000248	-0.1794	
		+10	138.050148601	-0.0000009	-0.0064	-
		+30	138.050134163	-0.0000153	-0.1110	
		+40	138.050167742	0.0000183	0.1322	
		+50	138.050125298	-0.0000242	-0.1752	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	150.050184825	0.0000000	0.0000	
		-30	150.050148028	-0.0000368	-0.2452	
		-20	150.050178036	-0.0000068	-0.0452	
		-10	150.050157692	-0.0000271	-0.1808	
	High Power	0	150.050159400	-0.0000254	-0.1694	
		+10	150.050172408	-0.0000124	-0.0828	
		+30	150.050176118	-0.0000087	-0.0580	
		+40	150.050184098	-0.0000007	-0.0048	
11//0525		+50	150.050168163	-0.0000167	-0.1110	2.0
11K0F3E		+20(Ref)	150.050143367	0.0000000	0.0000	2.0
		-30	150.050168147	0.0000248	0.1651	
		-20	150.050163272	0.0000199	0.1327	
		-10	150.050191745	0.0000484	0.3224	
	Low Power	0	150.050187233	0.0000439	0.2923	
		+10	150.050172790	0.0000294	0.1961	-
		+30	150.050190675	0.0000473	0.3153	
		+40	150.050179737	0.0000364	0.2424	
		+50	150.050166130	0.0000228	0.1517	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	162.050196494	0.0000000	0.0000	
		-30	162.050193926	-0.0000026	-0.0158	
		-20	162.050204573	0.0000081	0.0499	
		-10	162.050224854	0.0000284	0.1750	
	High Power	0	162.050204490	0.0000080	0.0493	
		+10	162.050195992	-0.0000005	-0.0031	
		+30	162.050200801	0.0000043	0.0266	
		+40	162.050201437	0.0000049	0.0305	
11//0525		+50	162.050206321	0.0000098	0.0606	2.0
11K0F3E		+20(Ref)	162.050223985	0.0000000	0.0000	2.0
		-30	162.050172267	-0.0000517	-0.3191	
		-20	162.050207135	-0.0000169	-0.1040	
		-10	162.050222154	-0.0000018	-0.0113	
	Low Power	0	162.050176586	-0.0000474	-0.2925	
		+10	162.050196156	-0.0000278	-0.1717	-
		+30	162.050224389	0.0000004	0.0025	
		+40	162.050218646	-0.0000053	-0.0329	
		+50	162.050219586	-0.0000044	-0.0271	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	173.950154656	0.0000000	0.0000	
		-30	173.950169673	0.0000150	0.0863	
		-20	173.950196233	0.0000416	0.2390	
		-10	173.950179467	0.0000248	0.1426	
	High Power	0	173.950170331	0.0000157	0.0901	
		+10	173.950170993	0.0000163	0.0939	2.0
		+30	173.950180687	0.0000260	0.1496	
		+40	173.950146493	-0.0000082	-0.0469	
11K0F3E		+50	173.950148473	-0.0000062	-0.0355	
IINUFSE		+20(Ref)	173.950185432	0.0000000	0.0000	2.0
		-30	173.950202104	0.0000167	0.0958	
		-20	173.950189022	0.0000036	0.0206	
		-10	173.950177864	-0.0000076	-0.0435	
	Low Power	0	173.950201341	0.0000159	0.0915	
		+10	173.950186640	0.0000012	0.0069	
		+30	173.950166394	-0.0000190	-0.1094	
		+40	173.950200112	0.0000147	0.0844	
		+50	173.950215839	0.0000304	0.1748	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	138.050014890	0.0000000	0.0000	
		-30	138.049990249	-0.0000246	-0.1785	
		-20	138.049998834	-0.0000161	-0.1163	
		-10	138.050019808	0.0000049	0.0356	
	High Power	0	138.050037197	0.0000223	0.1616	
		+10	138.050012308	-0.0000026	-0.0187	
		+30	138.050007588	-0.0000073	-0.0529	
		+40	138.049989385	-0.0000255	-0.1848	
4//00520		+50	138.050028586	0.0000137	0.0992	2.0
4K00F2D		+20(Ref)	138.050011443	0.0000000	0.0000	2.0
		-30	138.050038144	0.0000267	0.1934	
		-20	138.050035421	0.0000240	0.1737	
		-10	138.050014265	0.0000028	0.0204	
	Low Power	0	138.049994647	-0.0000168	-0.1217	
		+10	138.050015613	0.0000042	0.0302	-
		+30	138.050001781	-0.0000097	-0.0700	
		+40	138.049998094	-0.0000133	-0.0967	
		+50	138.050013952	0.0000025	0.0182	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	150.050010422	0.0000000	0.0000	
		-30	150.050010625	0.0000002	0.0014	
		-20	150.050032064	0.0000216	0.1442	
		-10	150.050037560	0.0000271	0.1809	
	High Power	0	150.050000888	-0.0000095	-0.0635	
		+10	150.050029749	0.0000193	0.1288	-
		+30	150.050044944	0.0000345	0.2301	
		+40	150.050059469	0.0000490	0.3269	
4//00520		+50	150.050056873	0.0000465	0.3096	2.0
4K00F2D		+20(Ref)	150.050015646	0.0000000	0.0000	2.0
		-30	150.050010266	-0.0000054	-0.0359	
		-20	150.050040202	0.0000246	0.1637	
		-10	150.050037513	0.0000219	0.1457	
	Low Power	0	150.050037142	0.0000215	0.1433	
		+10	150.050028338	0.0000127	0.0846	-
		+30	150.050042879	0.0000272	0.1815	
		+40	150.050045980	0.0000303	0.2022	
		+50	150.050047543	0.0000319	0.2126	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	162.050057824	0.0000000	0.0000	
		-30	162.050058486	0.0000007	0.0041	
		-20	162.050015481	-0.0000423	-0.2613	
		-10	162.050061264	0.0000034	0.0212	
	High Power	0	162.050039834	-0.0000180	-0.1110	
		+10	162.050037402	-0.0000204	-0.1260	
		+30	162.050009699	-0.0000481	-0.2970	
		+40	162.050062676	0.0000049	0.0299	
4//00520		+50	162.050066700	0.0000089	0.0548	
4K00F2D		+20(Ref)	162.050034190	0.0000000	0.0000	2.0
		-30	162.050062598	0.0000284	0.1753	
		-20	162.050026428	-0.0000078	-0.0479	
		-10	162.050054081	0.0000199	0.1227	
	Low Power	0	162.050046440	0.0000122	0.0756	
		+10	162.050040403	0.0000062	0.0383	-
		+30	162.050032174	-0.0000020	-0.0124	
		+40	162.050014941	-0.0000192	-0.1188	
		+50	162.050024545	-0.0000096	-0.0595	



