

RF Test Report

Applicant : iWaylink Inc.

Product Type : Portable data terminal

Trade Name : IMOTION GROUP or 

Model Number : TC603

Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
ANSI C63.26 2015

Received Date : Oct. 21, 2021

Test Period : Nov. 15 ~ Dec. 01, 2021

Issued Date : Jan. 18, 2022

Issued by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330

Frequency Range : 9 kHz to 40 GHz

Test Firm MRA designation number: TW0010

Note:

- 1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
- 2.This report shall not be reproduced except in full, without the written approval of A Test Lab Technology Corporation.
- 3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Jan. 18, 2022	Initial Issue	Tobey Cheng

Verification of Compliance

Applicant : iWaylink Inc.

Product Type : Portable data terminal

Trade Name : IMOTION GROUP or 

Model Number : TC603

FCC ID : SPYTC603

EUT Rated Voltage : DC 5 V, 3 A / DC 9 V, 2 A

Test Voltage : 120 Vac / 60 Hz

Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
ANSI C63.26 2015

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>



A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : _____
(Kai Yu Yang)

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1 General Information

1.1. EUT Description

Applicant	iWaylink Inc. 6F., No. 288, Sec. 6, Civic Blvd., Xinyi Dist., Taipei City 110, Taiwan			
Product Type	Senzit			
Trade Name	IMOTION GROUP or 			
Model Number	TC603			
FCC ID	SPYTC603			
Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
WCDMA/ HSDPA/ HSUPA	II	1852.4 ~ 1907.6	1932.4 ~ 1987.6	QPSK, BPSK
	V	826.4 ~ 846.6	871.4 ~ 891.6	QPSK, BPSK
Antenna information	Type		Max. Gain (dBi)	
	PIFA Antenan		WCDMA/ HSDPA/ HSUPA Band II	0.4
			WCDMA/ HSDPA/ HSUPA Band V	-2.6
Operate Temp. Range	-10 ~ +50 °C			

Frequency Band	E.R.P. /E.I.R.P. (W)		Occupied Bandwidth (kHz)	Emission Designator
WCDMA/ HSDPA/ HSUPA Band II	0.247	(E.I.R.P.)	4181.3	4M18F9W
WCDMA/ HSDPA/ HSUPA Band V	0.085	(E.R.P.)	4156.7	4M16F9W

1.2. Mode of Operation

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
WCDMA Band II Link Mode
WCDMA Band V Link Mode

Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

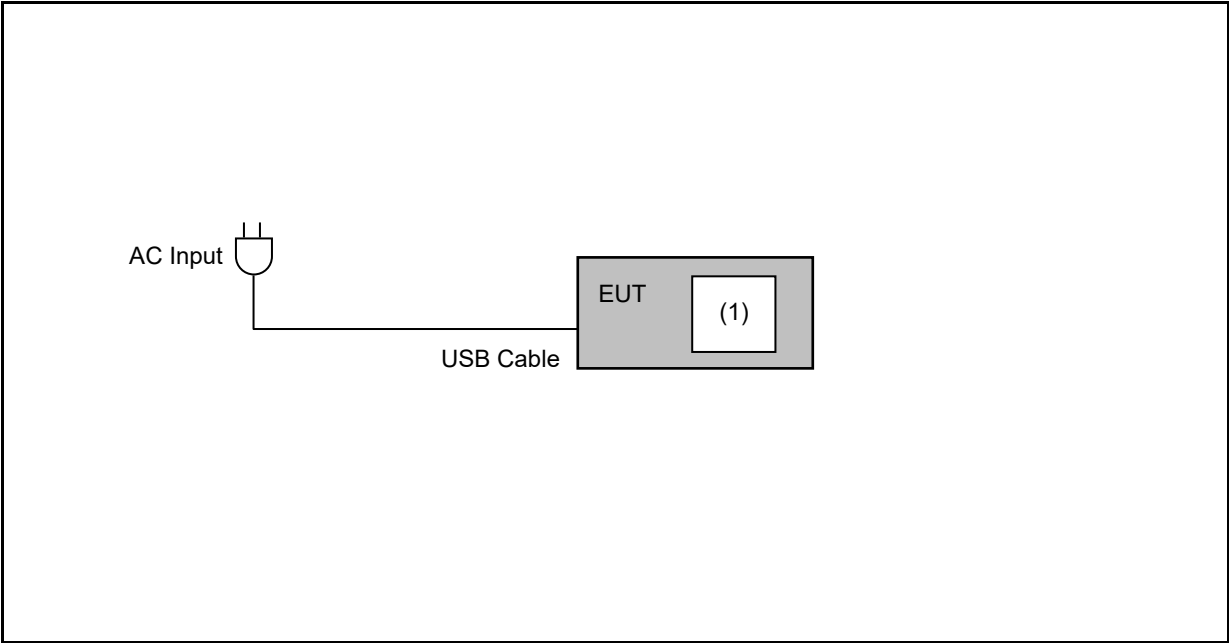
By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Y axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

1.3. EUT Test Step

1	Setup the EUT shown on "Configuration of Test System Details".
2	Turn on the power of all equipment.

1.4. Configuration of Test System Details

Radiated Emission



Devices Description					
	Product	Manufacturer	Model Number	Serial Number	Power Cord
(1)	Micro SD Card	Transcend	9153BA 8G 07DS1	---	---

1.5. Test Instruments

For Conducted

Test Period: Nov. 15, 2021

Testing Engineer: Nat Wu

Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Divider	Warison	WDIV-2I0.5-26.5S20	WR222AM2B1	03/12/2021	1 year
☐	Divider	Warison	WDIV-2I0.5-26.5S20	WR222AM2B2	11/04/2021	1 year
☐	Spectrum Analyzer (3 Hz~13.2 GHz)	Agilent	E4445A	MY45300744	10/27/2021	1 year
☒	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	01/08/2021	1 year
☐	Spectrum Analyzer (20 Hz~26.5 GHz)	R&S	FSU26	201118	01/14/2021	1 year
☒	Universal Radio Communication Tester	R&S	CMU200	112387	03/17/2021	1 year
☐	Wideband Radio Communication Tester	R&S	CMW500	103168	11/20/2020	1 year
☐	Universal Radio Communication Tester	Agilent	E5515C	MY47511156	09/09/2021	1 year
☐	Radio Communication Analyzer	Anritsu	MT8820C	6201342039	12/03/2020	1 year
☐	Radio Communication Analyzer	Anritsu	MT8821C	6201300618	06/03/2021	1 year
☐	UXM 5G Wireless Test Platform	Keysight	E7515B	MY59321574	07/05/2021	1 year
☐	Radio Communication Analyzer	Anritsu	MT8000A	6262166824	09/18/2020	2 year
☐	Signalling Tester	Anritsu	MD8475A	6201357755	03/29/2021	1 year
☐	USB sound vibration measurement system	National Instruments	USB-4432	1AF01D4	11/27/2020	1 year
☐	USB sound vibration measurement system	PCB	352C65	LW161409	12/02/2020	1 year
☐	USB sound vibration measurement system	G.R.A.S	40PH	186006	12/04/2020	1 year
☒	Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	03/30/2021	1 year
☒	Power Supply	KEITHLEY	2303	4045290	02/01/2021	1 year
☐	Power Supply	IDRC	CP-268	268711	12/01/2020	1 year
☐	Software	PWS Test	1.1.1	N/A	N.C.R.	---
☐	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request.

For Radiated Emissions

Test Period: Dec. 01, 2021

Testing Engineer: Pink Li

Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☐	Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/18/2021	1 year
☐	Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	01/08/2021	1 year
☒	Spectrum Analyzer (2 Hz~50 GHz)	Keysight	N9030B	MY57143537	04/19/2021	1 year
☒	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/15/2021	1 year
☐	Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A10961	07/06/2021	1 year
☐	Broadband Amplifier (100 kHz~1 GHz)	Titan	T0910E00014330 A1F	001	07/23/2021	1 year
☐	Amplifier (1 GHz~26.5 GHz)	Agilent	8449B	3008A02237	10/21/2021	1 year
☒	Broadband Amplifier (1 GHz~26.5 GHz)	Titan	T0912E01263025 A1F	002	07/26/2021	1 year
☐	Preamplifier (26.5 GHz~40 GHz)	EMCI	EMC2654045	980028	08/19/2021	1 year
☐	Loop Antenna (9 kHz~30 MHz)	COM-POWER CORPORATION	AL-130	121014	04/07/2021	1 year
☒	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	01146	07/19/2021	1 year
☐	Trilog Broadband Antenna (30 kHz~1 GHz)	Schwarzbeck Mess-Elektronik	VULB9168	416	11/17/2021	1 year
☒	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	02207	07/09/2021	1 year
☐	Broadband Horn Antenna (1 GHz~18 GHz)	Schwarzbeck Mess-Elektronik	9120D	9120D-550	08/24/2021	1 year
☐	Broadband Horn Antenna (18 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	9170	9170-320	08/24/2021	1 year
☐	Horn Antenna (18 GHz~40 GHz)	ETS	3116	00086467	12/03/2020	1 year
☐	RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/19/2021	1 year
☐	Microwave Cable	EMCI	EMC104-SM-SM-1 3000	170814	02/19/2021	1 year
☐	Microwave Cable	EMCI	EMC102-KM-KM-1 4000	151001	02/19/2021	1 year

Note: N.C.R. = No Calibration Request.

Radiation test sites		Semi Anechoic Room				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Coaxial Cable	Titan	T0710AT327A10A 100	J11005	08/06/2021	1 year
☒	Coaxial Cable	Titan	T0710AT327A10A 900	J11004	08/06/2021	1 year
☒	Coaxial Cable	Titan	CFD400NL-LW	001	08/06/2021	1 year
☐	Bluetooth Tester	R&S	CBT	100350	03/17/2021	2 years
☐	Wireless Connectivity Tester	R&S	CMW270	102208	06/02/2021	1 year
☐	Power Supply	KEITHLEY	2303	4045290	02/01/2021	1 year
☒	Software	EZ EMC	1.1.4.4	N/A	N.C.R.	---
☒	Universal Radio Communication Tester	R&S	CMU200	109369	11/29/2020	2 years

Note: N.C.R. = No Calibration Request.

1.6. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75

Test Setting Condition		
L.V.	Low Voltage	DC 3.6 V
N.V.	Normal Voltage	DC 3.85 V
H.V.	High Voltage	DC 4.24 V
L.T.	Low Temperature	-10 °C
N.T.	Normal Temperature	+25 °C
H.T.	High Temperature	+50 °C

1.7. Measurement Uncertainty

Parameter	Uncertainty
Conducted Output Average Power	1.1 dB
Effective Radiated Power / Equivalent Isotropic Radiated Power	1.1 dB
Frequency Stability	$1.2 \times 10^{-7} \times f_c$ (Hz)
Emission Bandwidth & Occupied Bandwidth	4.5 %
Peak to Average Ratio	1.1 dB
Band Edge	1.1 dB
Conducted Spurious Emission	1.1 dB
Radiated Emission	5.2 dB

1.8. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Power	Reference
§22.913(a)(5)	Effective Radiated Power	Pass
§24.232(c)	Equivalent Isotropic Radiated Power	Pass
§24.232(d) §27.50 KDB 971168 D01 (5.7.1)	Peak to average ratio	Pass
§2.1049 §22.917(a) §24.238(a)	Emission Bandwidth & Occupied Bandwidth	Reference
§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	Pass
§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission	Pass
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Pass
§2.1055 §22.355 §24.235	Frequency Stability for Temperature & Voltage	Pass

Decision Rule

- ☒ Uncertainty is not included.
- ☐ Uncertainty is included.

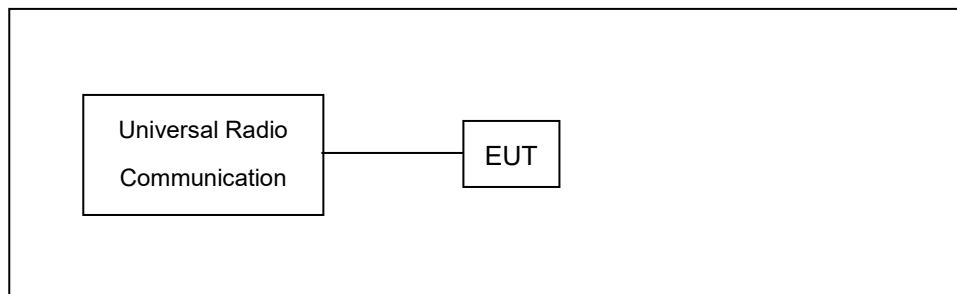
2 Measurement Procedure

2.1. RF Output Power Test

■ Limit

N/A

■ Test Setup



■ Test Procedure

- a. The EUT was set up for the maximum power with with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

2.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

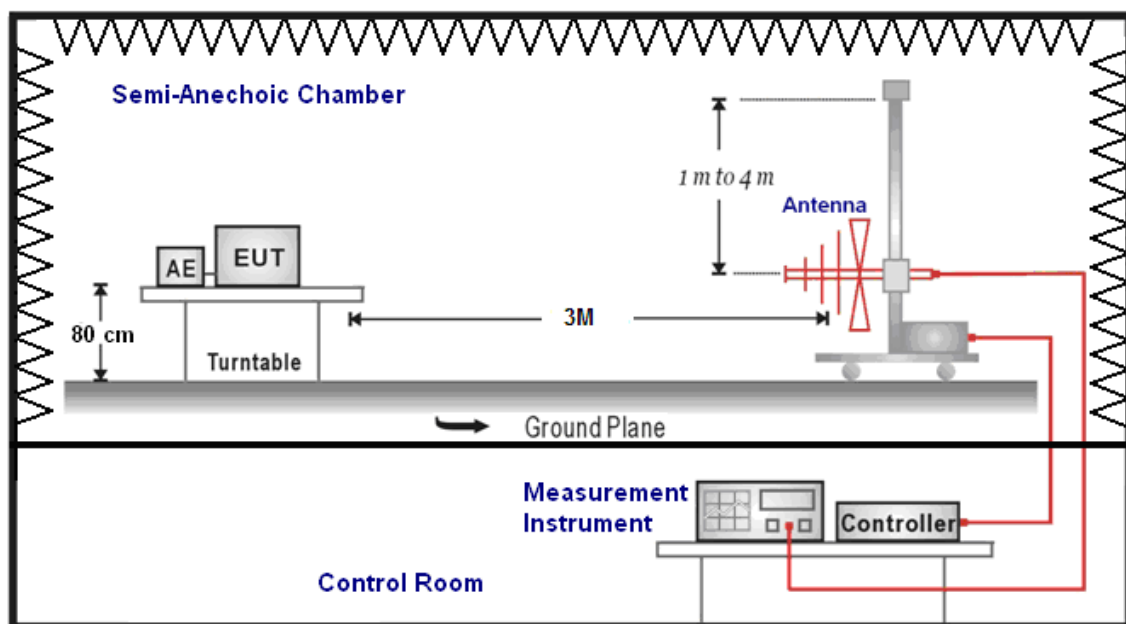
■ Limit

For FCC Part 22.913(a)(5): The E.R.P. of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

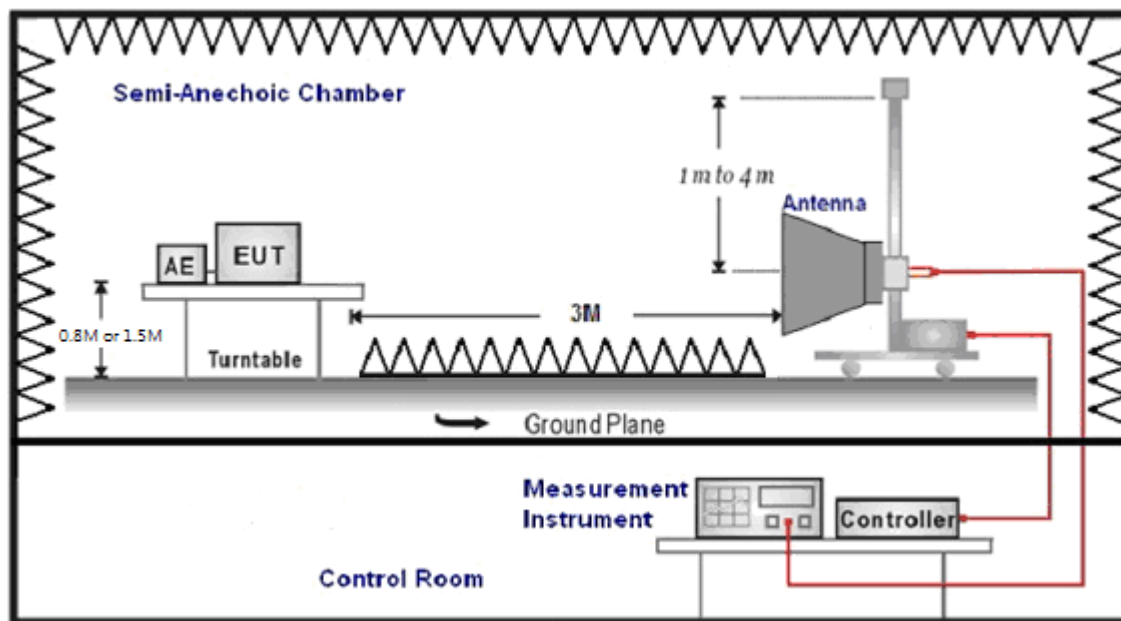
For FCC Part 24.232(c): The E.I.R.P. of Mobile and portable stations test transmitters must not exceed 2 Watts.

■ Setup

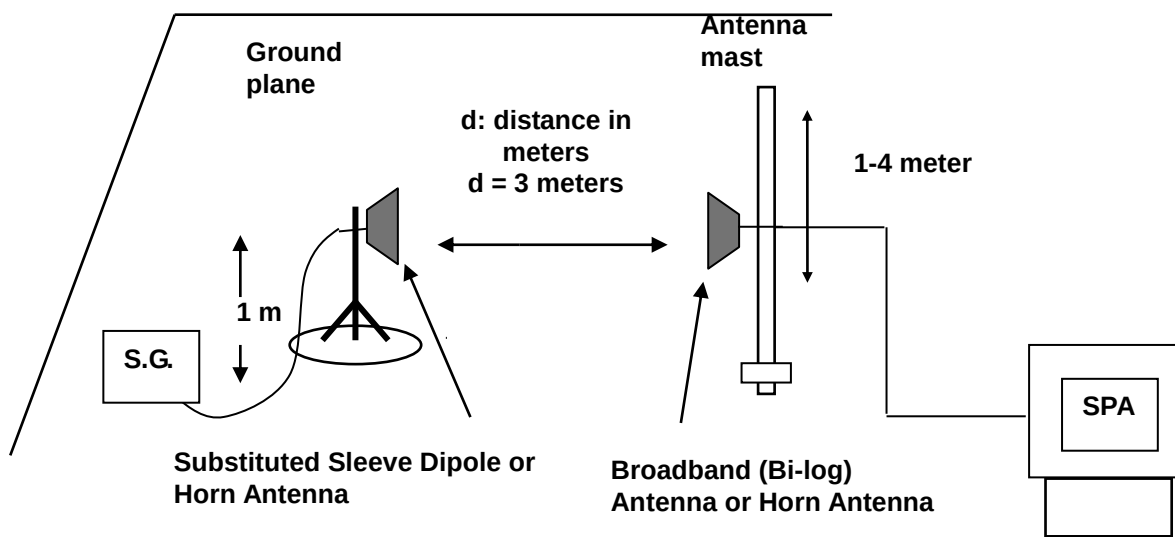
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. $E.I.R.P. = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $E.R.P. = E.I.R.P. - 2.15 \text{ dB}$

Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna

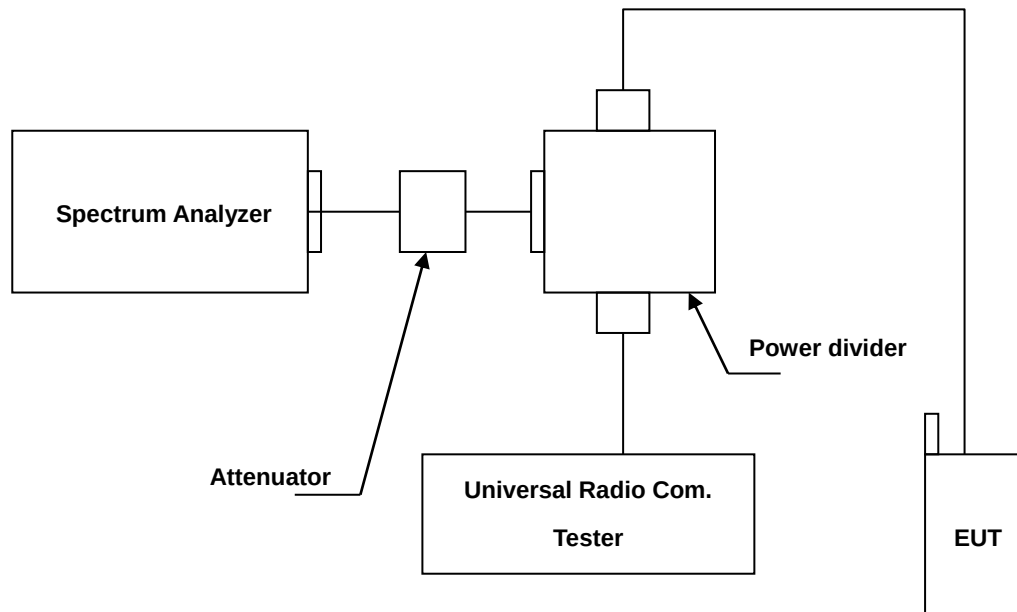
2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

2.3. Peak to Average Ratio Test

■ Limit

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

■ Setup



■ Test Procedure

- Set resolution/measurement bandwidth signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1 %.

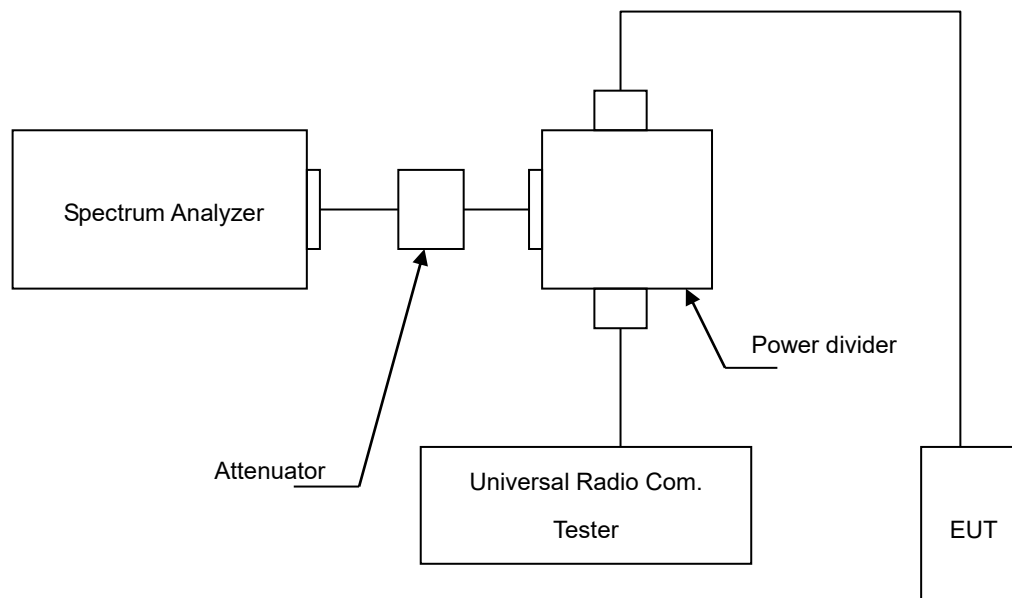
2.4. Emission Bandwidth & Occupied Bandwidth Test

■ Limit

The Occupied Bandwidth Limit:

N/A.