Type of Emission	Power	Temperature (Degree C)	Frequency (Hz)	Frequency Error (Hz)	Frequency stability (ppm)	Limit (ppm)
		+20(Ref)	173.950015903	0.0000000	0.0000	
		-30	173.950017454	0.0000016	0.0089	
		-20	173.950000329	-0.0000156	-0.0895	
		-10	173.950007776	-0.0000081	-0.0467	
	High Power	0	173.950028440	0.0000125	0.0721	
		+10	173.950023050	0.0000071	0.0411	2.0
		+30	173.950013964	-0.0000019	-0.0111	
		+40	173.950039586	0.0000237	0.1362	
4K00F2D		+50	173.949997349	-0.0000186	-0.1067	
4KUUF2D		+20(Ref)	173.950004534	0.0000000	0.0000	2.0
		-30	173.950039112	0.0000346	0.1988	
		-20	173.950050588	0.0000461	0.2648	
		-10	173.950016884	0.0000123	0.0710	-
	Low Power	0	173.950028190	0.0000237	0.1360	
		+10	173.950024981	0.0000204	0.1175	
		+30	173.950005671	0.0000011	0.0065	
		+40	173.950001033	-0.0000035	-0.0201	
		+50	173.950035154	0.0000306	0.1760	



# (2) Frequency Stability (Voltage Variation)

138.05	MHz
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Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
		85	6.38	138.050110543	0.8007	
	High Power	100	7.50	138.050109662	0.7944	
		115	8.63	138.050109315	0.7918	
16K0F3E	Low Power	85	6.38	138.050108498	0.7859	2.0
		100	7.50	138.050108444	0.7855	-
		115	8.63	138.050110433	0.7999	

## 150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
		85	6.38	150.050133366	0.8888	
	High Power	100	7.50	150.050133761	0.8914	
1000000		115	8.63	150.050132328	0.8819	2.0
16K0F3E	Low Power	85	6.38	150.050132711	0.8844	2.0
		100	7.50	150.050132492	0.8830	-
		115	8.63	150.050133622	0.8905	

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
		85	6.38	162.050157396	0.9713	
	High Power	100	7.50	162.050157453	0.9716	2.0
1000000		115	8.63	162.050156365	0.9649	
16K0F3E	Low Power	85	6.38	162.050155871	0.9619	
		100	7.50	162.050157069	0.9693	
		115	8.63	162.050156658	0.9667	



## 173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
		85	6.38	173.950154225	0.8866	
	High Power	100	7.50	173.950154123	0.8860	
1000000		115	8.63	173.950154406	0.8876	2.0
16K0F3E	Low Power	85	6.38	173.950124743	0.7171	2.0
		100	7.50	173.950125917	0.7239	-
		115	8.63	173.950125012	0.7187	

## 138.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)
		85	6.38	138.050109513	0.7933	
	High Power	100	7.50	138.050108970	0.7894	
11//0525		115	8.63	138.050108588	0.7866	2.0
11K0F3E	Low Power	85	6.38	138.050109242	0.7913	2.0
		100	7.50	138.050110324	0.7992	-
		115	8.63	138.050108714	0.7875	

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	150.050132241	0.8813		
	High Power	100	7.50	150.050132058	0.8801		
11//0525		115	8.63	150.050131909	0.8791		
11K0F3E		85	6.38	150.050132138	0.8806	2.0	
	Low Power	100	7.50	150.050132946	0.8860		
		115	8.63	150.050133360	0.8888		



## 162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	162.050156109	0.9633		
	High Power	100	7.50	162.050156282	0.9644		
11//0525		115	8.63	162.050155654	0.9605		
11K0F3E		85	6.38	162.050156932	0.9684	2.0	
	Low Power	100	7.50	162.050156311	0.9646		
		115	8.63	162.050156040	0.9629		

## 173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	173.950132304	0.7606		
	High Power	wer 100 7.50 173.9501		173.950134194	0.7715		
11//0525		115	8.63	173.950132878	0.7639		
11K0F3E		85	6.38	173.950147523	0.8481	2.0	
	Low Power	100	7.50	173.950147931	0.8504		
		115	8.63	173.950146922	0.8446		

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	138.050013537	0.0981		
	High Power	100	7.50	138.050013901	0.1007	2.0	
		115	8.63	138.050013671	0.0990		
4K00F2D		85	6.38	138.050014637	0.1060		
	Low Power	100	7.50	138.050015977	0.1157		
		115	8.63	138.050016526	0.1197		



## 150.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	150.050029009	0.1933		
	High Power	100	7.50	150.050029358	0.1957		
		115	8.63	150.050029039	0.1935	2.0	
4K00F2D		85	6.38	150.050028733	0.1915		
	Low Power	100	7.50	150.050028701	0.1913		
		115	8.63	150.050027646	0.1842		

# 162.05 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	162.050036648	0.2261		
	High Power	100	7.50	162.050036943	0.2280		
		115	8.63	162.050036574	0.2257		
4K00F2D		85	6.38	162.050040481	0.2498	2.0	
	Low Power	100	7.50	162.050040898	0.2524		
		115	8.63	162.050039887	0.2461		

## 173.95 MHz

Type of Emission	Power	Diviation (%)	Voltage (V)	Frequency (MHz)	Frequency stability (ppm)	Limit (ppm)	
		85	6.38	173.950022103	0.1271		
	High Power	100	7.50	173.950022239	0.1278	2.0	
		115	8.63	173.950022013	0.1265		
4K00F2D	Low Power	85	6.38	173.950025471	0.1464		
		100	7.50	173.950026519	0.1525		
		115	8.63	173.950025413	0.1461		

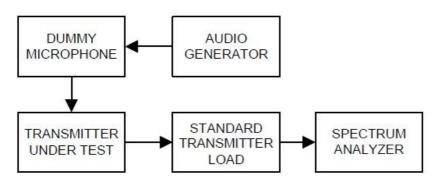


## 8.3 Occupied Bandwidth

#### Definition

The transmitter sideband spectrum denotes the sideband power produced at a discrete frequency separation from the carrier up to the test bandwidth (see TIA-603-E Section 1.3.4.4) due to all sources of unwanted noise within the transmitter in a modulated condition.