■ Setup



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The occupied bandwidth of middle channel for the highest and lowest RF powers was measured.

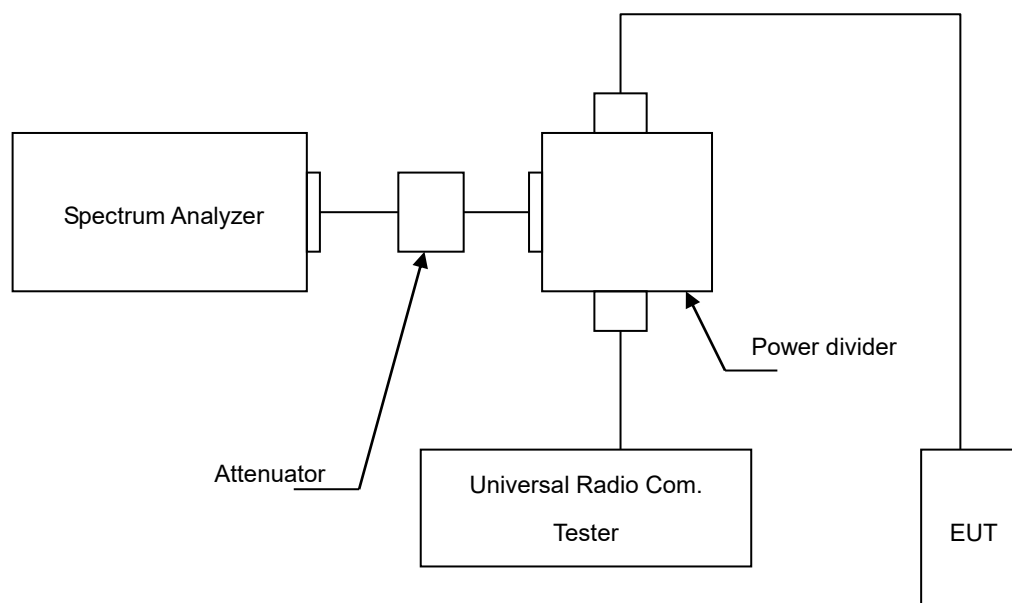
2.5. Band Edge Test

■ Limit

The Band Edge Limit:

The 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.

■ Setup



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The band edge of low and high channels for the highest RF powers within the transmitting frequency band were measured.

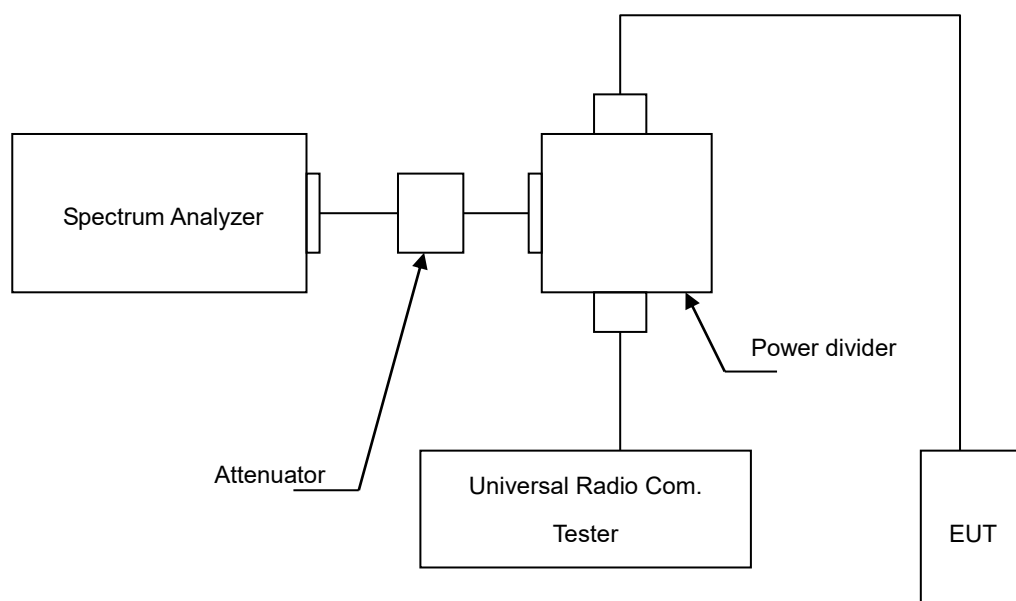
2.6. Conducted Spurious Emission Test

■ Limit

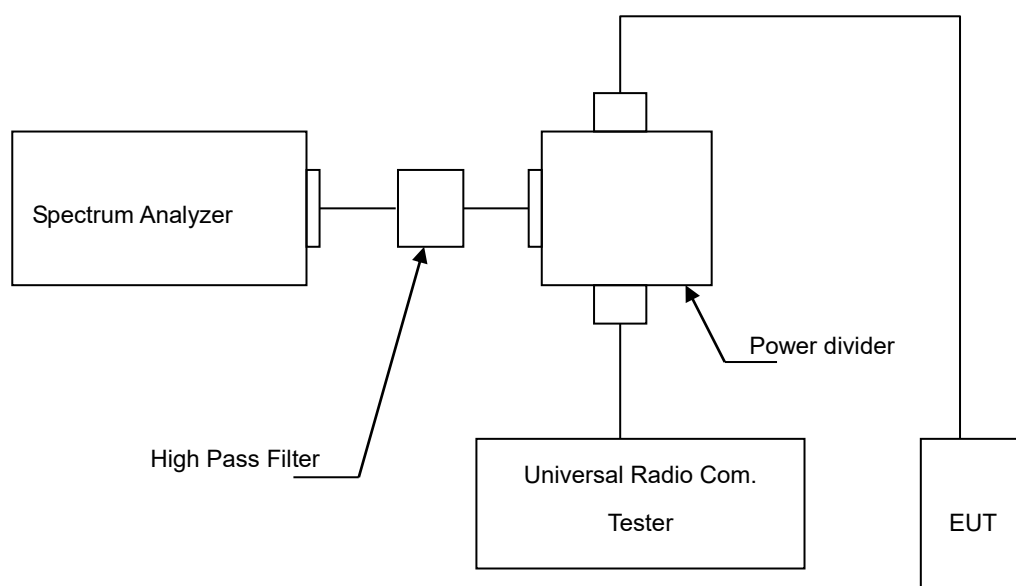
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

■ Setup

Below 2.8 GHz



Above 2.8 GHz



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.
4. Test setting at WCDMA Band IV RB=1 MHz, VB=1 MHz.

2.7. Field Strength of Spurious Radiation Test

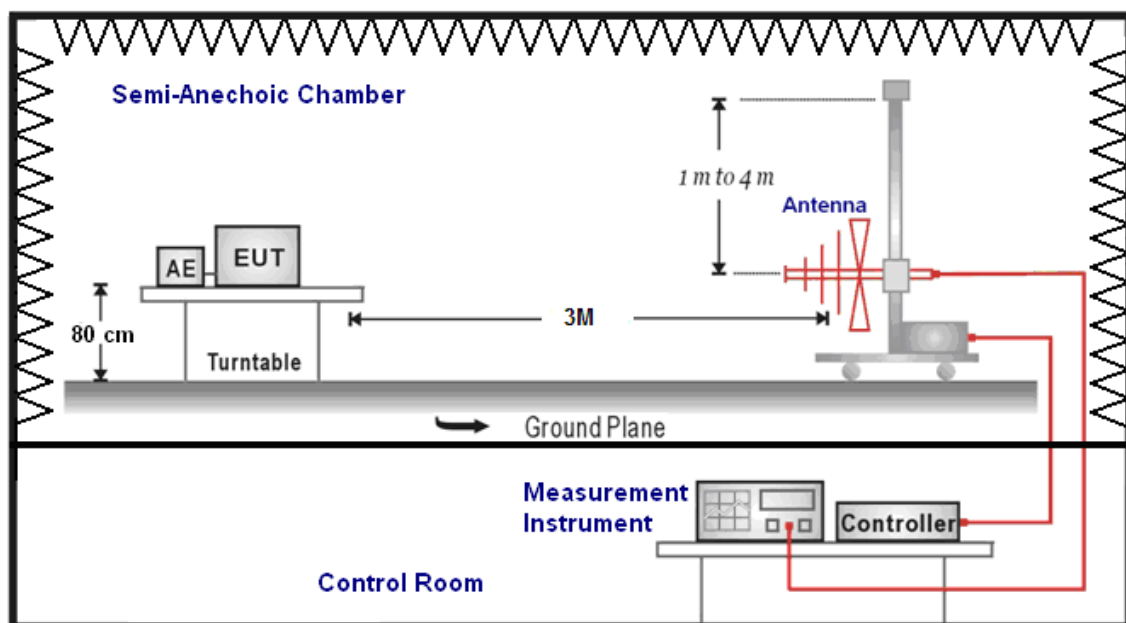
■ Limit

The 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.

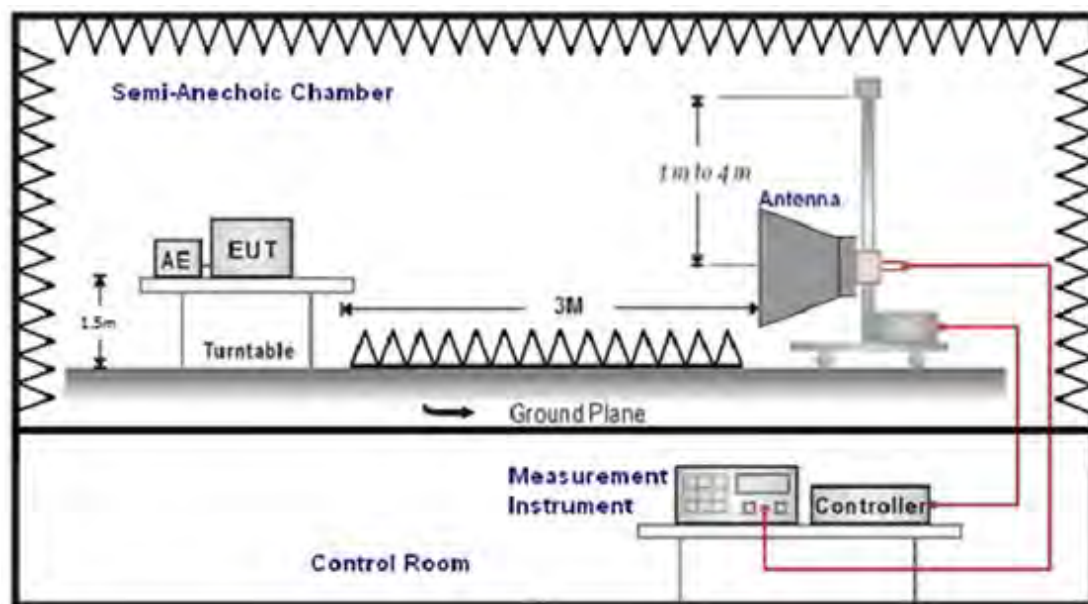
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

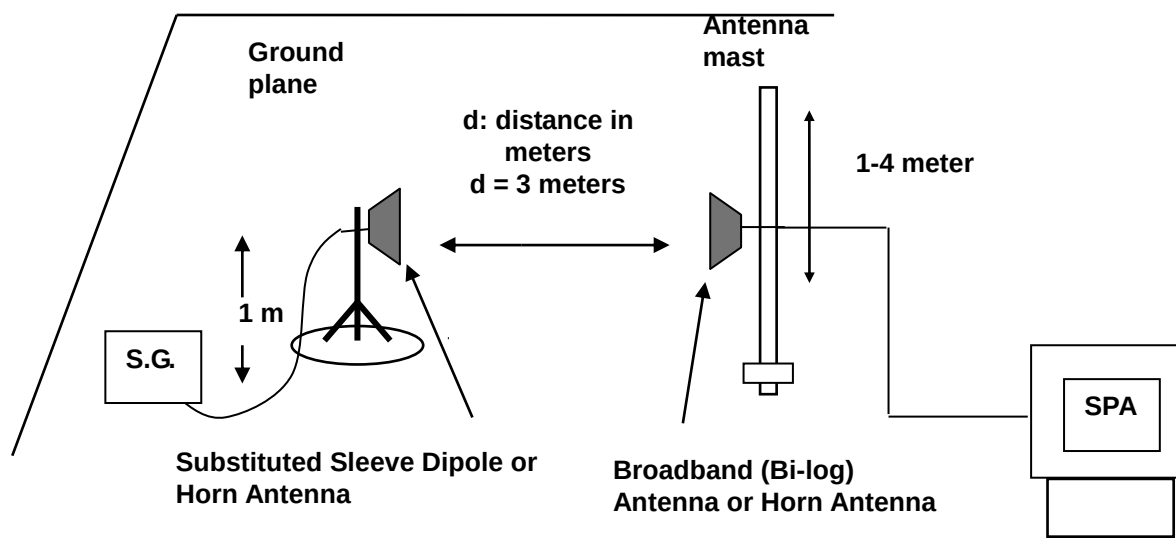
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P.- 2.15 dB
- f. Measurement range 9 kHz - 10 th Harmonic

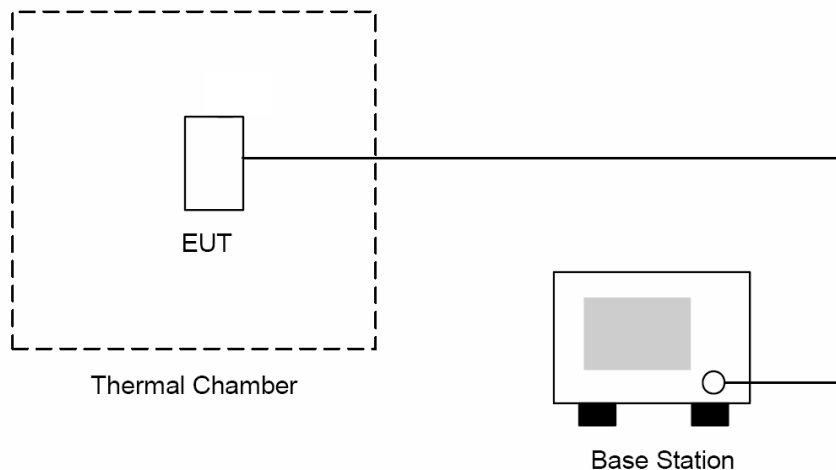
Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna
2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

2.8. Frequency Stability (Temperature & Voltage Variation) Test

■ Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

■ Setup



■ Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to $-30\text{ }^{\circ}\text{C}$ and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in $10\text{ }^{\circ}\text{C}$ steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at $25 \pm 5\text{ }^{\circ}\text{C}$ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115 % of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

3 Test Results

Test Mode	Test Modes description
UMTS/TM1	WCDMA system,QPSK modulation
UMTS/TM2	HSDPA system,QPSK modulation
UMTS/TM3	HSUPA system,QPSK modulation

3.1. RF Power Output

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band V	UMTS/TM1	LCH	24.04	26.70	PASS
		MCH	24.06	27.15	PASS
		HCH	23.73	26.46	PASS
Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band V	UMTS/TM2	LCH_SubTest-1	22.99	25.63	PASS
		LCH_SubTest-2	23	25.64	PASS
		LCH_SubTest-3	22.53	25.21	PASS
		LCH_SubTest-4	22.51	25.23	PASS
		MCH_SubTest-1	23.05	26.07	PASS
		MCH_SubTest-2	23.07	26.18	PASS
		MCH_SubTest-3	22.58	25.62	PASS
		MCH_SubTest-4	22.57	25.51	PASS
		HCH_SubTest-1	22.82	25.5	PASS
		HCH_SubTest-2	22.87	25.68	PASS
		HCH_SubTest-3	22.36	25.11	PASS
		HCH_SubTest-4	22.35	25.06	PASS
Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band V	UMTS/TM3	LCH_SubTest-1	23.62	26.24	PASS
		LCH_SubTest-2	21.17	23.86	PASS
		LCH_SubTest-3	22.96	25.61	PASS
		LCH_SubTest-4	23	25.64	PASS
		LCH_SubTest-5	23.02	25.61	PASS
		MCH_SubTest-1	23.81	26.76	PASS
		MCH_SubTest-2	21.25	24.24	PASS
		MCH_SubTest-3	22.85	25.93	PASS
		MCH_SubTest-4	22.03	25.14	PASS
		MCH_SubTest-5	22.57	25.68	PASS
		HCH_SubTest-1	23.6	26.3	PASS
		HCH_SubTest-2	20.99	23.68	PASS
		HCH_SubTest-3	22.9	25.6	PASS
		HCH_SubTest-4	22.78	25.57	PASS
		HCH_SubTest-5	22.79	25.61	PASS

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band II	UMTS/TM1	LCH	23.53	26.55	PASS
		MCH	23.52	26.81	PASS
		HCH	23.35	26.31	PASS
Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band II	UMTS/TM2	LCH_SubTest-1	22.52	25.45	PASS
		LCH_SubTest-2	22.56	25.61	PASS
		LCH_SubTest-3	22.07	25.01	PASS
		LCH_SubTest-4	22.05	25.08	PASS
		MCH_SubTest-1	22.57	25.78	PASS
		MCH_SubTest-2	22.58	25.8	PASS
		MCH_SubTest-3	22.1	25.41	PASS
		MCH_SubTest-4	22.08	25.28	PASS
		HCH_SubTest-1	22.44	25.34	PASS
		HCH_SubTest-2	22.47	25.53	PASS
		HCH_SubTest-3	21.98	25.02	PASS
		HCH_SubTest-4	21.96	24.96	PASS
Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
WCDMA Band II	UMTS/TM3	LCH_SubTest-1	22.56	25.49	PASS
		LCH_SubTest-2	21.55	24.59	PASS
		LCH_SubTest-3	22.58	25.58	PASS
		LCH_SubTest-4	22.51	25.44	PASS
		LCH_SubTest-5	22.56	25.5	PASS
		MCH_SubTest-1	22.06	25.31	PASS
		MCH_SubTest-2	21.18	24.47	PASS
		MCH_SubTest-3	22.68	25.97	PASS
		MCH_SubTest-4	22.57	25.75	PASS
		MCH_SubTest-5	22.62	25.84	PASS
		HCH_SubTest-1	22.45	25.43	PASS
		HCH_SubTest-2	20.63	23.71	PASS
		HCH_SubTest-3	22.55	25.55	PASS
		HCH_SubTest-4	22.44	25.42	PASS
		HCH_SubTest-5	22.47	25.45	PASS

3.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

Band	Modulation	Frequency (MHz)	Avg burst Conducted power (dBm)	E.I.R.P.		Limit (W)
				(dBm)	(W)	
WCDMA Band II	RMC12.2K	1852.4	23.53	23.93	0.247	≤ 2
		1880.0	23.52	23.92	0.247	≤ 2
		1907.6	23.35	23.75	0.237	≤ 2
HSDPA Band II		1852.4	22.52	22.92	0.196	≤ 2
		1880.0	22.57	22.97	0.198	≤ 2
		1907.6	22.44	22.84	0.192	≤ 2
		1852.4	22.56	22.96	0.198	≤ 2
		1880.0	22.58	22.98	0.199	≤ 2
		1907.6	22.47	22.87	0.194	≤ 2
		1852.4	22.07	22.47	0.177	≤ 2
		1880.0	22.10	22.50	0.178	≤ 2
		1907.6	21.98	22.38	0.173	≤ 2
		1852.4	22.05	22.45	0.176	≤ 2
		1880.0	22.08	22.48	0.177	≤ 2
		1907.6	21.96	22.36	0.172	≤ 2
HSUPA Band II	QPSK	1852.4	22.56	22.96	0.198	≤ 2
		1880.0	22.06	22.46	0.176	≤ 2
		1907.6	22.45	22.85	0.193	≤ 2
		1852.4	21.55	21.95	0.157	≤ 2
		1880.0	21.18	21.58	0.144	≤ 2
		1907.6	20.63	21.03	0.127	≤ 2
		1852.4	22.58	22.98	0.199	≤ 2
		1880.0	22.68	23.08	0.203	≤ 2
		1907.6	22.55	22.95	0.197	≤ 2
		1852.4	22.51	22.91	0.195	≤ 2
		1880.0	22.57	22.97	0.198	≤ 2
		1907.6	22.44	22.84	0.192	≤ 2
		1852.4	22.56	22.96	0.198	≤ 2
		1880.0	22.62	23.02	0.200	≤ 2
		1907.6	22.47	22.87	0.194	≤ 2

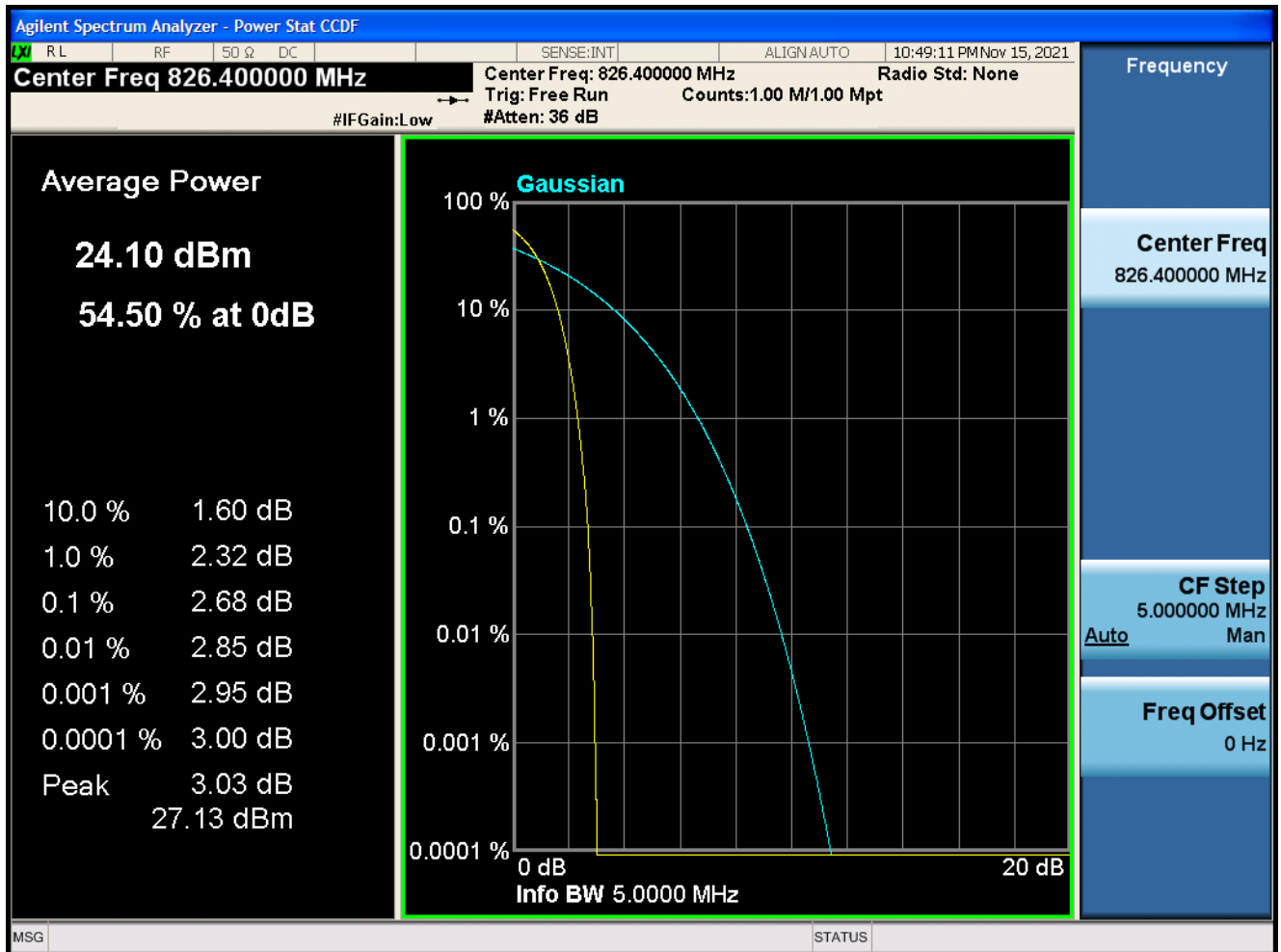
Band	Modulation	Frequency (MHz)	Avg burst Conducted power (dBm)	E.R.P.		Limit (W)
				(dBm)	(W)	
WCDMA Band V	RMC12.2K	826.4	24.04	19.29	0.085	≤7
		836.6	24.06	19.31	0.085	≤7
		846.6	23.73	18.98	0.079	≤7
HSDPA Band V	QPSK	826.4	22.99	18.24	0.067	≤7
		836.6	23.05	18.30	0.068	≤7
		846.6	22.82	18.07	0.064	≤7
		826.4	23.00	18.25	0.067	≤7
		836.6	23.07	18.32	0.068	≤7
		846.6	22.87	18.12	0.065	≤7
		826.4	22.53	17.78	0.060	≤7
		836.6	22.58	17.83	0.061	≤7
		846.6	22.36	17.61	0.058	≤7
		826.4	22.51	17.76	0.060	≤7
		836.6	22.57	17.82	0.061	≤7
		846.6	22.35	17.60	0.058	≤7
HSUPA Band V		826.4	23.62	18.87	0.077	≤7
		836.6	23.81	19.06	0.081	≤7
		846.6	23.60	18.85	0.077	≤7
		826.4	21.17	16.42	0.044	≤7
		836.6	21.25	16.50	0.045	≤7
		846.6	20.99	16.24	0.042	≤7
		826.4	22.96	18.21	0.066	≤7
		836.6	22.85	18.10	0.065	≤7
		846.6	22.90	18.15	0.065	≤7
		826.4	23.00	18.25	0.067	≤7
		836.6	22.03	17.28	0.053	≤7
		846.6	22.78	18.03	0.064	≤7
826.4	23.02	18.27	0.067	≤7		
836.6	22.57	17.82	0.061	≤7		
846.6	22.79	18.04	0.064	≤7		