#### TEST CONFIGURATION



#### TEST PROCEDURE

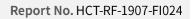
According to TIA-603-E Section 2.2.11.2 / RSS-119 Section 5.5

- a) For EUT supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for +/- 2.5 kHz deviation (or 50 % modulation). (FM modulation).
- b) With level constant, the signal level was increased 16 dB.
- c) For EUT supporting digital modulation, the digital modulation mode was operated to its maximum extent.
- d) Adjust the spectrum analyzer for the following setting:
  - 1) RBW : 100Hz (Authorized Band 6 kHz),

100Hz (Authorized Band 11.25 kHz),

300Hz (Authorized Band 20 kHz)

- 2) VBW : Video Bandwidth at least 10 times the resolution bandwidth.
- 4) Sweep Speed : Sweep Speed slow enough to maintain measurement calibration.
- 5) Sampling Time : 10 times
- 6) Detector Mode = Positive Peak.
- e) The occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.





## TEST RESULTS

Certification	Type of Emission	Channel Bandwidth (kHz)	Power	Test Frequency (MHz)	Measured 99% OBW at Maximum Freq. Deviation(kHz)	Limit (kHz)												
			High	138.05 150.05	14.882 14.931													
			Power	162.05	15.017													
		0.5		173.95	15.038													
FCC	16K0F3E	25		138.05	14.705													
			Low	150.05	14.646													
			Power	162.05	14.685													
				173.95	14.764	20.00												
				138.05	14.712	20.00												
			High	150.05	14.638													
			Power	162.05	14.663													
10	1000505	25		173.95	14.638													
IC	16K0F3E	25		138.05	14.705													
			Low	150.05	14.646													
			Power	162.05	14.685													
				173.95	14.764													
				138.05	9.910													
			High	150.05	9.878													
		12.5	Power	162.05	9.914													
	1160525 125		125		173.95	9.927												
FCC/IC	11K0F3E			138.05	9.912													
			Low	150.05	9.910													
															Power	162.05	9.916	
				138.05	7.719													
			High	150.05	7.702													
	01/20515		Power	162.05	7.678													
	8K30F1E,	12.5		173.95	7.579	11.25												
FCC/IC	8K30F1D, 8K30F7W	12.5		138.05	7.642	11.25												
	ONSULIN		Low	150.05	7.643													
			Power	162.05	7.732													
				173.95	7.562													
				138.05	7.490													
			High	150.05	7.333													
			Power	162.05	7.424													
ECC/IC	7K60FXD,	12.5		173.95	7.264													
FCC/IC	7K60FXE	12.5		138.05	7.466													
			Low	150.05	7.414													
			Power	162.05	7.426													
				173.95	7.421													

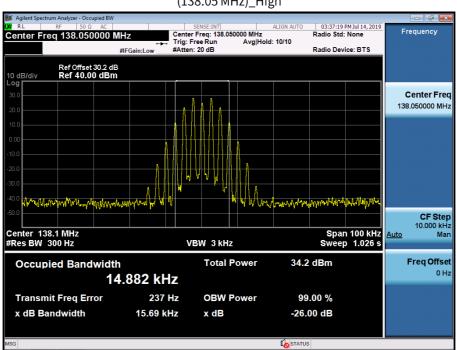


Certification	Type of Emission	Channel Bandwidth (kHz)	Power	Test Frequency (MHz)	Measured 99% OBW at Maximum Freq. Deviation(kHz)	Limit (kHz)	
				138.05	3.524		
			High	150.05	3.521		
	41/00515		Power	162.05	3.521		
FCC/IC	4K00F1E,	D, 6.25		173.95	3.491		
FCC/IC	4K00F1D, 4K00F7W		Low Power	138.05	3.529		
				150.05	3.523		
				162.05	3.514		
				173.95	3.492	C 00	
				138.05	4.058	6.00	
			High	150.05	4.058		
			Power	162.05	4.067		
	41400520	C DE		173.95	4.065		
FCC/IC	4K00F2D	6.25		138.05	4.058		
			Low	150.05	4.058		
			Power	162.05	4.069		
				173.95	4.065		



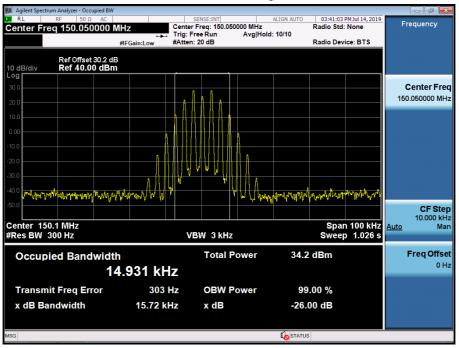
#### Plots of 99% Bandwidth

#### 16K0F3E FCC



## (138.05 MHz)\_High

#### (150.05 MHz)\_High

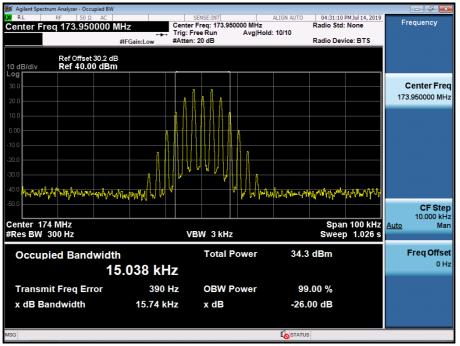




Jii Agilent Spectrum Analyzer - Occupied BW						
RL         RF         50 Ω         AC           Center Freq         162.050000         MH	7 C	SENSE:INT enter Freg: 162.0			:44:16 PM Jul 14, 2019 o Std: None	Frequency
		rig: Free Run Atten: 20 dB	Avg Hold		o Device: BTS	
#IF	Gain:Low #/	Atten: 20 dB		Rau	o Device. B13	
Ref Offset 30.2 dB 10 dB/div Ref 40.00 dBm						
Log 30.0						Center Freq
						162.050000 MHz
20.0		<u> </u>				
10.0						
0.00	- n 🕯					
-10.0	<u> </u>					
-20.0						
-30.0		[] \ 4 \ 4   ]				
		w Yi	WED A .			
-40.0 ใบไม้เรื่องๆให้บุรณีทางการการการการการการการการการการการการการก	math w W V		1 W W ( W	a <sup>r</sup> y/papyoy/yaharim	llylowerpathespyra	
-50.0						CF Step
Center 162.1 MHz					Span 100 kHz	10.000 kHz Auto Man
#Res BW 300 Hz		VBW 3 kH	Z		weep 1.026 s	<u>ridio</u> mun
Occupied Bandwidth		Total	Power	34.1 dBı	n	Freq Offset
15.0	017 kHz					0 Hz
Transmit Freq Error	355 Hz	OBW	Power	99.00	%	
x dB Bandwidth	15.72 kHz	x dB		-26.00 d	В	
MSG				STATUS		