3.3. Peak-to-Average Ratio

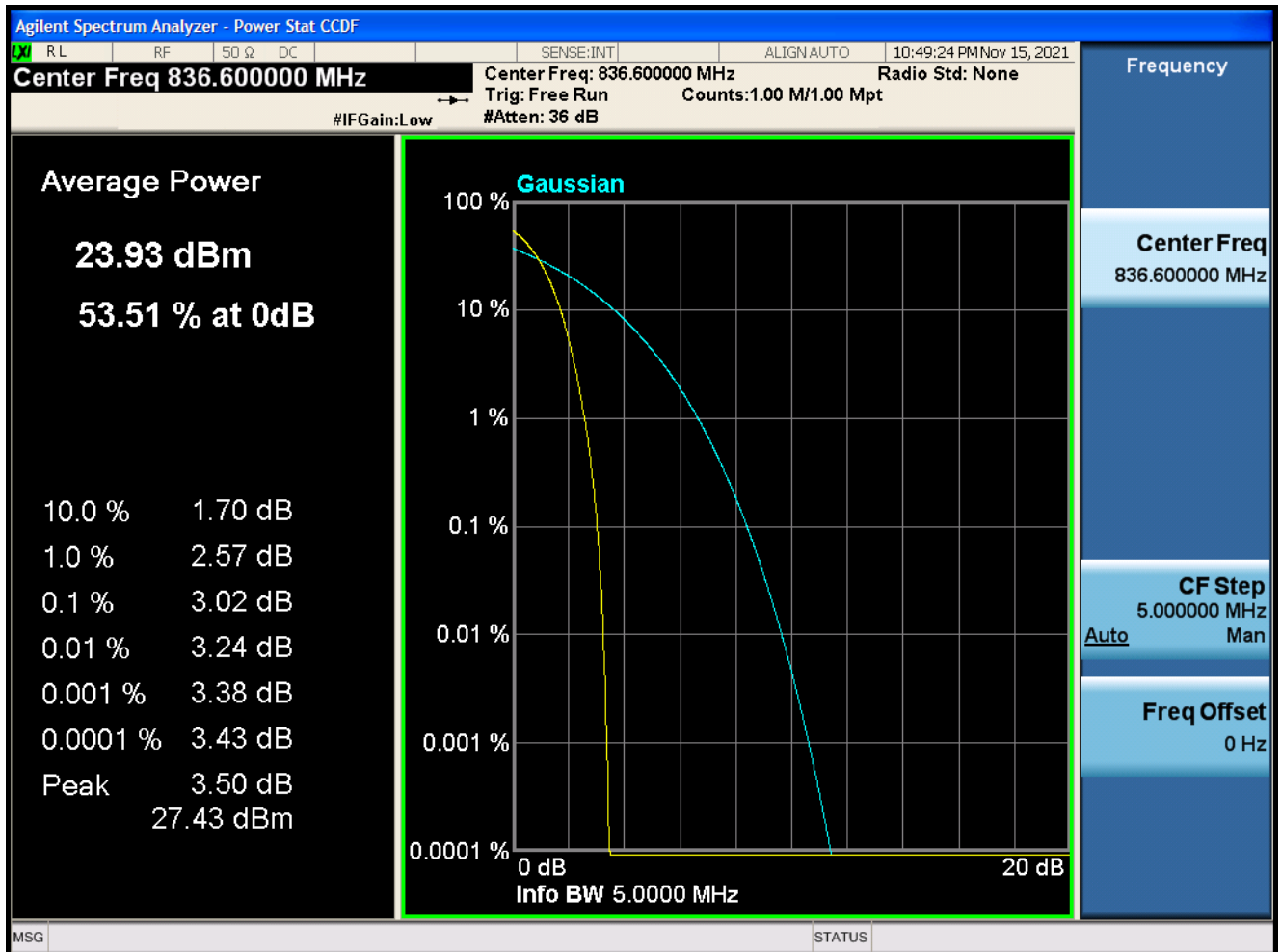
Test Band	Test Mode	Test Channel	Measured (db)	Limit (db)	Verdict
WCDMA Band V	UMTS/TM1	LCH	2.68	13	PASS
		MCH	3.02	13	PASS
		HCH	2.75	13	PASS

Test Band	Test Mode	Test Channel	Measured (db)	Limit (db)	Verdict
WCDMA Band II	UMTS/TM1	LCH	3.01	13	PASS
		MCH	3.21	13	PASS
		HCH	2.99	13	PASS

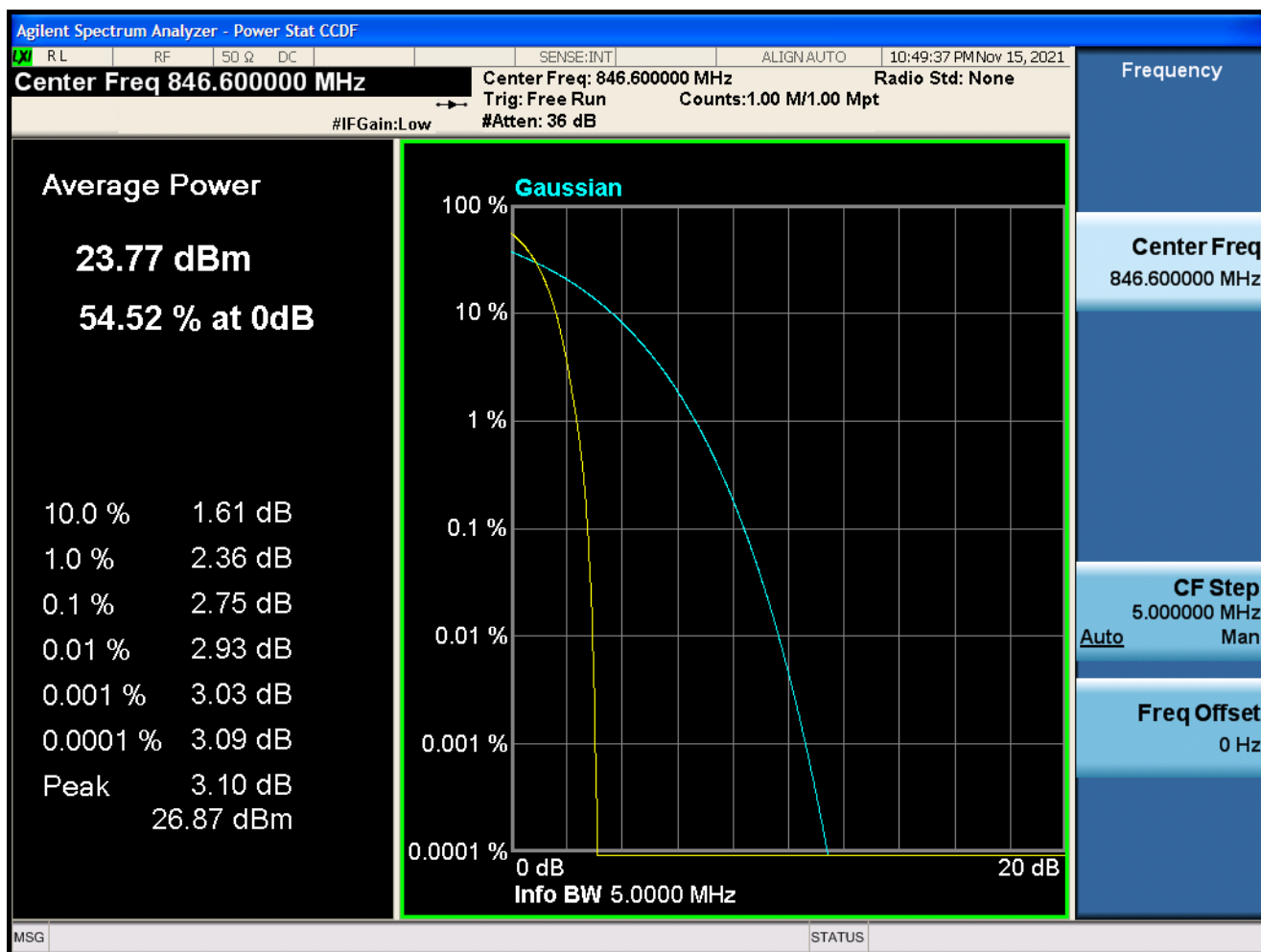
- 1 For WCDMA
 - 1.1 Test Band=WCDMA Band V
 - 1.1.1 Test Mode=UMTS/TM1
 - 1.1.1.1 Test Channel=LCH



1.1.1.2 Test Channel=MCH



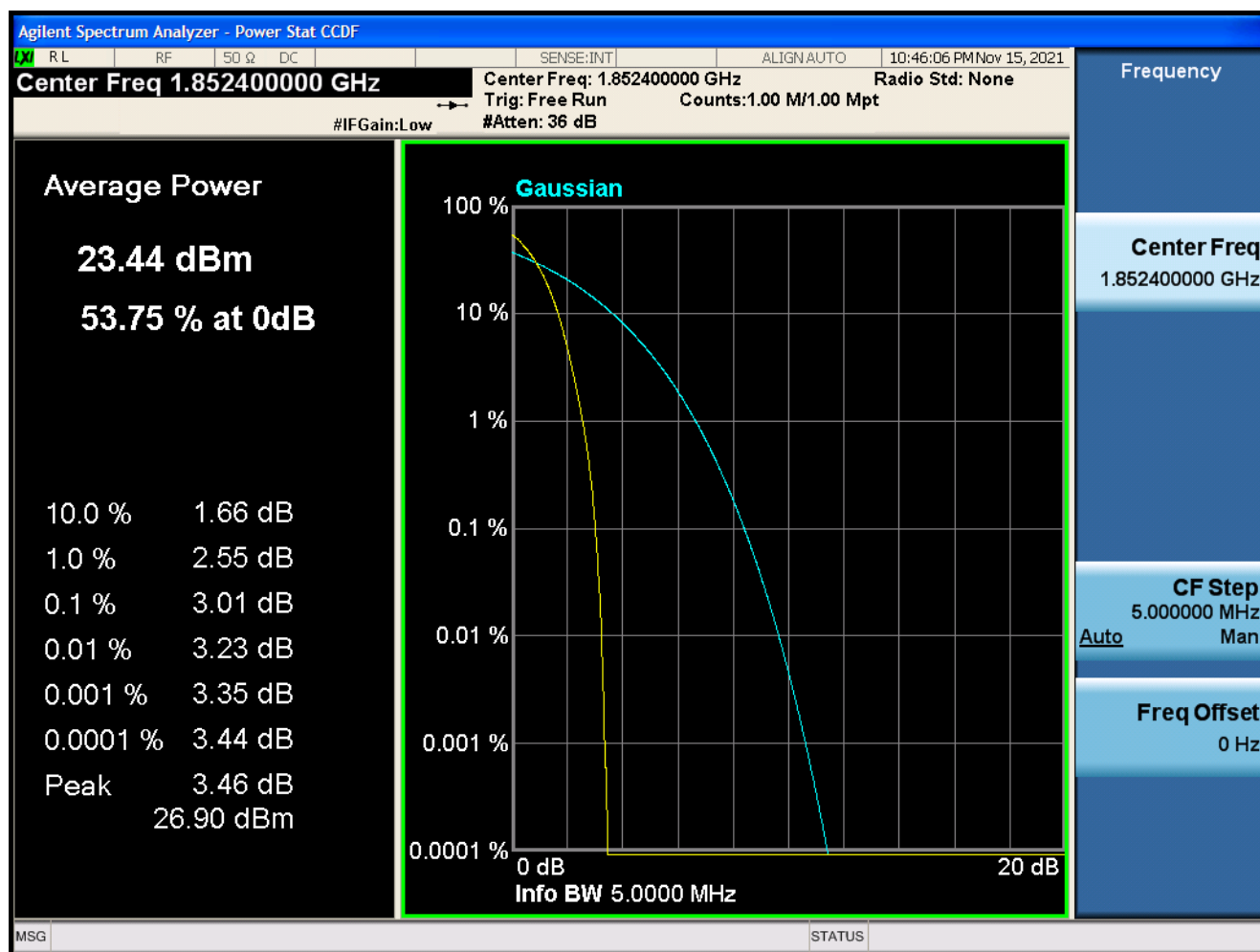
1.1.1.3 Test Channel=HCH



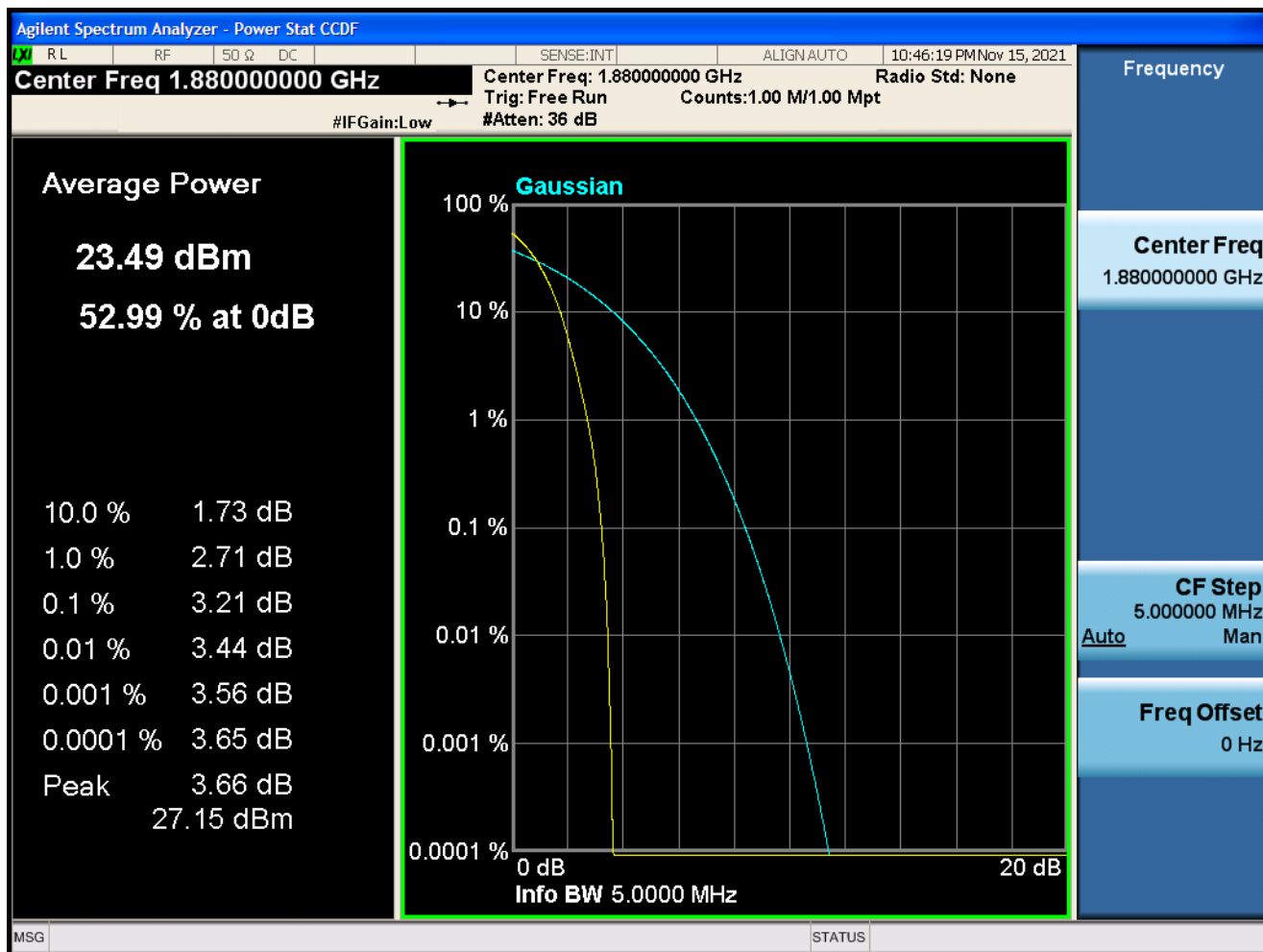
1.2 Test Band=WCDMA Band II

1.2.1 Test Mode=UMTS/TM1

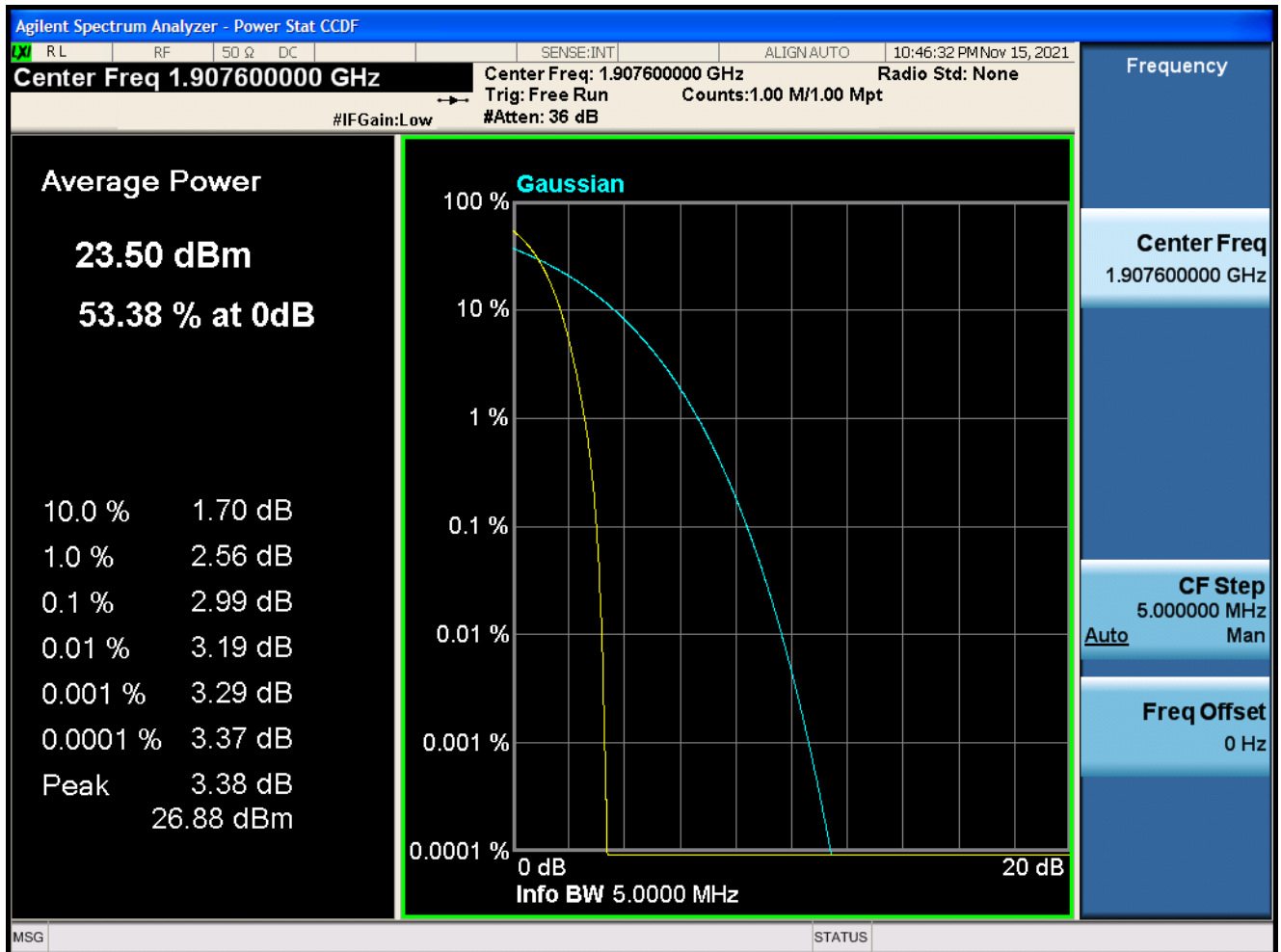
1.2.1.1 Test Channel=LCH



1.2.1.2 Test Channel=MCH



1.2.1.3 Test Channel=HCH

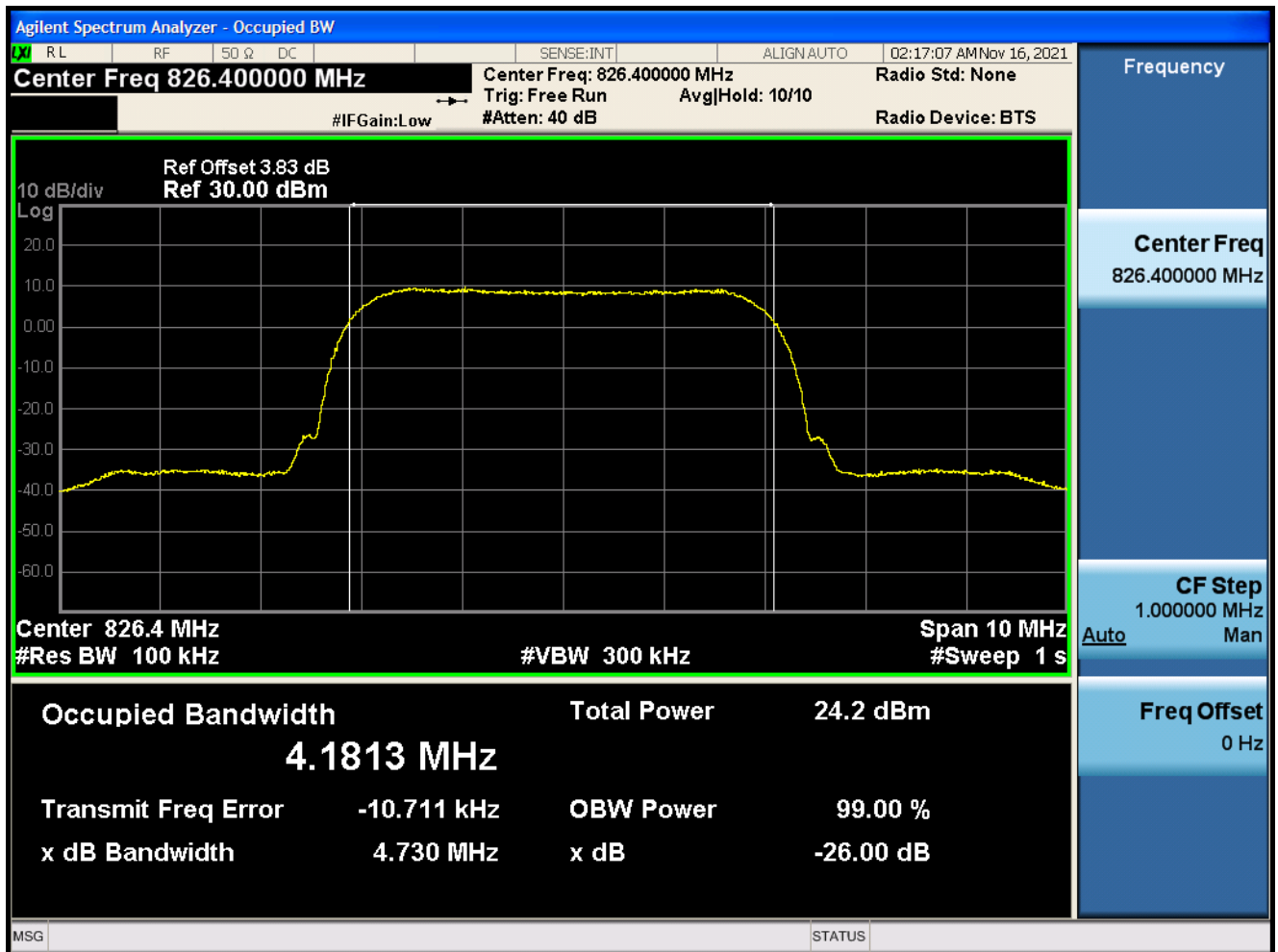


3.4. Emission Bandwidth & Occupied Bandwidth Test

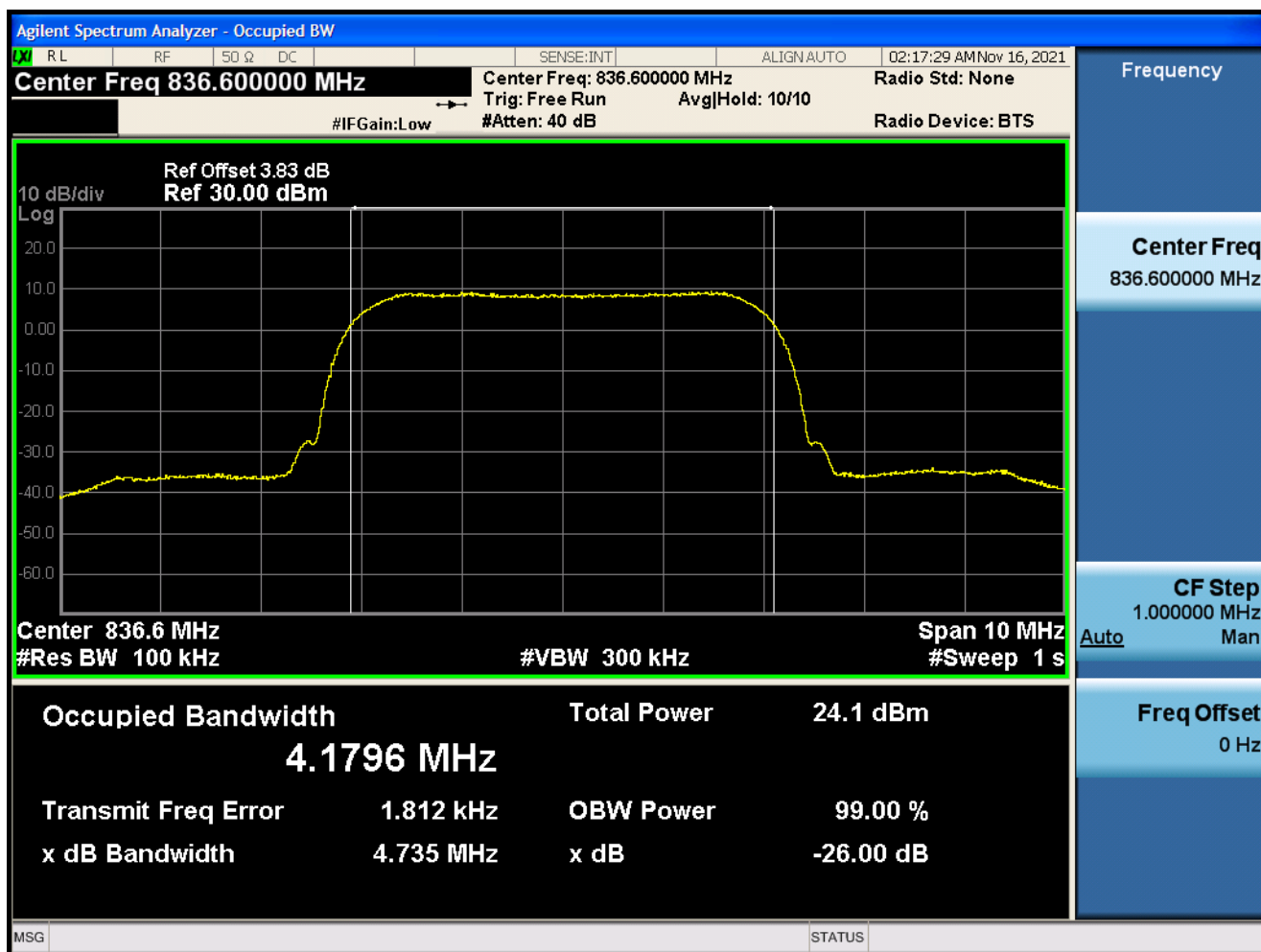
Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA Band V	UMTS/TM1	LCH	4181.3	4730	PASS
		MCH	4179.6	4735	PASS
		HCH	4181.7	4730	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth (KHZ)	Emission Bandwidth (KHZ)	Verdict
WCDMA Band II	UMTS/TM1	LCH	4156.7	4693	PASS
		MCH	4156.7	4692	PASS
		HCH	4166.3	4731	PASS

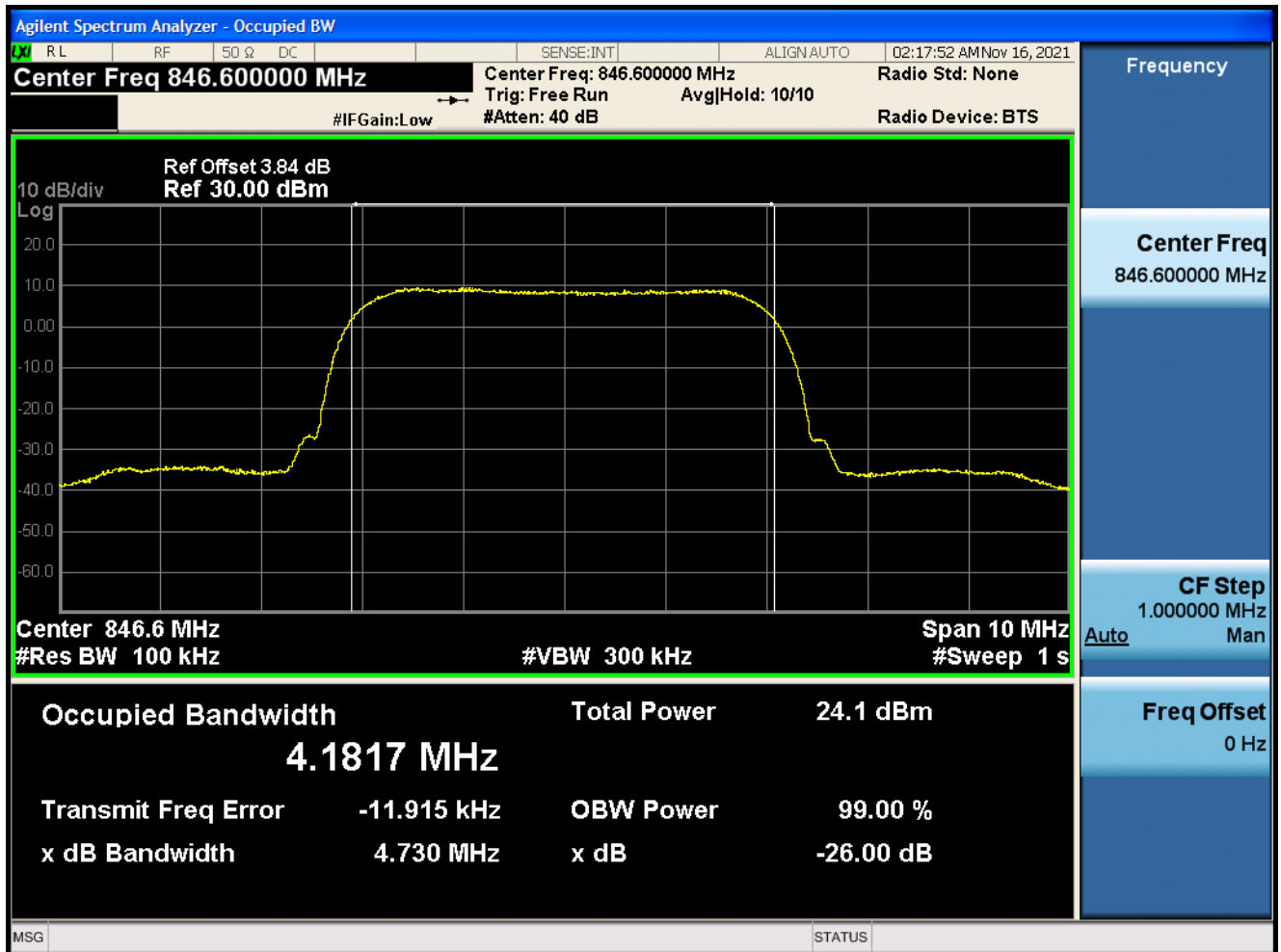
- 2 For WCDMA
 - 2.1 Test Band=WCDMA Band V
 - 2.1.1 Test Mode=UMTS/TM1
 - 2.1.1.1 Test Channel=LCH



2.1.1.2 Test Channel=MCH



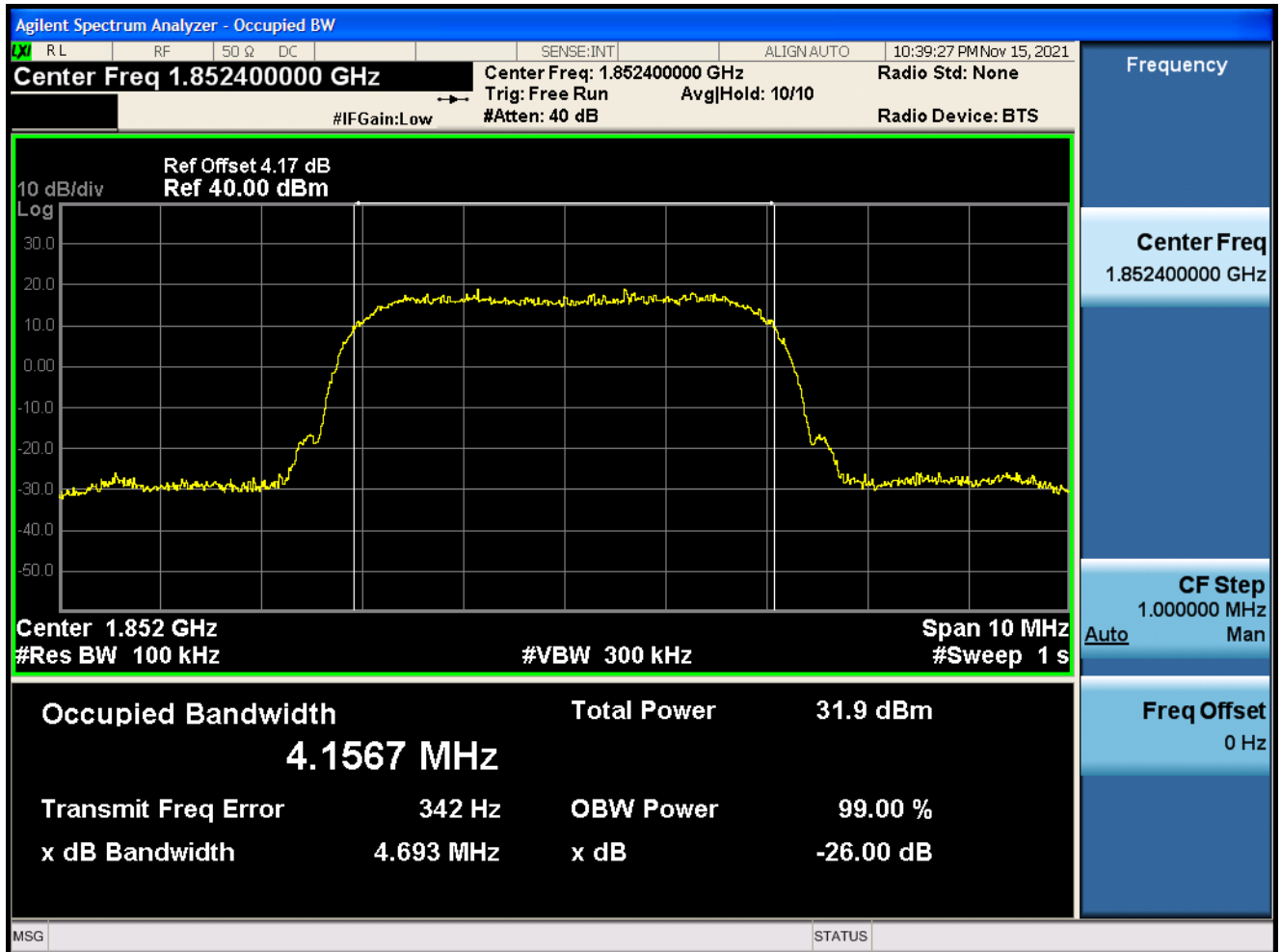
2.1.1.3 Test Channel=HCH



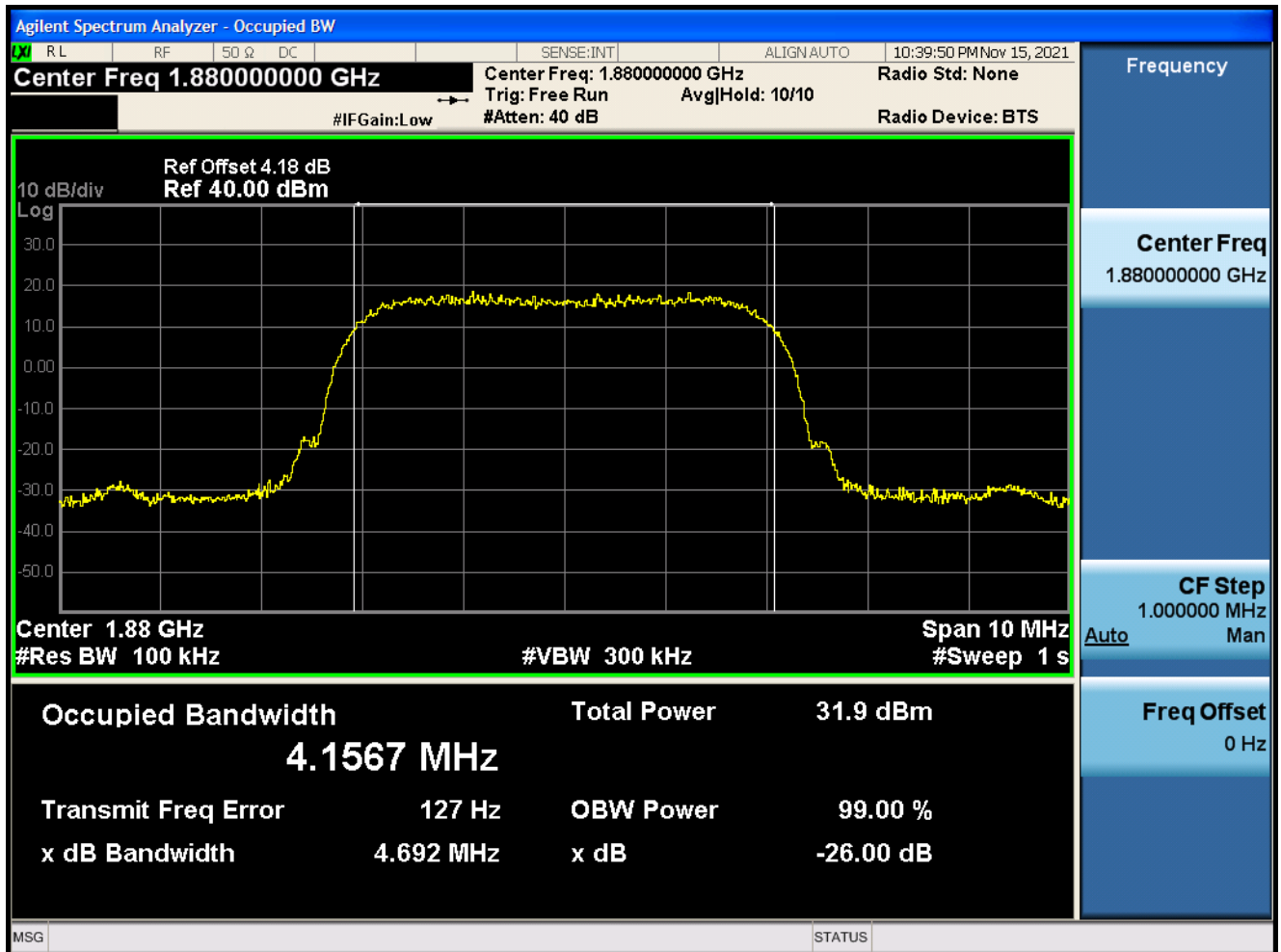
2.2 Test Band=WCDMA Band II

2.2.1 Test Mode=UMTS/TM1

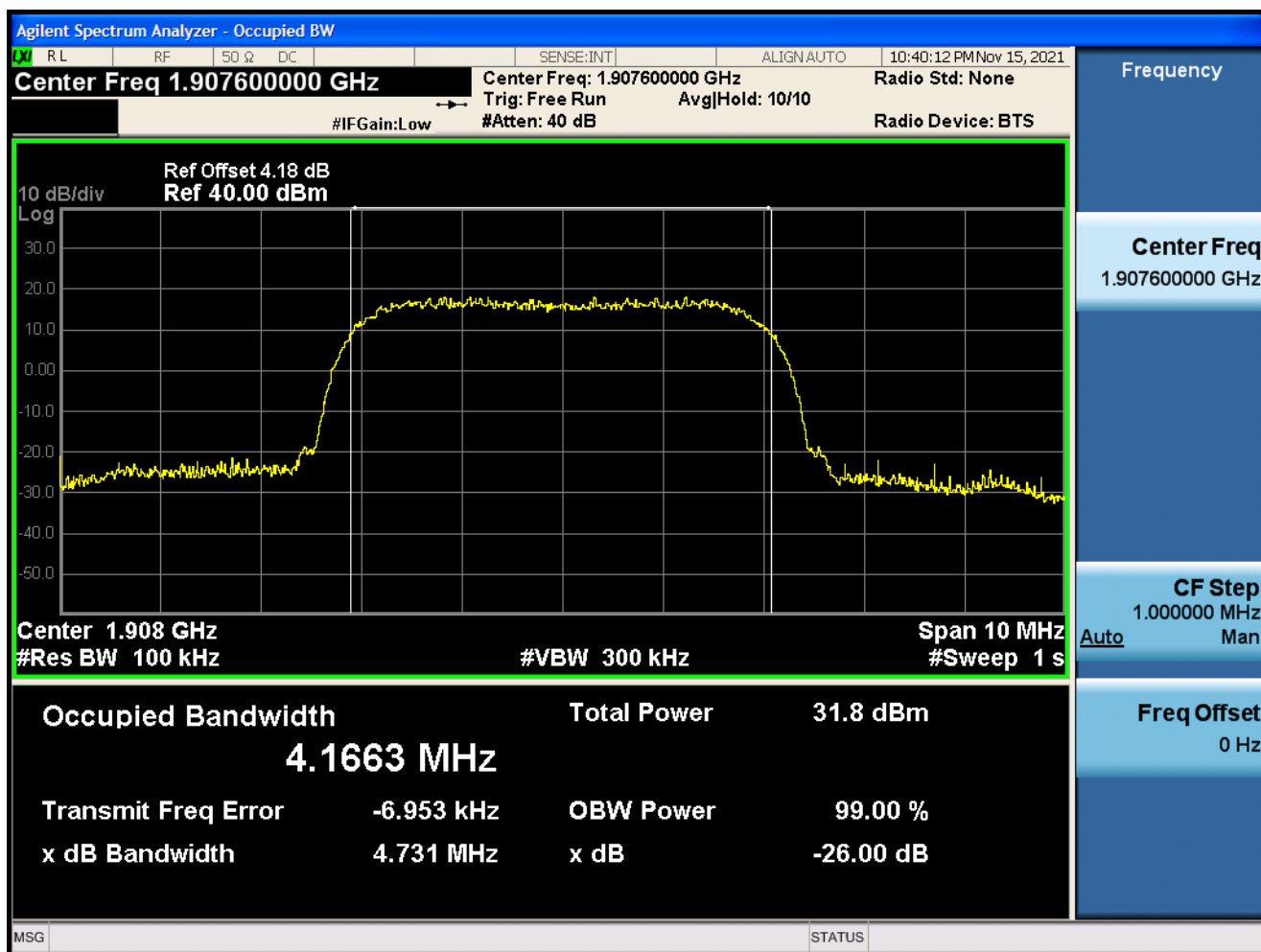
2.2.1.1 Test Channel=LCH



2.2.1.2 Test Channel=MCH

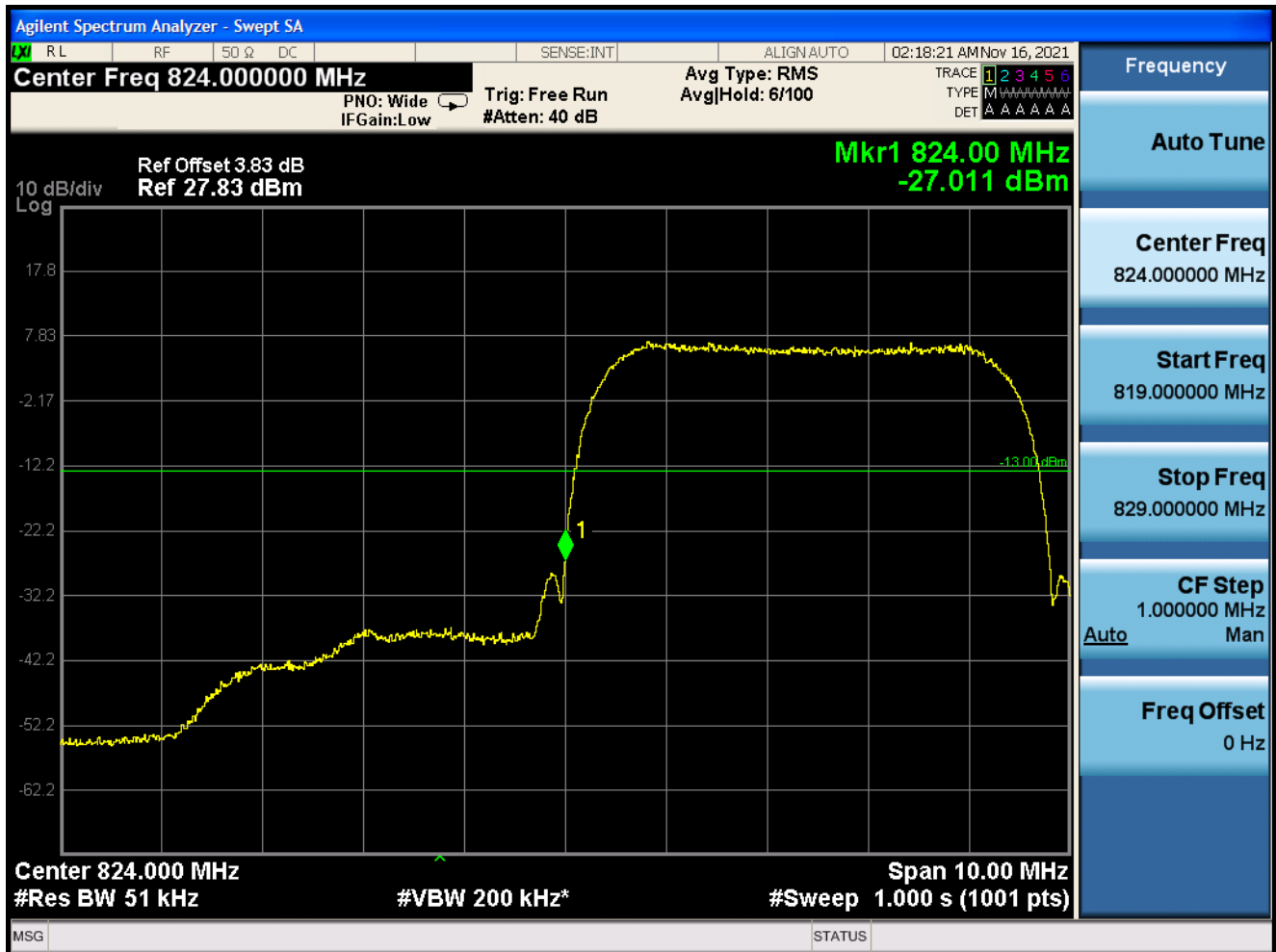


2.2.1.3 Test Channel=HCH



3.5. Band Edge Test

- 1 For WCDMA
- 1.1 Test Band=WCDMA Band V
- 1.1.1 Test Mode=UMTS/TM1
- 1.1.1.1 Test Channel=LCH