## (162.05 MHz)\_High

## (173.95 MHz)\_High



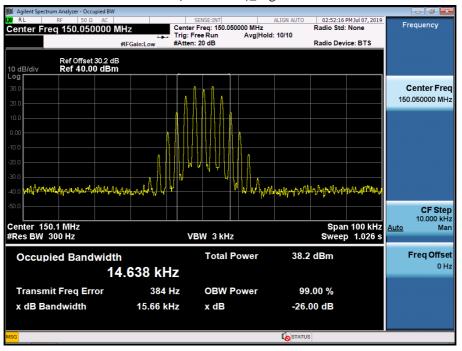


#### 16K0F3E\_IC

m Analyzer - Occupied BW 🚺 Aailent Sp SENSE:INT ALIGN AUT Center Freq: 138.050000 MHz Trig: Free Run Avg|Hold: 10/10 #Atten: 20 dB 02:48:59 PM Jul 07, 2019 Radio Std: None RI Frequency Center Freq 138.050000 MHz #IFGain:Low Radio Device: BTS Ref Offset 30.2 dB Ref 40.00 dBm 10 dE og **Center Freq** 138.050000 MHz L I L A and all m.140 AUNA/ <u>m hing</u> ALLAN <mark>ት አብረቆገስ</mark> **CF Step** 10.000 kHz Man Center 138.1 MHz #Res BW 300 Hz Span 100 kHz Sweep 1.026 s <u>Auto</u> VBW 3 kHz Freq Offset Total Power 38.2 dBm **Occupied Bandwidth** 0 Hz 14.712 kHz **Transmit Freq Error** 331 Hz **OBW Power** 99.00 % x dB Bandwidth 15.67 kHz -26.00 dB x dB **I**STATUS

(138.05 MHz)\_High

#### (150.05 MHz)\_High

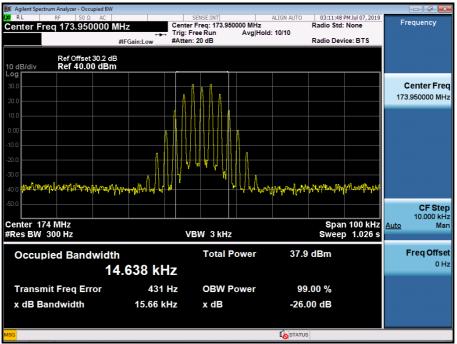




	Analyzer - Occupied B	W									
Center Freq	RF 50 Ω AC 162.050000	MHz	Center F		.050	000 MHz	ALIGN AUTO	02:55:27 Radio Std	PM Jul 07, 2019 : None	Fr	requency
		+→ #IFGain:Low	Trig: Fro #Atten:			Avg Hold	l: 10/10	Radio Dev	rice: BTS		
	Ref Offset 30.2 Ref 40.00 dB										
Log											
30.0			. (	λΙ.							Center Freq
20.0			╈	-11 J. A						162	2.050000 MHz
10.0					1						
0.00											
						1					
-10.0		n ()				l n					
-20.0				/ / /	Ű.						
-30.0					¥η	H fl 🔭					
-40.0	way and a character	wight while with	4		V	by pr hand	un and a suble	un ling	homenal		
-50.0	_										
0.0.0											CF Step 10.000 kH;
Center 162.1									n 100 kHz	Auto	Mar
#Res BW 30	0 Hz		VB	W 3k	Hz			Swee	p 1.026 s		
Occupie	d Bandwid	lth		Tota	I P	ower	38.1	dBm			Freq Offse
		14.663 kH	z								0 Hz
Transmit	Freq Error	427		OBV	/ P	ower	99	.00 %			
x dB Band		15.66 ki		x dB				00 dB			
	Iwidth	15.00 KI	12	X UE			-20-	00 08			
								_			
MSG							STATUS	3			