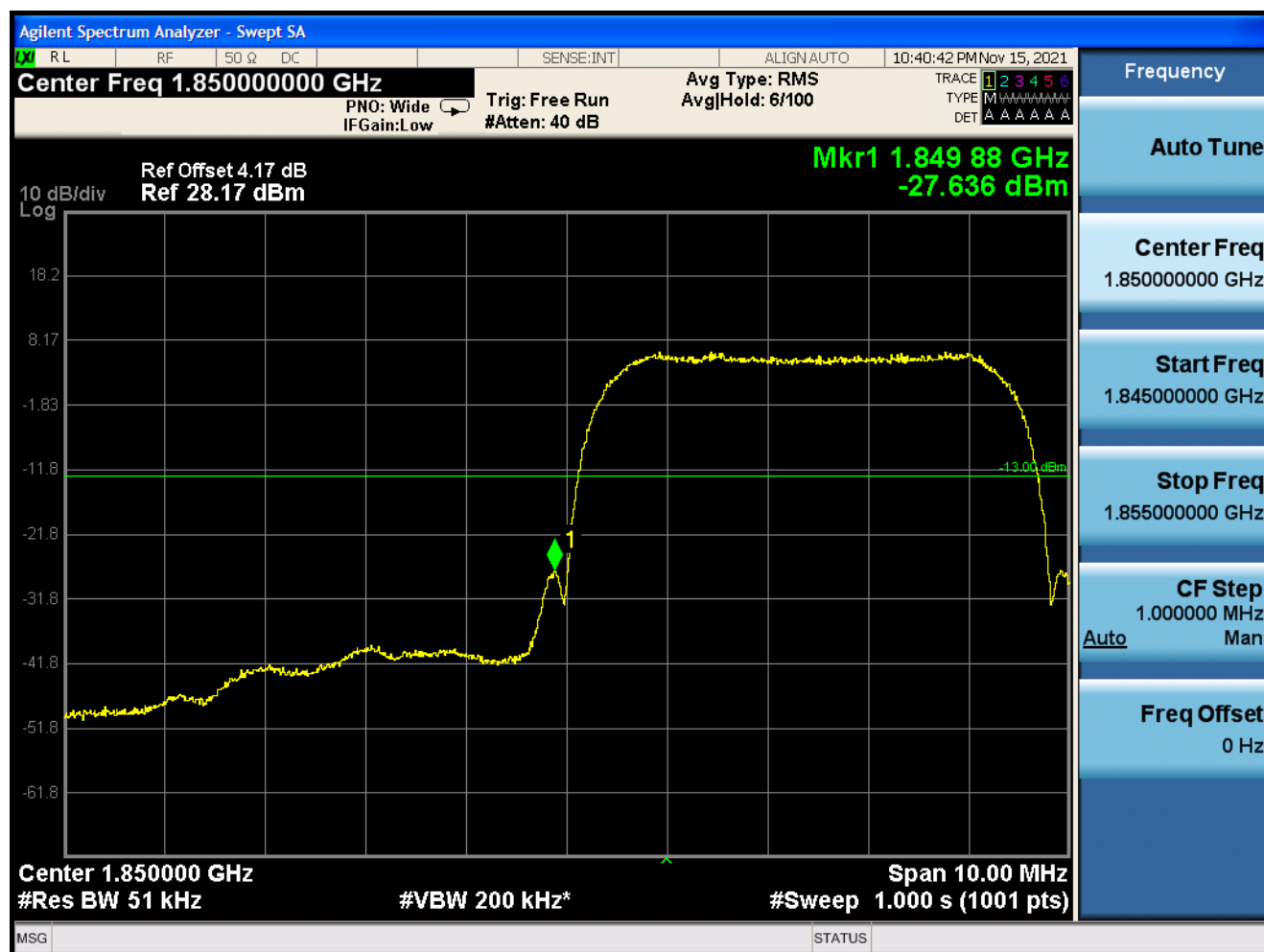
1.1.1.2 Test Channel=HCH



1.2 Test Band=WCDMA Band II

1.2.1 Test Mode=UMTSTM1

1.2.1.1 Test Channel=LCH

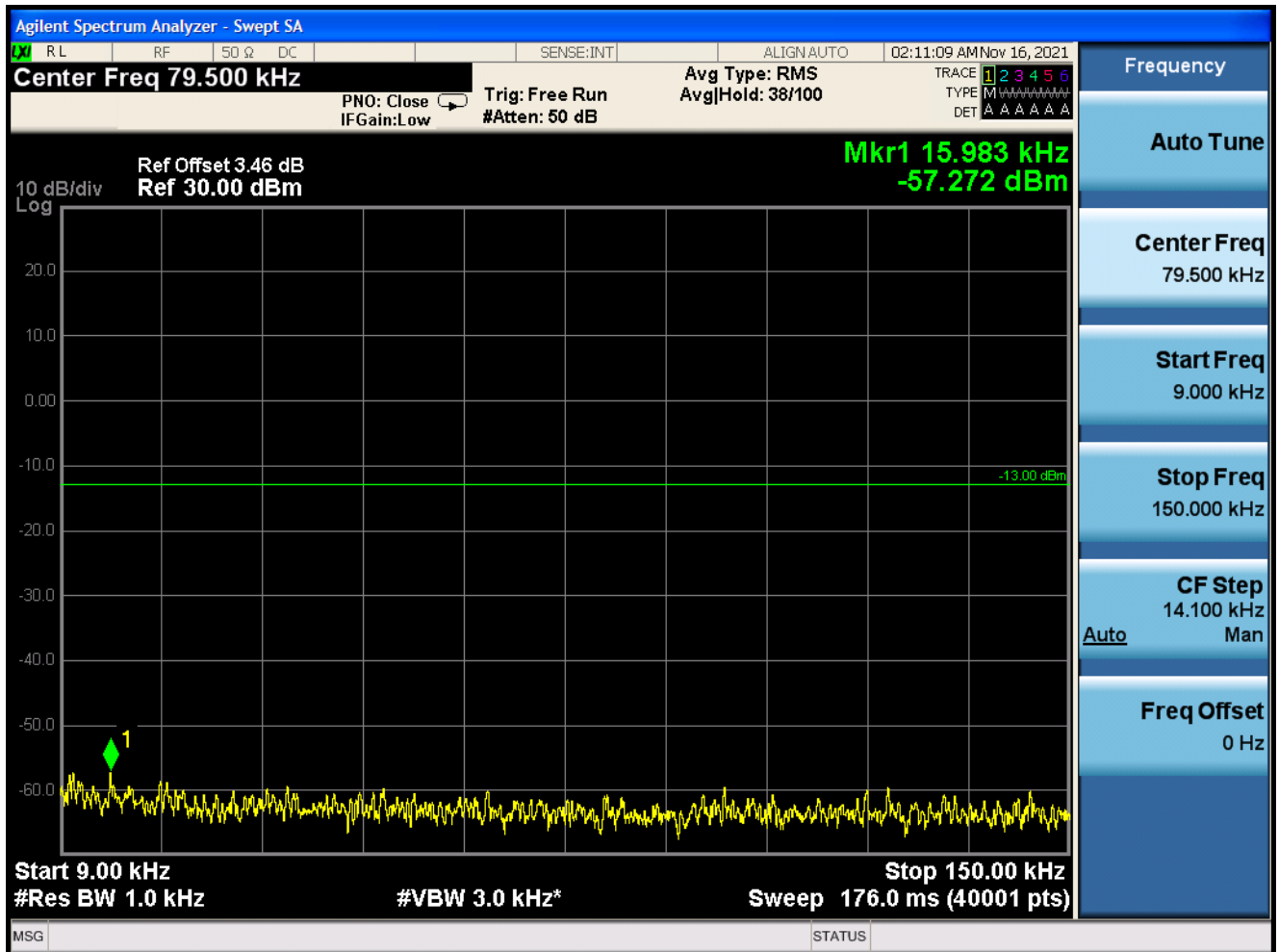


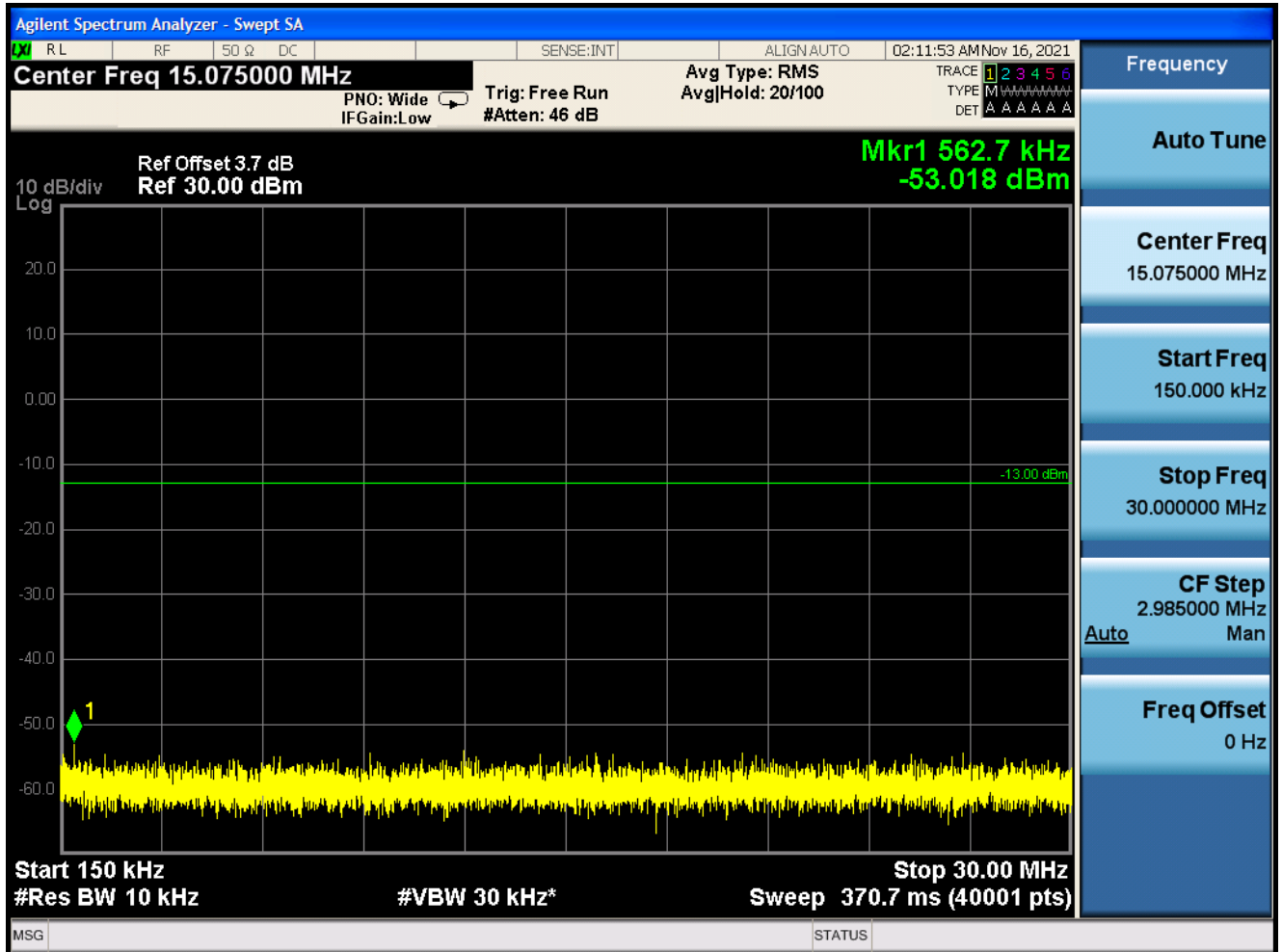
1.2.1.2 Test Channel=HCH

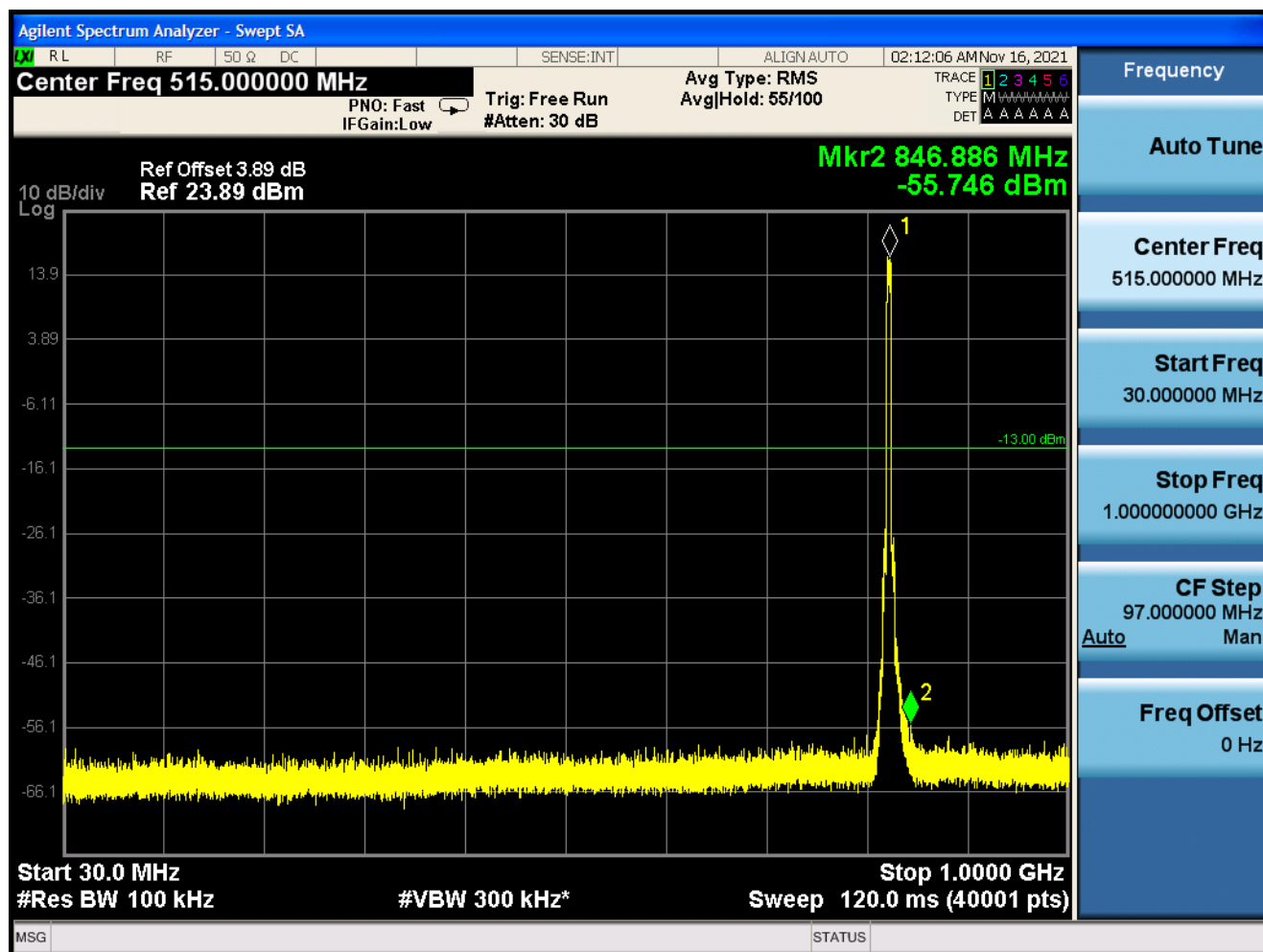


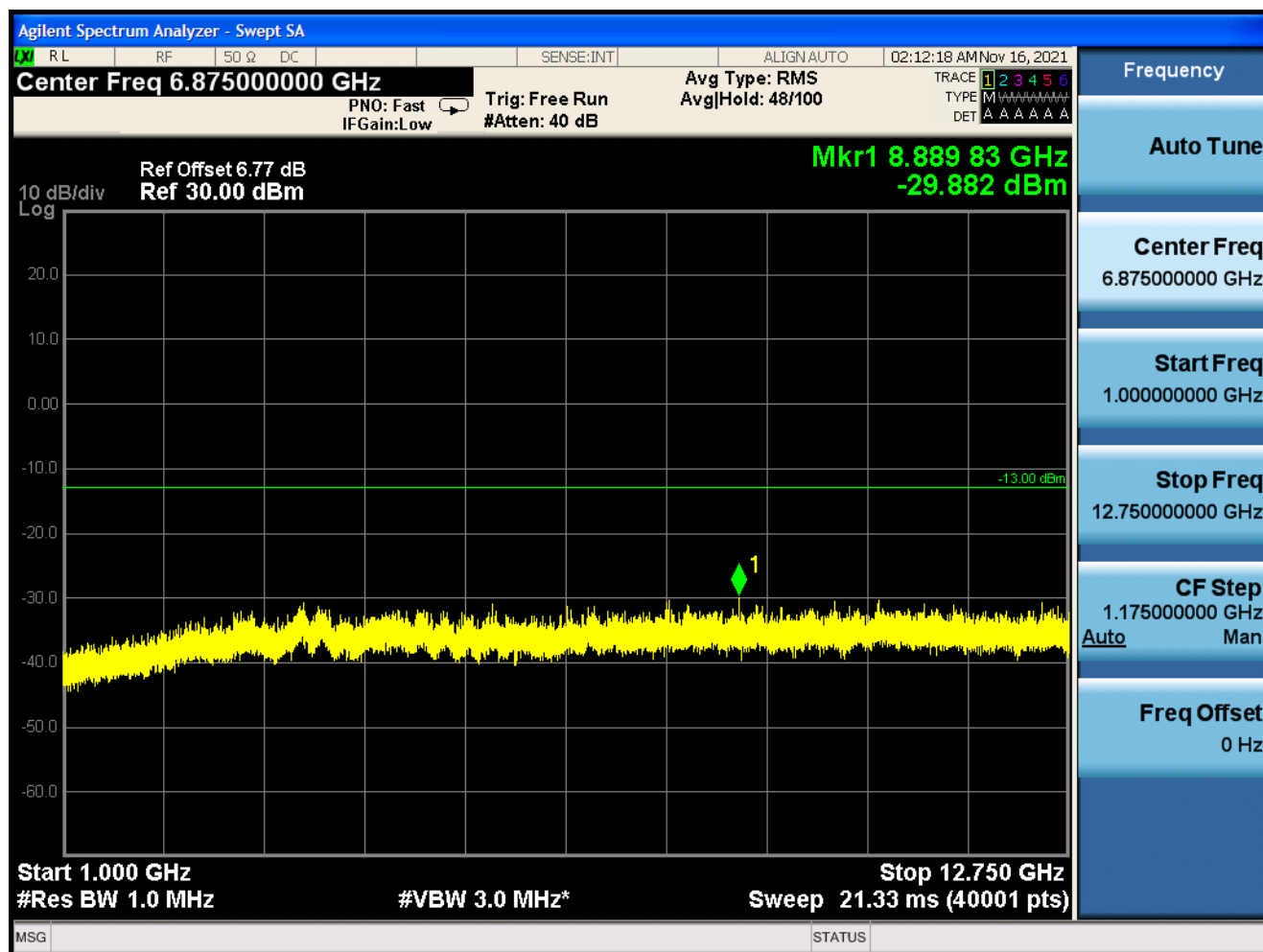
3.6. Conducted Spurious Emission Test

- 1 For WCDMA
- 1.1 Test Band=WCDMA Band V
- 1.1.1 Test Mode=UMTS/TM1
- 1.1.1.1 Test Channel=LCH