# (162.05 MHz)\_High

(173.95 MHz)\_High

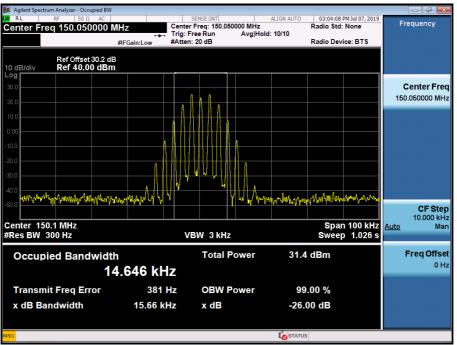




Agilent Spectrum Analyzer - Occupied BW					- 6 -			
KL RF 50 Ω AC     Center Freq 138.050000 M		SENSE:INT Iter Freq: 138.050000 M		02:59:32 PM Jul 07, 20 Radio Std: None	Frequency			
	Trig	j:FreeRun Av ten:20 dB	g Hold: 10/10	Radio Device: BTS				
Ref Offset 30.2 dB 10 dB/div Ref 40.00 dBm								
Log								
30.0					Center Freq			
20.0					138.050000 MHz			
10.0								
0.00								
-10.0	A {	<u>↓,``,,`,,`,,`,,`,,`,,`,,`,,`,,`,,`,,`,,`</u>						
-20.0								
-30.0		<u>↓↓↓↓↓↓↓↓</u>						
-40.0		<u> </u>	٨					
500 Mangapart ya hin unapartal	Margary W W M	h M M	of margade Vapares top					
-50.0					CF Step 10.000 kHz			
Center 138.1 MHz				Span 100 kl	Hz Auto Man			
#Res BW 300 Hz		VBW 3 kHz		Sweep 1.026	s			
Occupied Bandwidth		Total Powe	er 31.5	dBm	Freq Offset			
	14.705 kHz							
Transmit Freq Error	334 Hz	OBW Powe	r 99	.00 %				
x dB Bandwidth	15.67 kHz	x dB	-26.0	00 dB				
MSG			<b>I</b> o STATUS	6				

## (138.05 MHz)\_Low

(150.05 MHz)\_Low

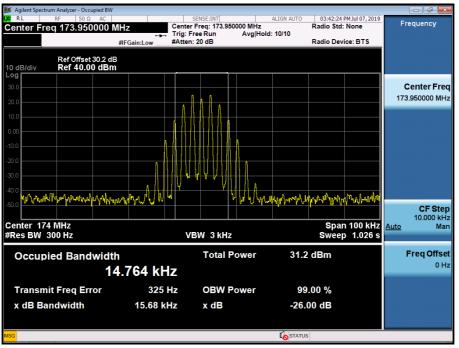




	um Analyzer - Occupied BW							
	RF 50 Ω AC eq 162.050000 N		SENSE:INT enter Freq: 16	2.050000 MHz		07:40 PM Jul 07, 2019 Std: None	Frequency	
Center Fre	3q 102.030000 h	T	rig: Free Run Atten: 20 dB	Avg Hold		Device: BTS		
		#IFGain:Low #	Atten: 20 dB		Radio	Device: BTS		
10 dB/div	Ref Offset 30.2 dE Ref 40.00 dBm							
	Rei 40.00 abii							
30.0							Center Freq	
20.0			1 4 1				162.050000 MHz	
10.0			- A. H. H. H. J.					
0.00			]  [[]  [[]					
-10.0		<u> </u>						
-20.0								
-30.0			╎╽╻╷╷					
-40.0		а ( I I I I	Ŵ ľ.	VIIIA				
WARNA	man murally and the	When when a when when we want		W W LA WAR	ntralimentaliter	horpeoply montheal		
-50.0							CF Step	
Center 162	2.1 MHz					Span 100 kHz	10.000 kHz Auto Man	
	#Res BW 300 Hz			Hz	Si	Sweep 1.026 s		
Occupi	ied Bandwidt	า	Tota	al Power	31.8 dBn	n	Freq Offset 0 Hz	
14.685 kHz								
Transm	it Freq Error	423 Hz	OBV	V Power	99.00 %	6		
	ndwidth	15.67 kHz	x dE	3	-26.00 di	3		
			X U					
MSG					STATUS			

(162.05 MHz)\_Low

#### (173.95 MHz)\_Low





#### 11K0F3E\_FCC/IC

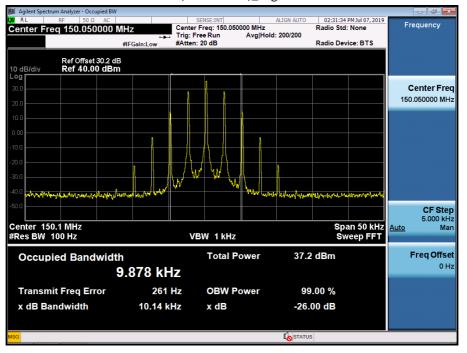
(138.05 MHz)\_High 📕 Agilent Spectr 🖬 R L um Analyzer - Occupied BW 
 SENSE:INT
 ALIGN AUTO