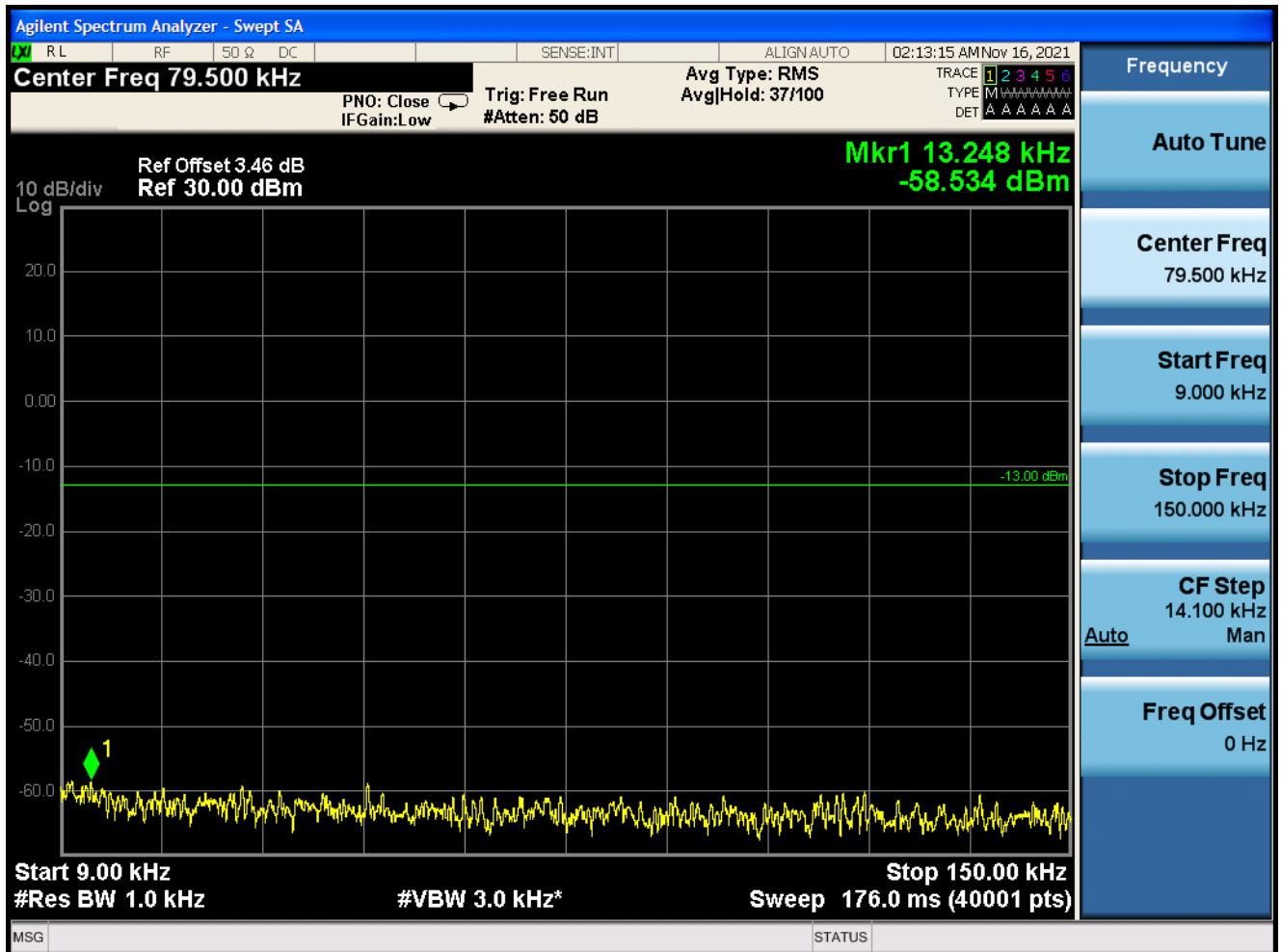


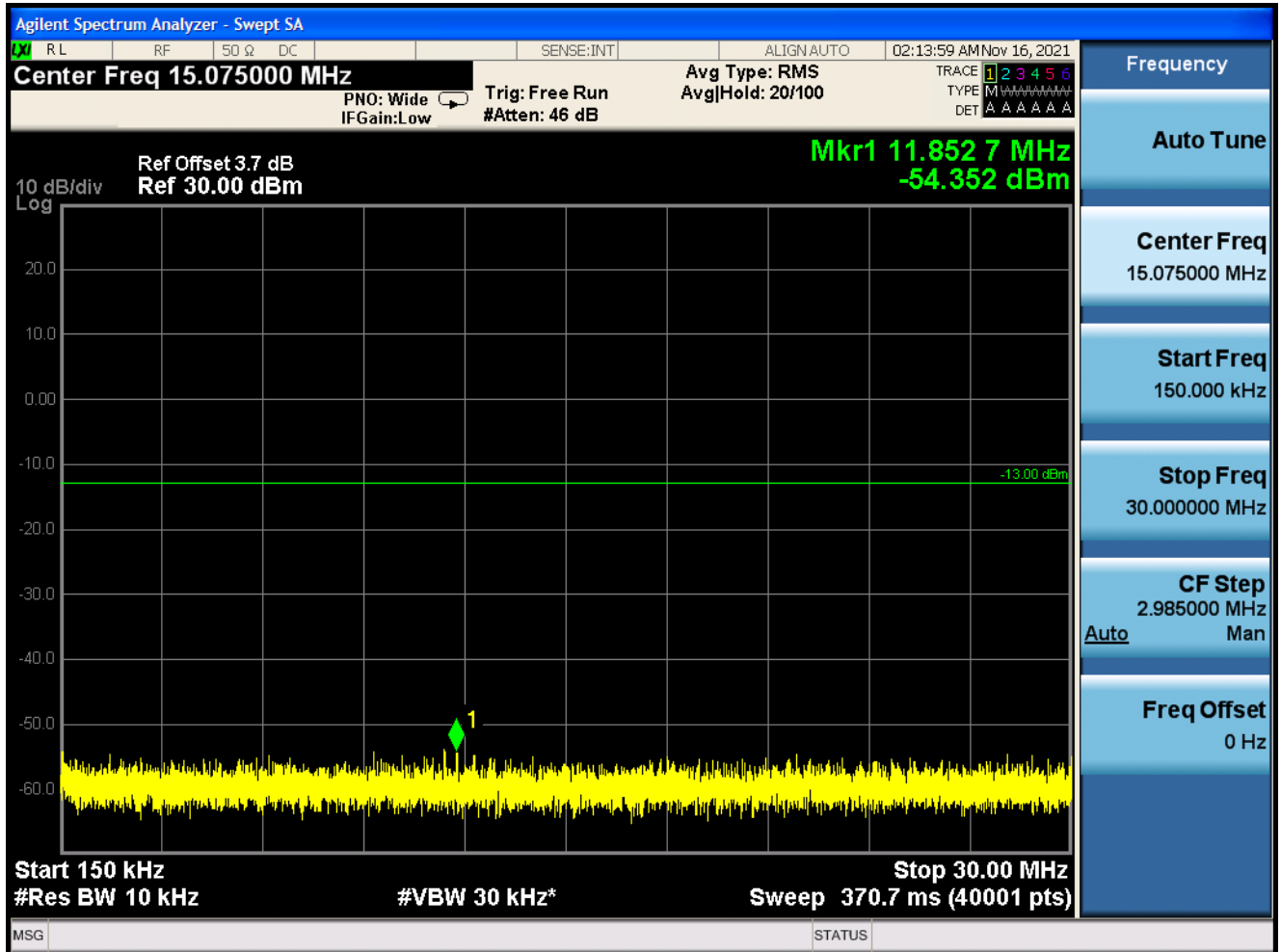


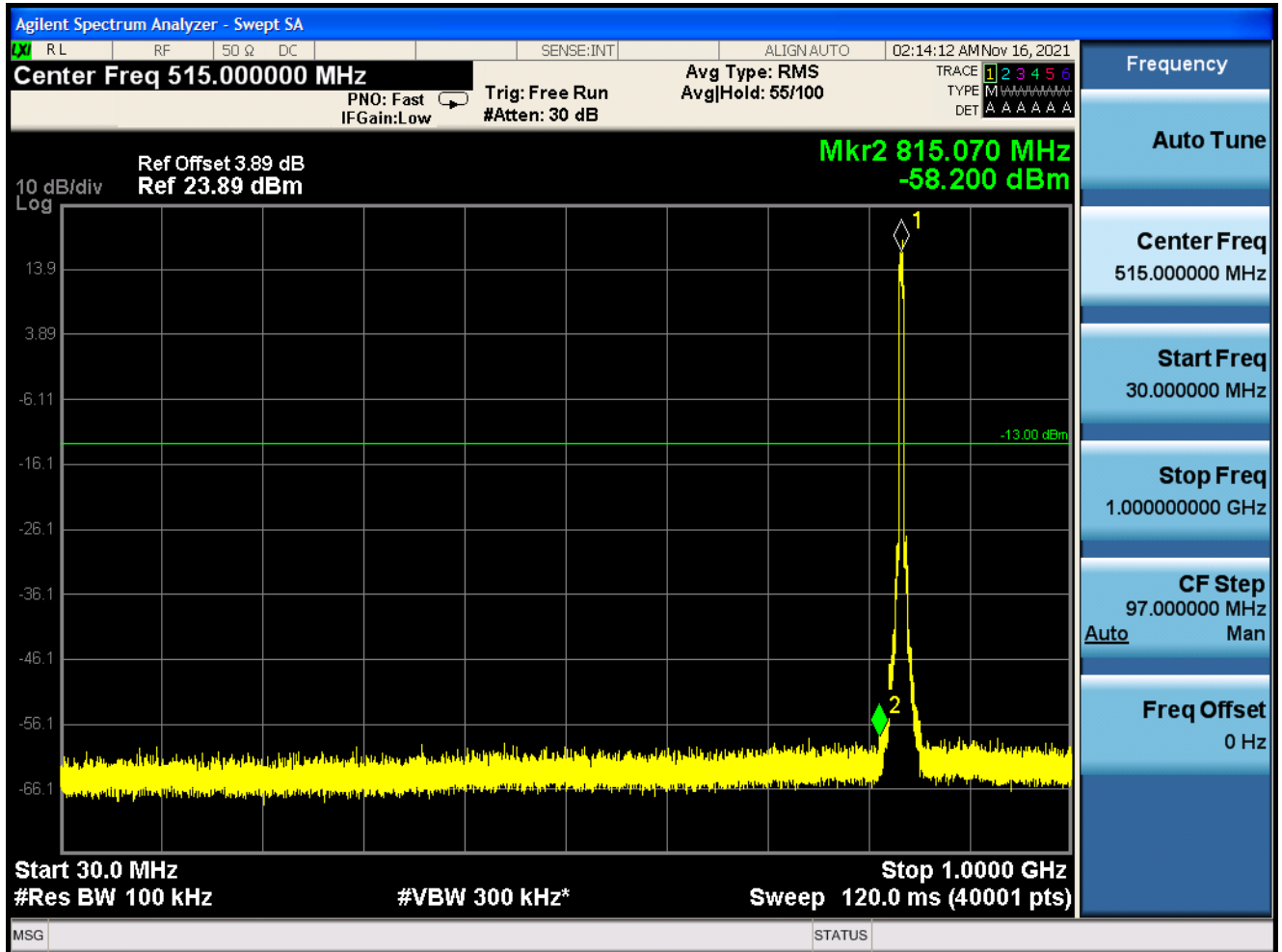


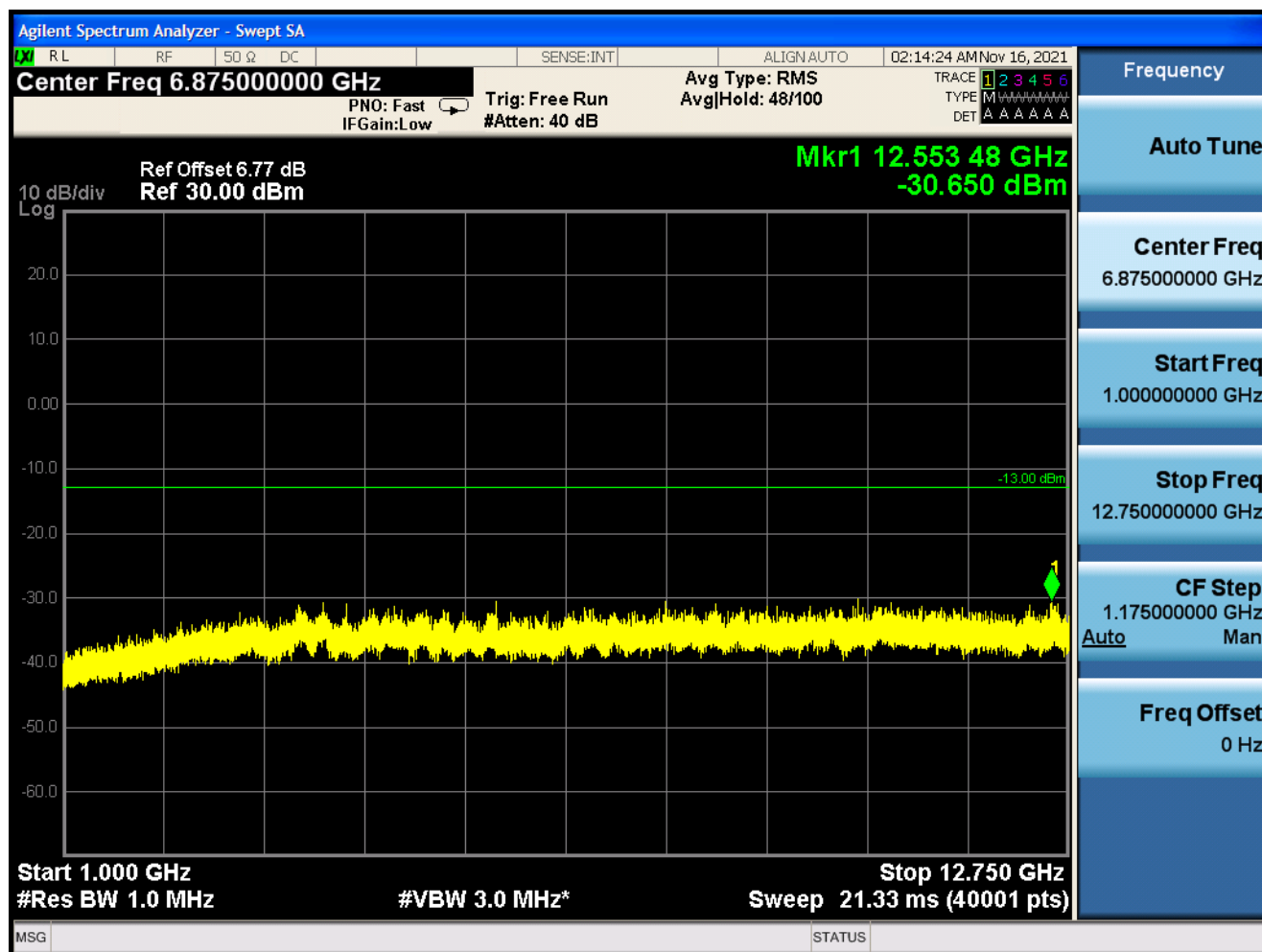


1.1.1.2 Test Channel=MCH

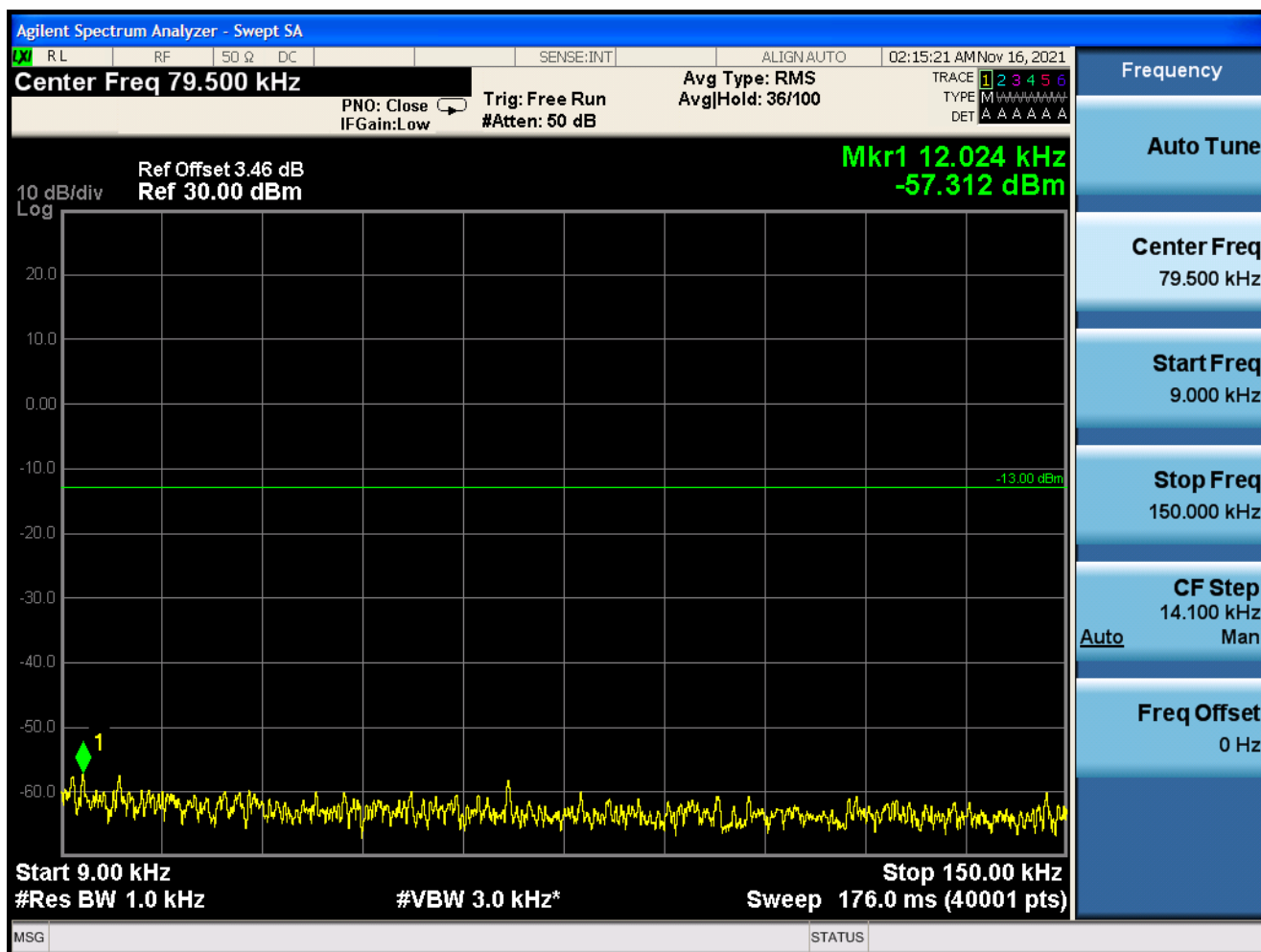


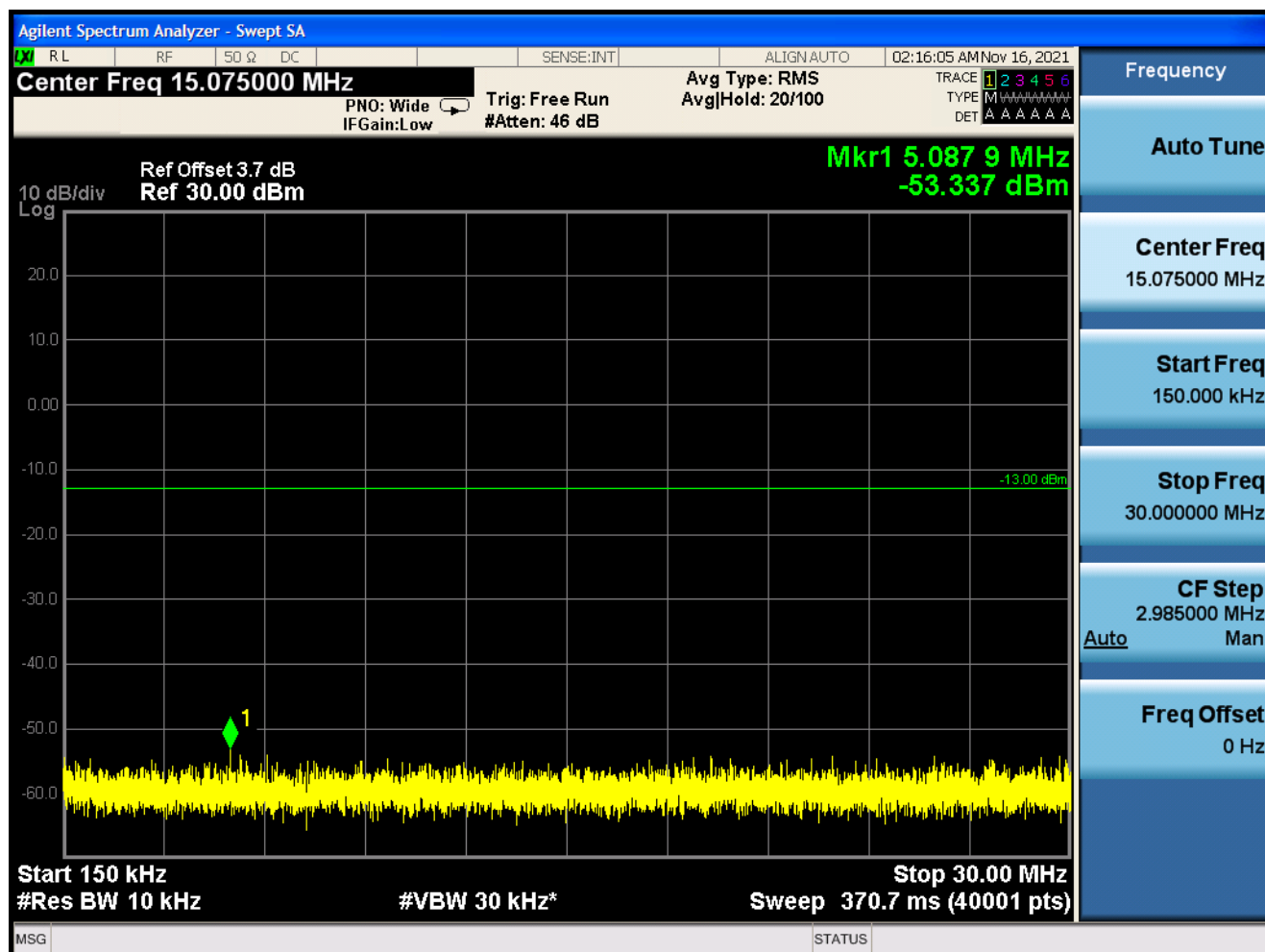


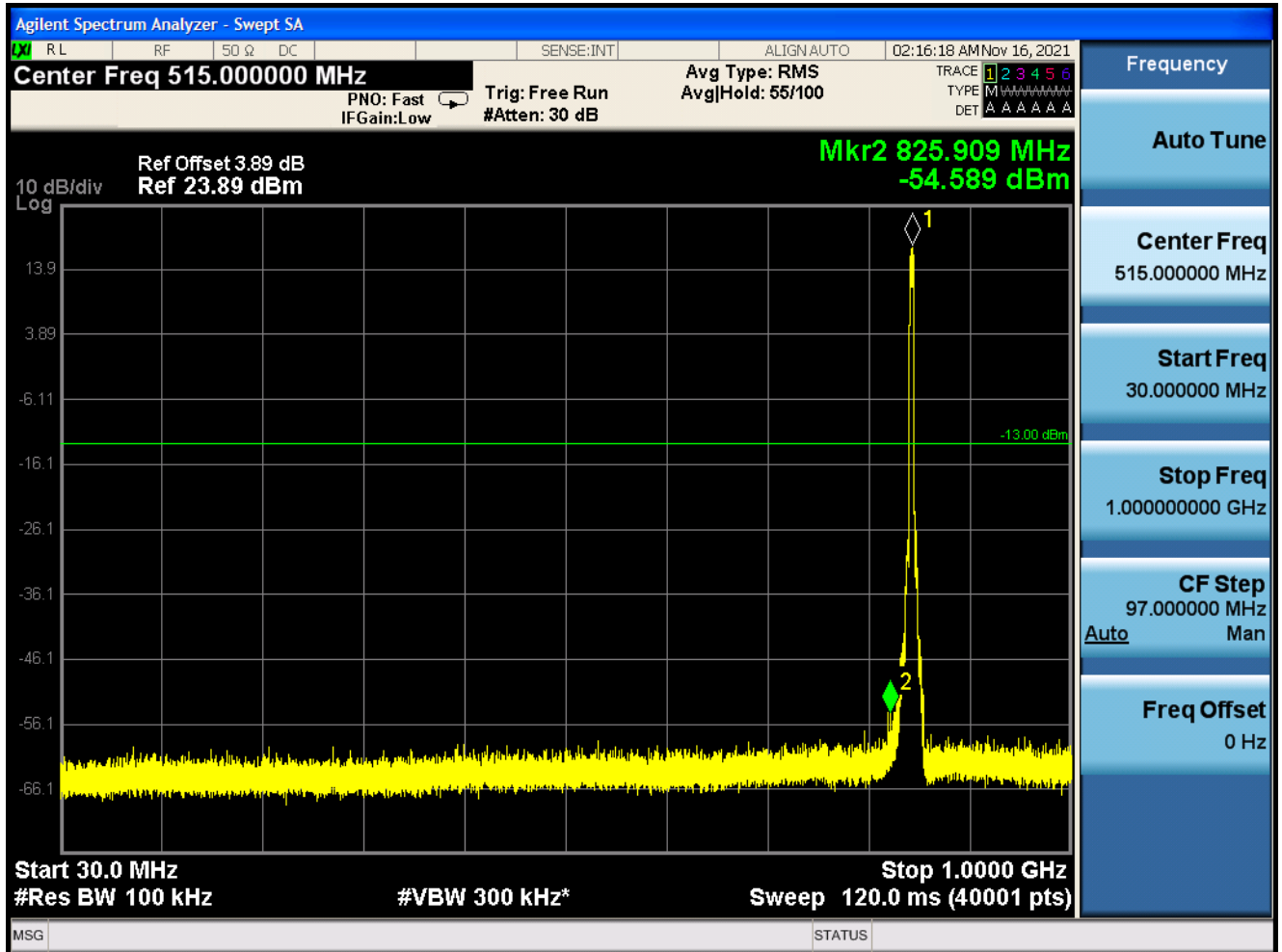


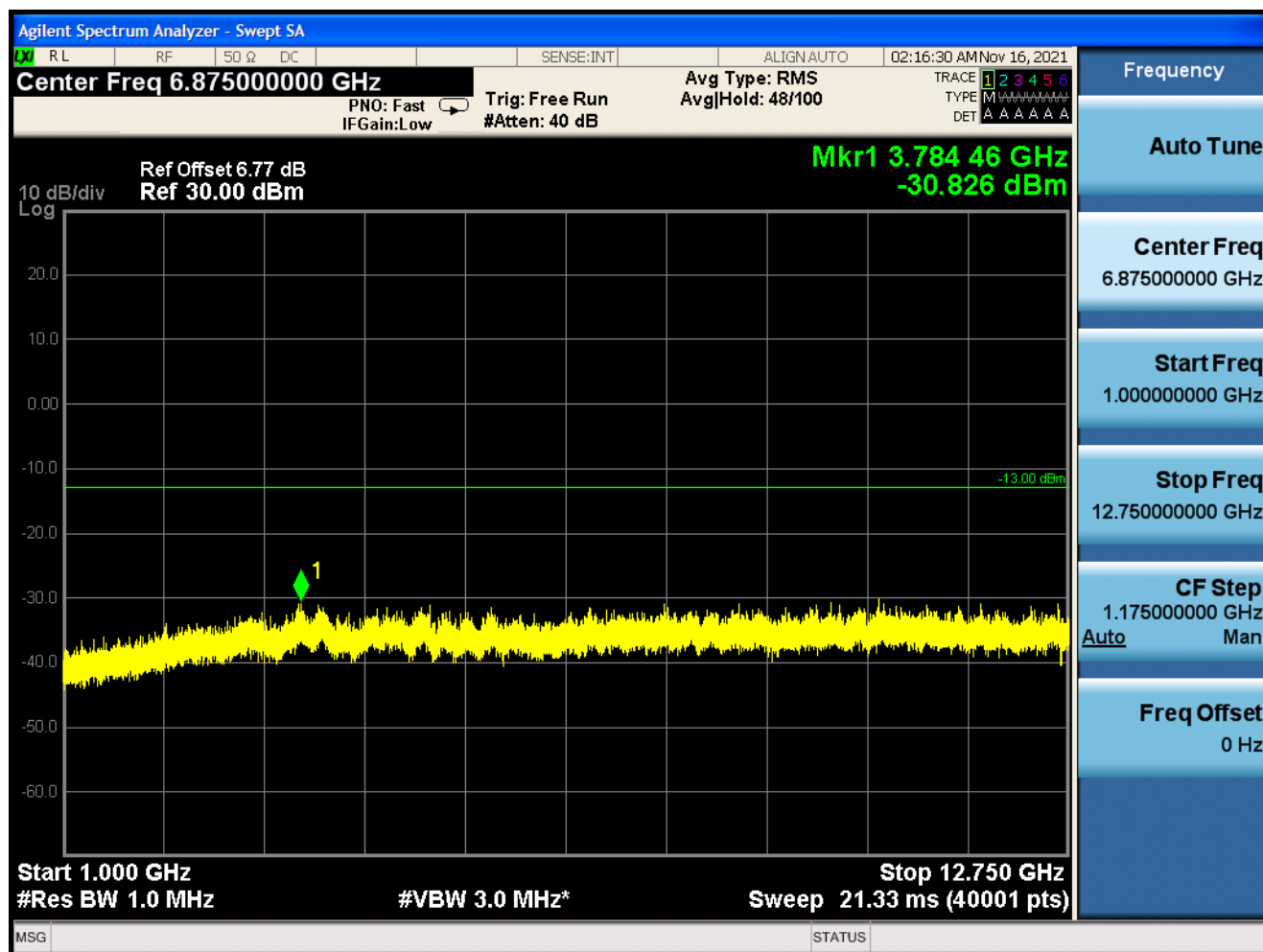


1.1.1.3 Test Channel=HCH





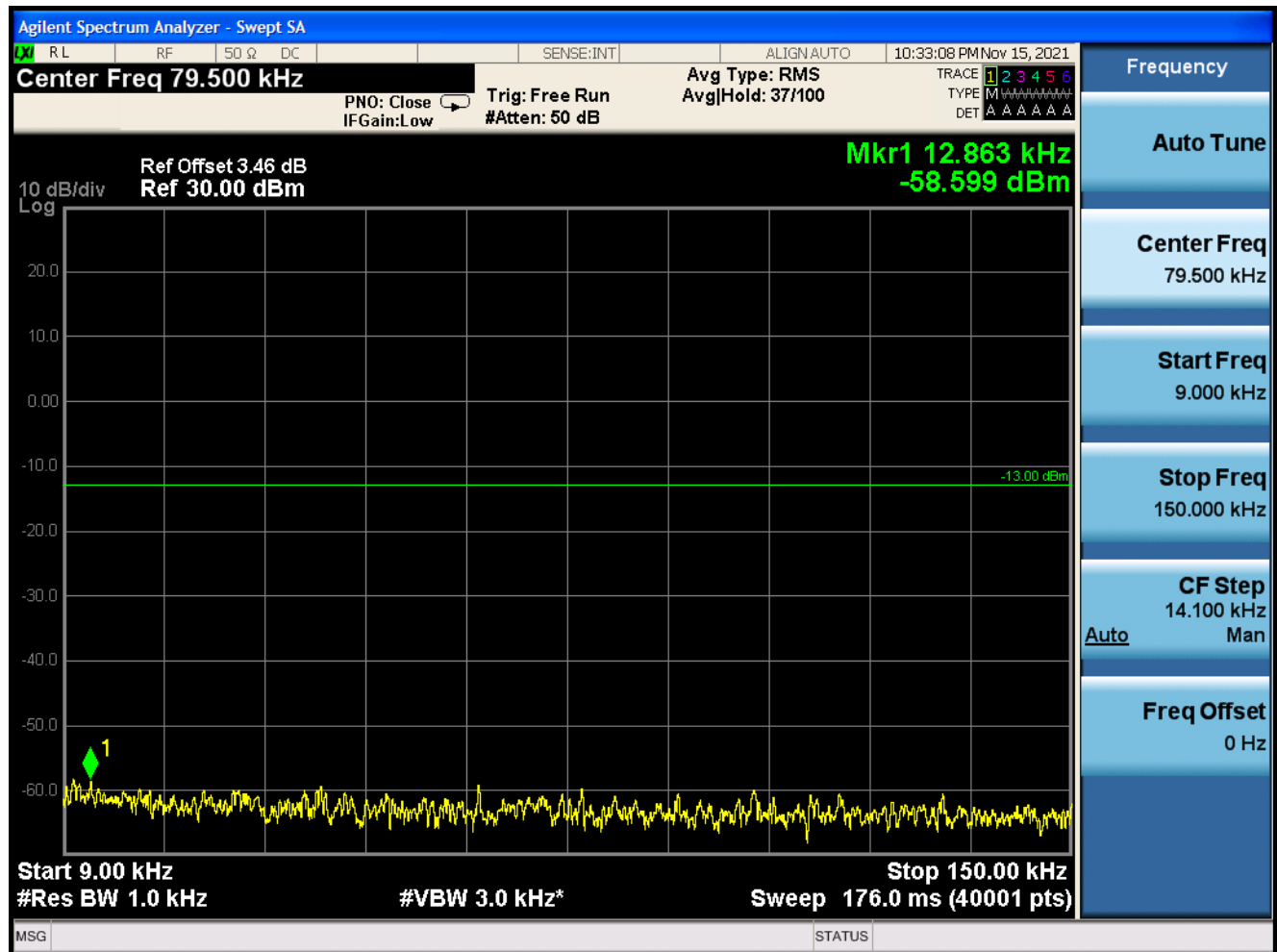


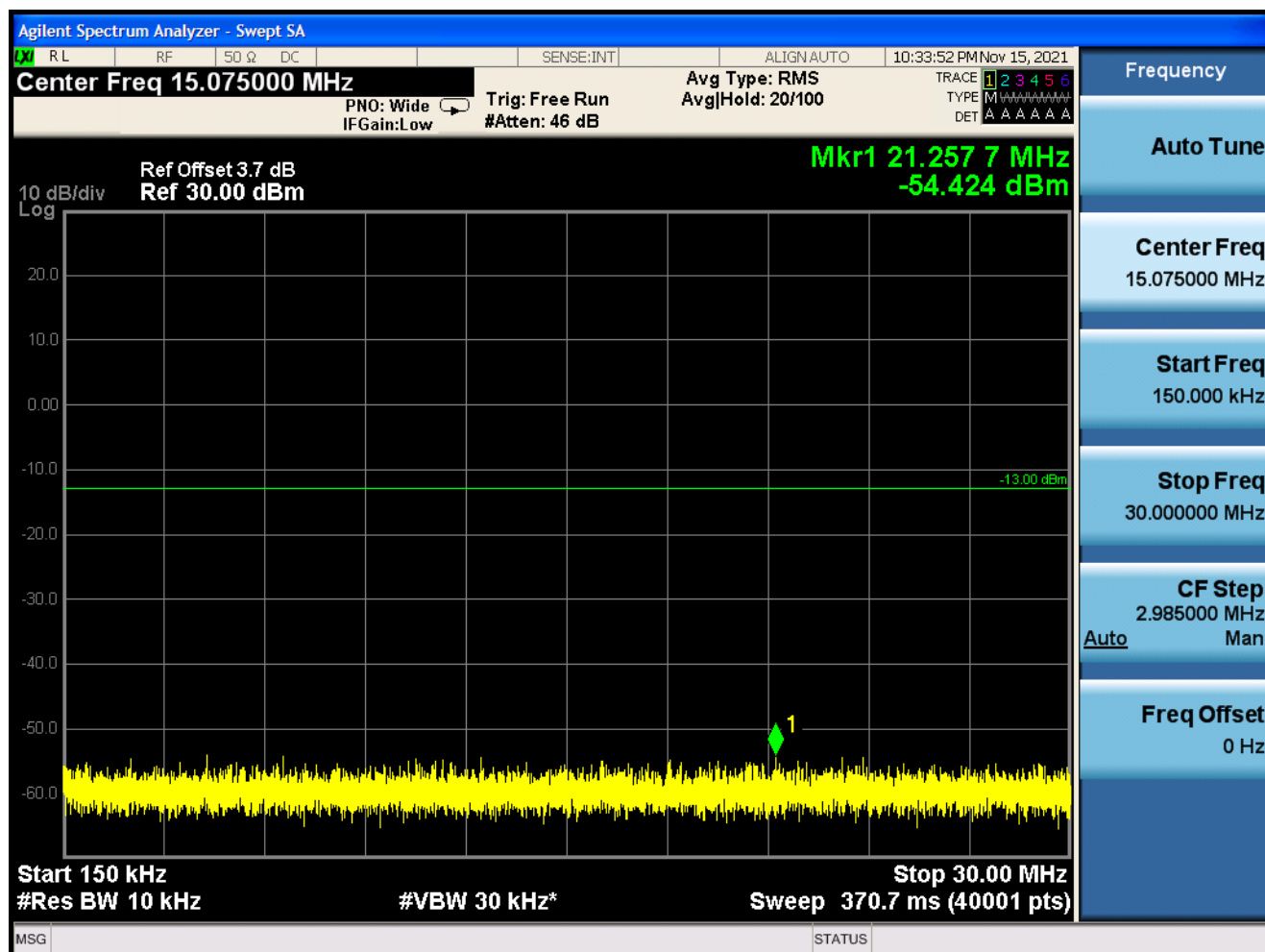


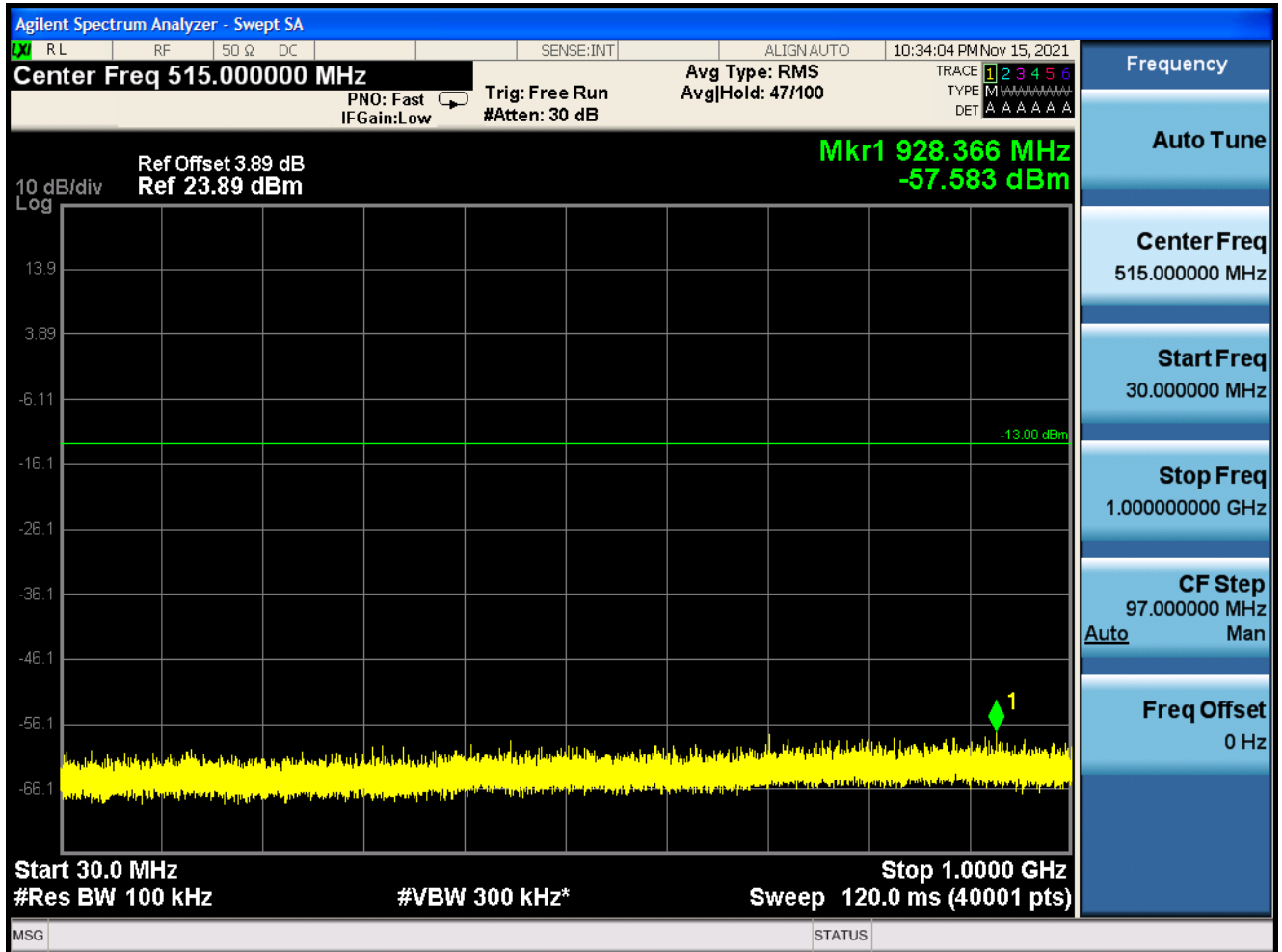
1.2 Test Band=WCDMA Band II

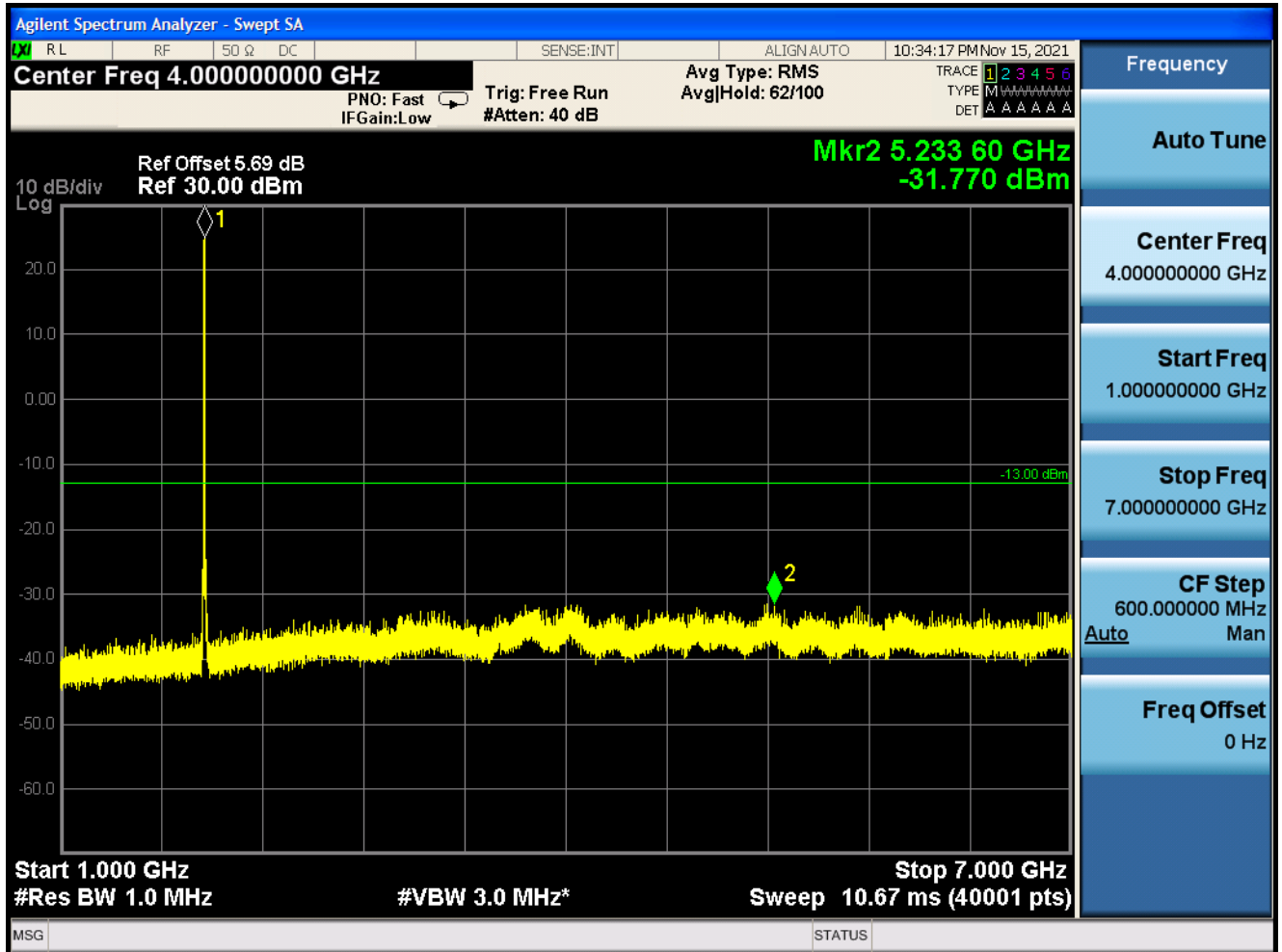
1.2.1 Test Mode=UMTS/TM1

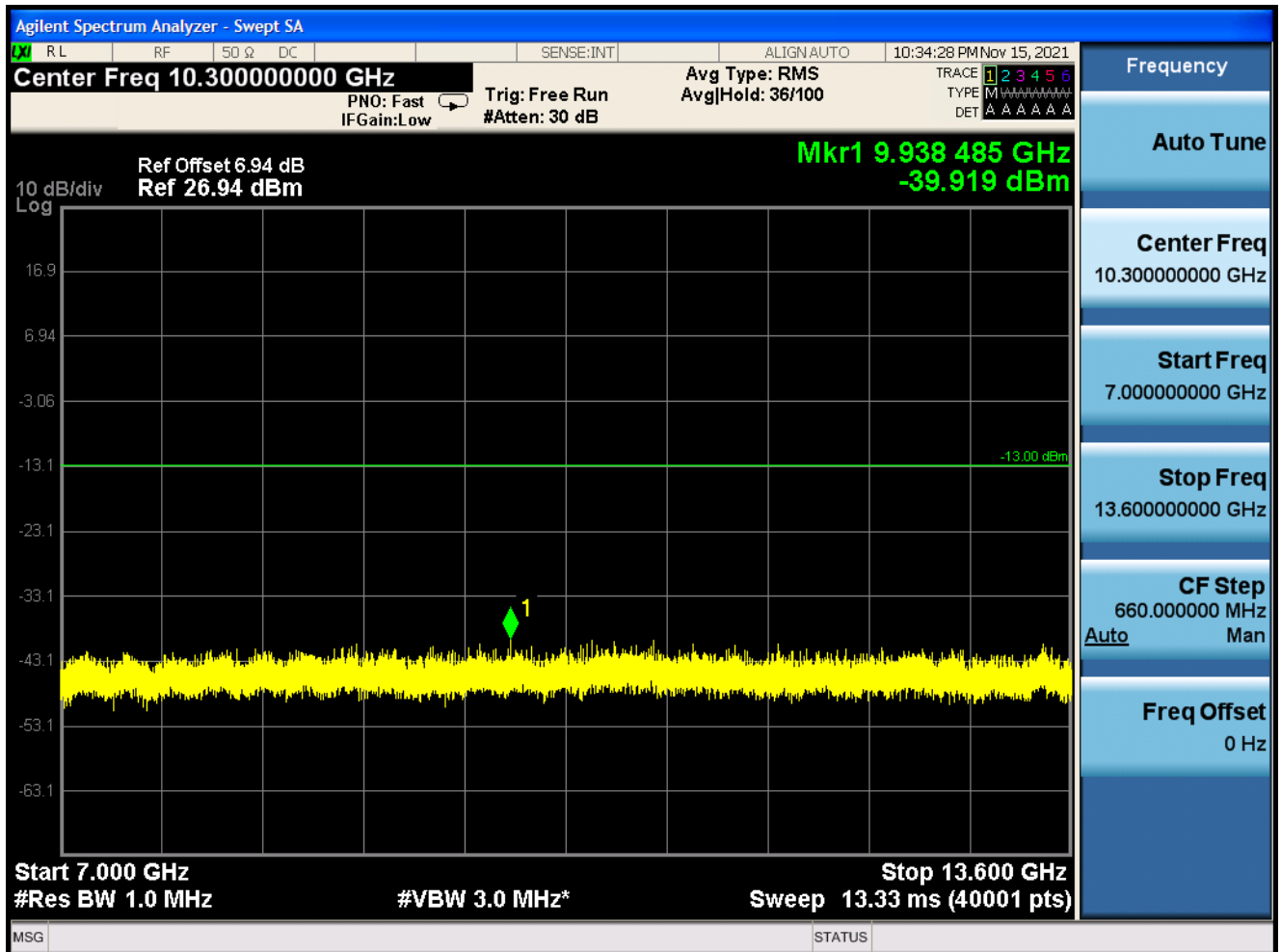