 Center Freq: 138.050000 MHz
 Trig: Free Run

 Trig: Free Run
 Avg|Hold: 200/200

 #Atten: 20 dB
 Avg|Hold: 200/200
 02:28:14 PM Jul 07, 2019 Radio Std: None Frequency Center Freq 138.050000 MHz #IFGain:Low Radio Device: BTS Ref Offset 30.2 dB Ref 40.00 dBm 10 dE og **Center Freq** 138.050000 MHz 11 41 . Ma wh CF Step 5.000 kHz Man Span 50 kHz Sweep FFT Center 138.1 MHz #Res BW 100 Hz <u>Auto</u> VBW 1 kHz Freq Offset Total Power 36.8 dBm **Occupied Bandwidth** 0 Hz 9.910 kHz **Transmit Freq Error** 249 Hz **OBW Power** 99.00 % x dB Bandwidth 10.15 kHz x dB -26.00 dB **I**STATUS

(150.05 MHz)\_High

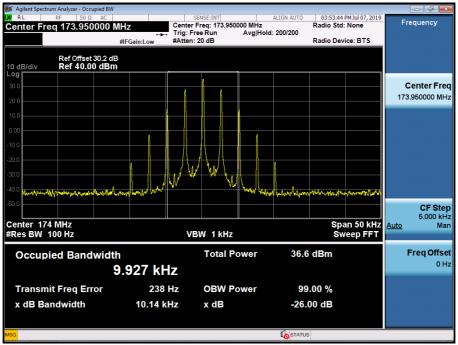




	rum Analyzer - Occupied BW						_ F
Center Fr	RF 50 Ω AC eq 162.050000 M	Lz Cent	SENSE:INT ter Freg: 162.050		LIGN AUTO	02:34:30 PM Jul 07, 201 Radio Std: None	9 Frequency
Genter I	•	🛶 Trig	: Free Run en: 20 dB	Avg Hold:		Radio Device: BTS	
	1	fIFGain:Low #Att	en: 20 ab			Radio Device: B15	
10 dB/div	Ref Offset 30.2 dB Ref 40.00 dBm						
Log	Rei 40.00 uBili			1			
30.0							Center Fr
20.0							162.050000 N
10.0							
0.00		1		1			
-10.0		┼─┤	<u> </u>				
-20.0		/	$\{ \ \} \ \}$				-
-30.0			W W L				
.40.0		_ J ∕IV	N,		4.		
	have shown and the second of the last	www.www.ww		W WW	menolulypedu	allow the contraction of the second	•
-50.0							CF St
Center 16	i2.1 MHz					Span 50 kH	5.000 k Z Auto N
	#Res BW 100 Hz VBW 1 kHz Sweep FFT						
Occup	ied Bandwidth		Total P	ower	36.9	dBm	Freq Offs
Cocap		.914 kHz					0
	3	.914 КПZ					
Transm	nit Freq Error	280 Hz	OBW P	ower	99.0	00 %	
x dB Bandwidth		10.14 kHz	x dB		-26.0	) dB	
MSG					STATUS		
DON					LOSTATUS		

## (162.05 MHz)\_High

## (173.95 MHz)\_High





Agilent Spectrum Analyzer - Occupie			1	-	
KI RF 50 Ω     Center Freq 138.0500	00 MHz C	SENSE:INT enter Freq: 138.050000 M		02:37:34 PM Jul 07, 2019 Radio Std: None	Frequency
		rig: Free Run Avg Atten: 20 dB	Hold: 200/200	Radio Device: BTS	
Ref Offset 30 10 dB/div Ref 40.00					
Log					
30.0		ł			Center Freq 138.050000 MHz
20.0					138.050000 MH2
10.0					
0.00					
-10.0			<u>,</u>		
-20.0					
-30.0		ААА	<u>,</u>		
-40.0		/ W' WY	, ,		
500 Marcard Marcard Marcard	moderal new mark	*** ****	was mylor hours	water	
					CF Step 5.000 kHz
Center 138.1 MHz #Res BW 100 Hz		VBW 1 kHz		Span 50 kHz Sweep FFT	<u>Auto</u> Man
Occupied Bandw	ridth	Total Powe	30 <b>.</b> 1	dBm	Freq Offset
	9.912 kHz				0 Hz
Transmit Freq Erro	r 248 Hz	OBW Power	99.	.00 %	
x dB Bandwidth	10.15 kHz	x dB	-26.0	0 dB	
MSG			<b>I</b> STATUS		

#### (138.05 MHz)\_Low

(150.05 MHz)\_Low