1.2.1.1 Test Channel=LCH

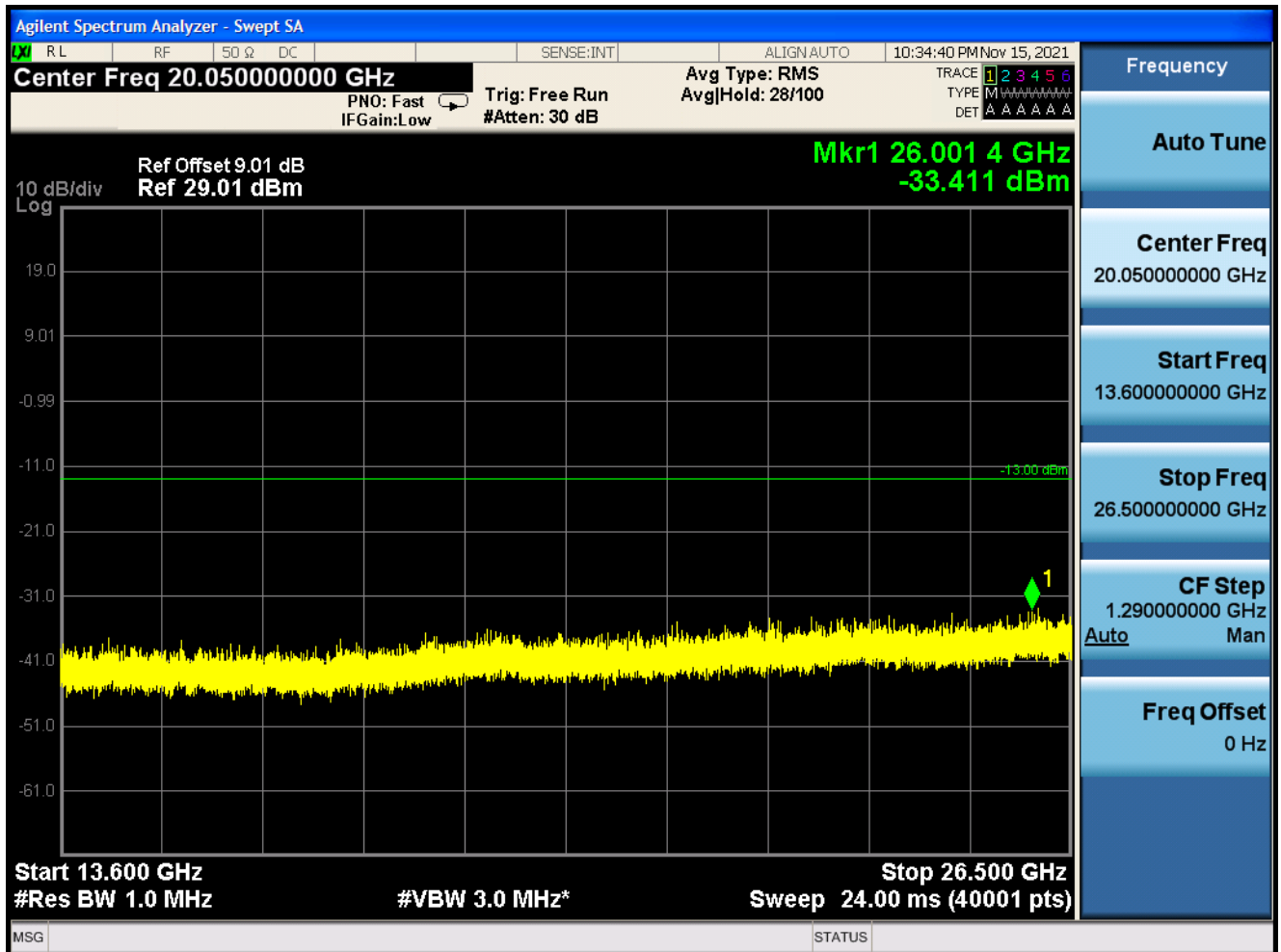




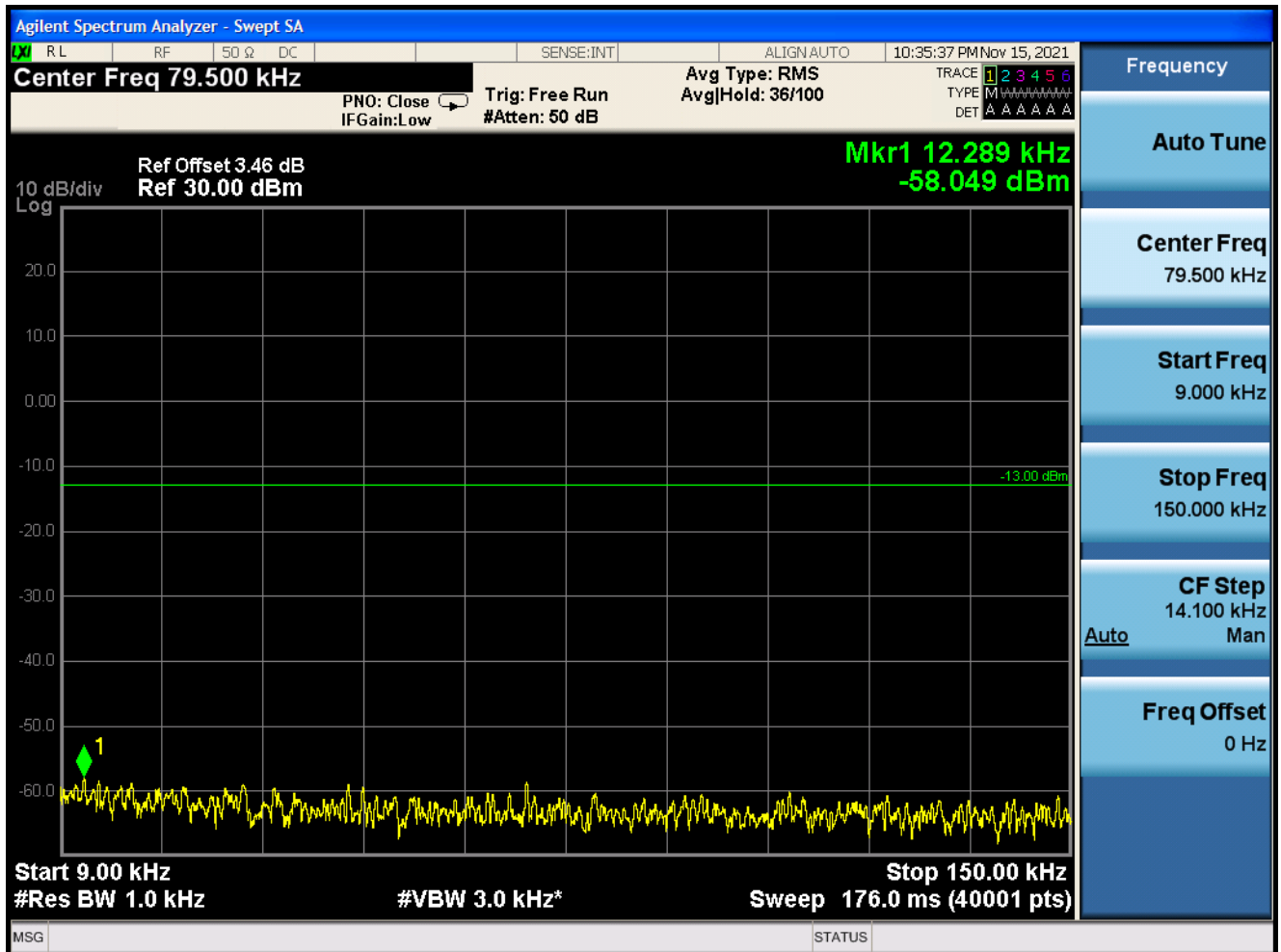


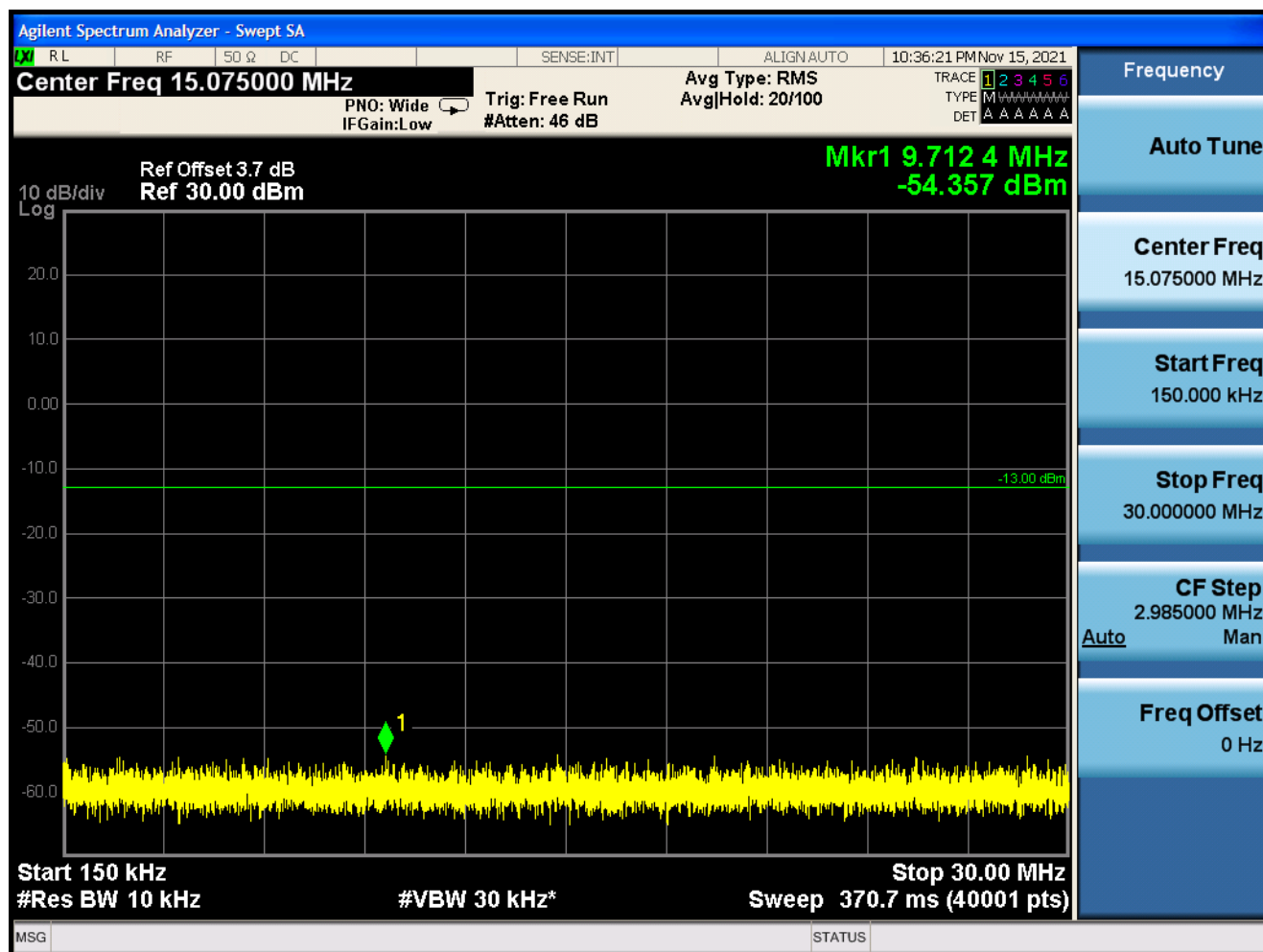


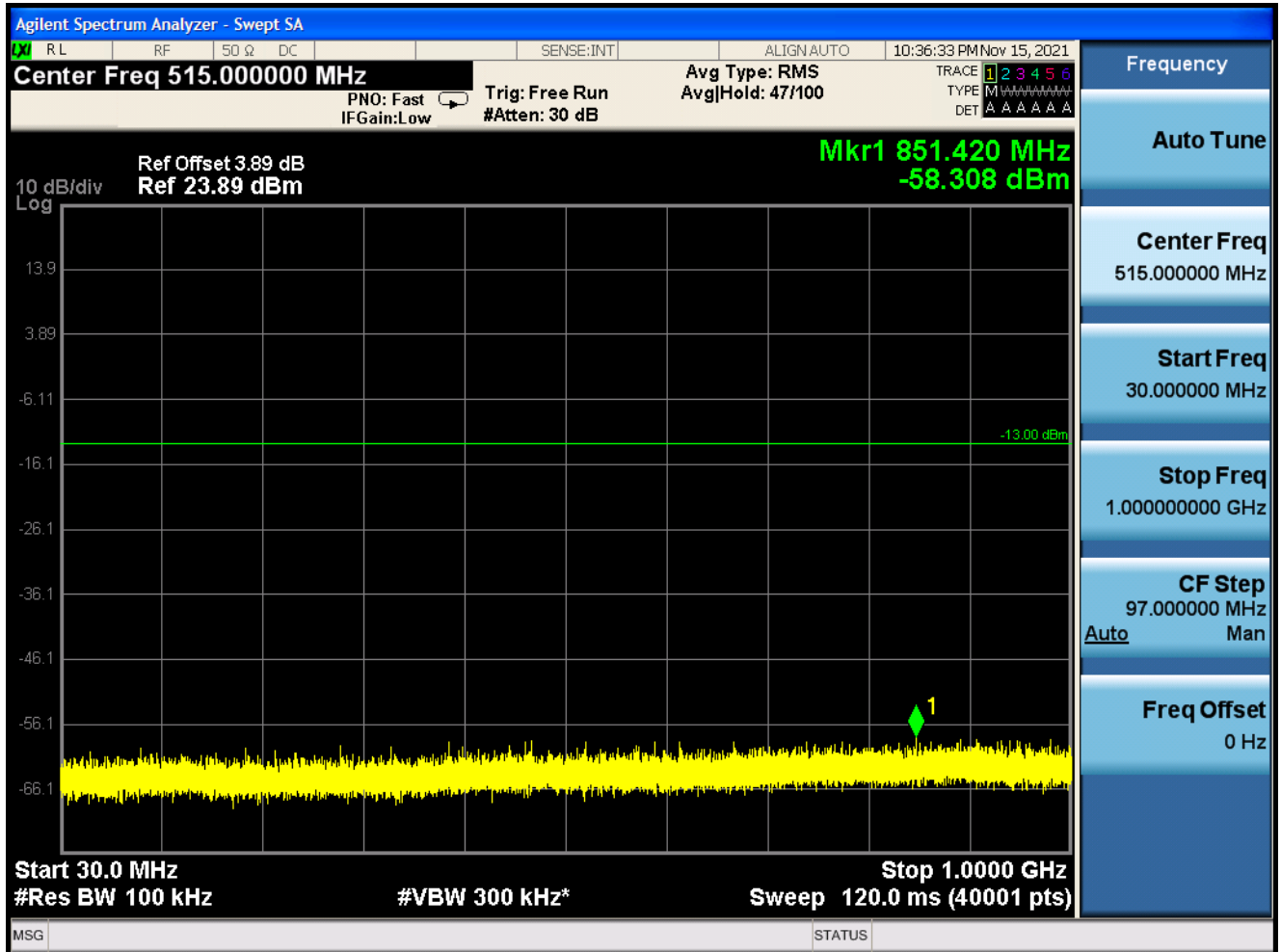


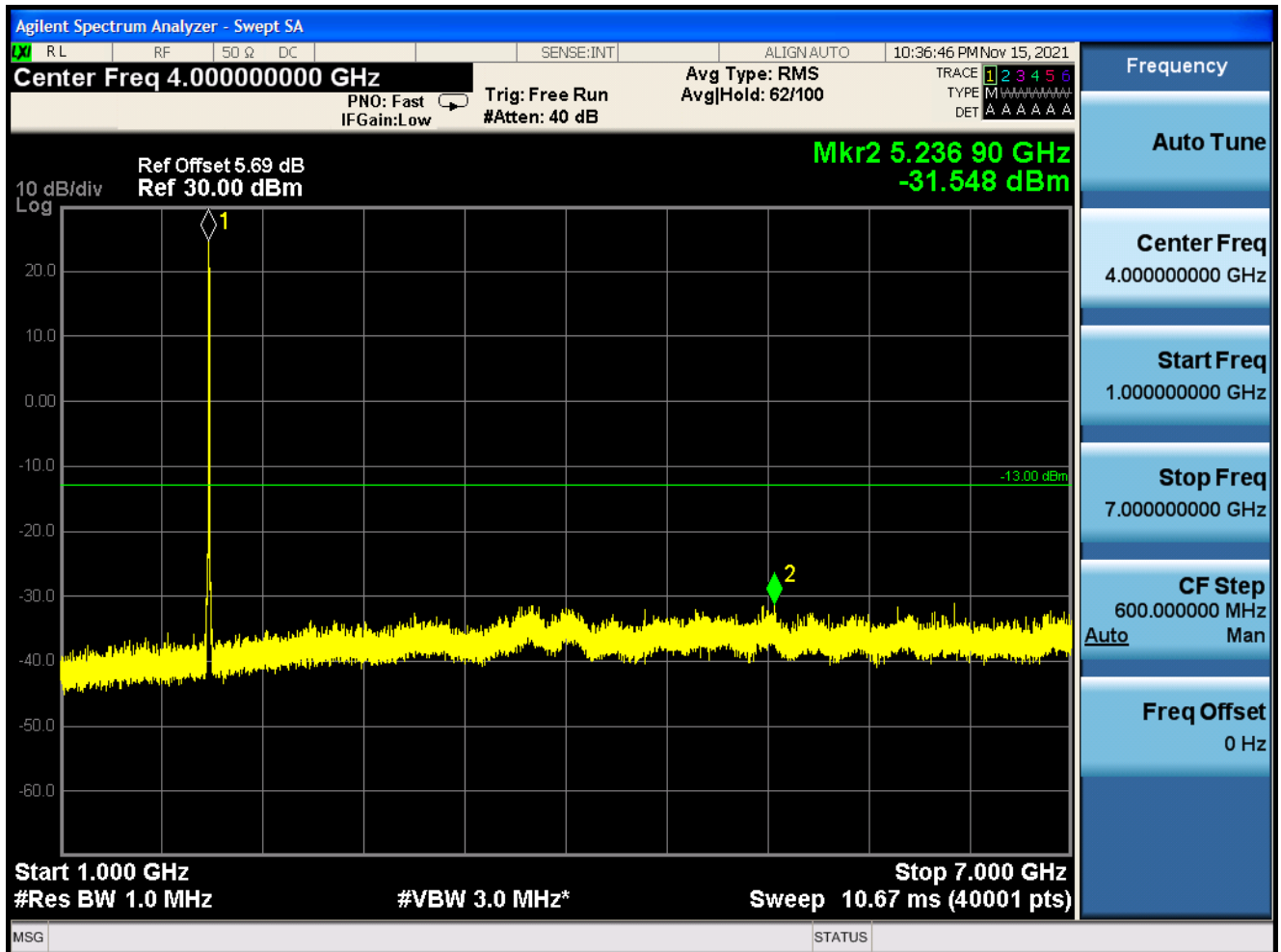


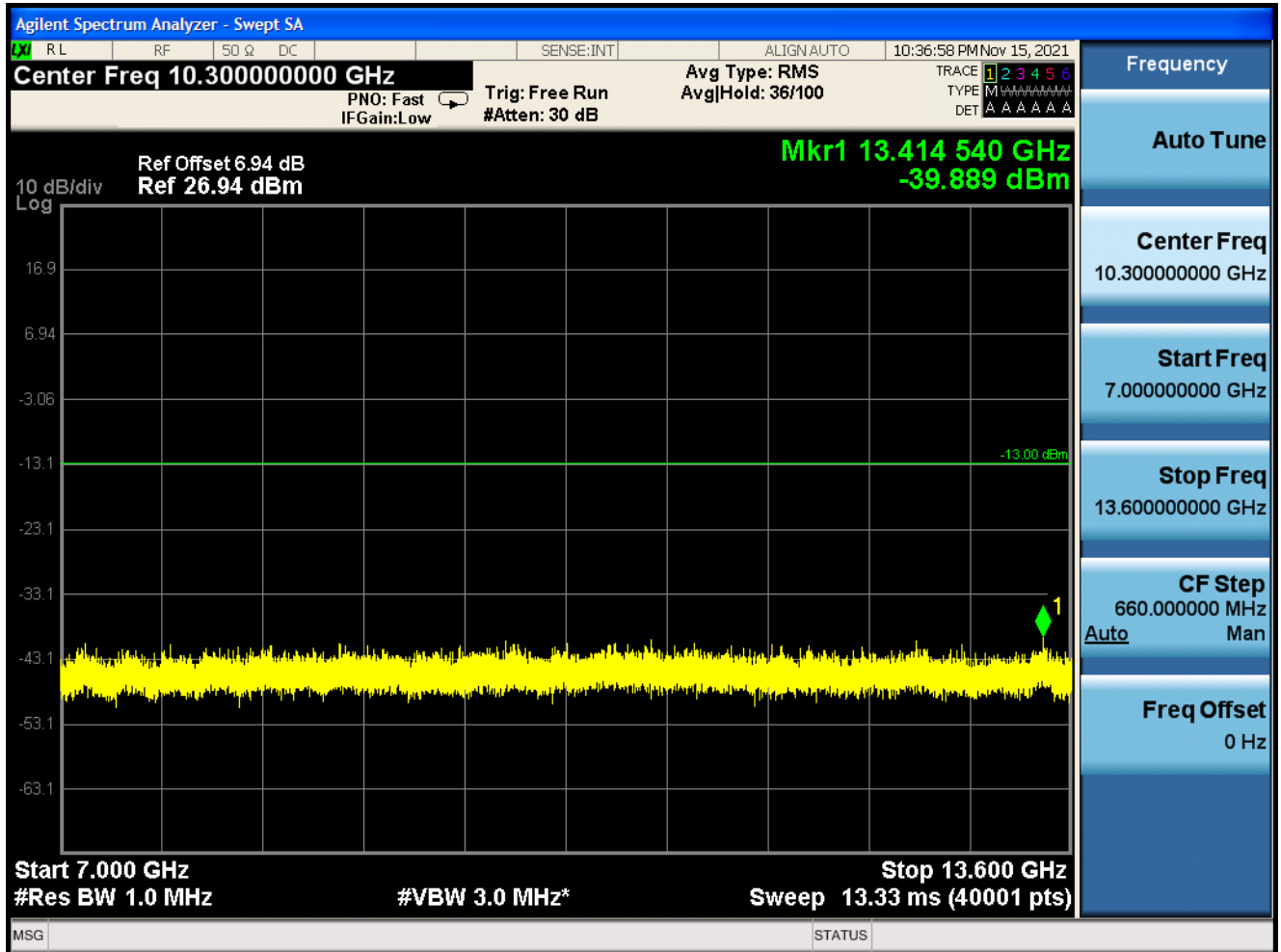
1.2.1.2 Test Channel=MCH

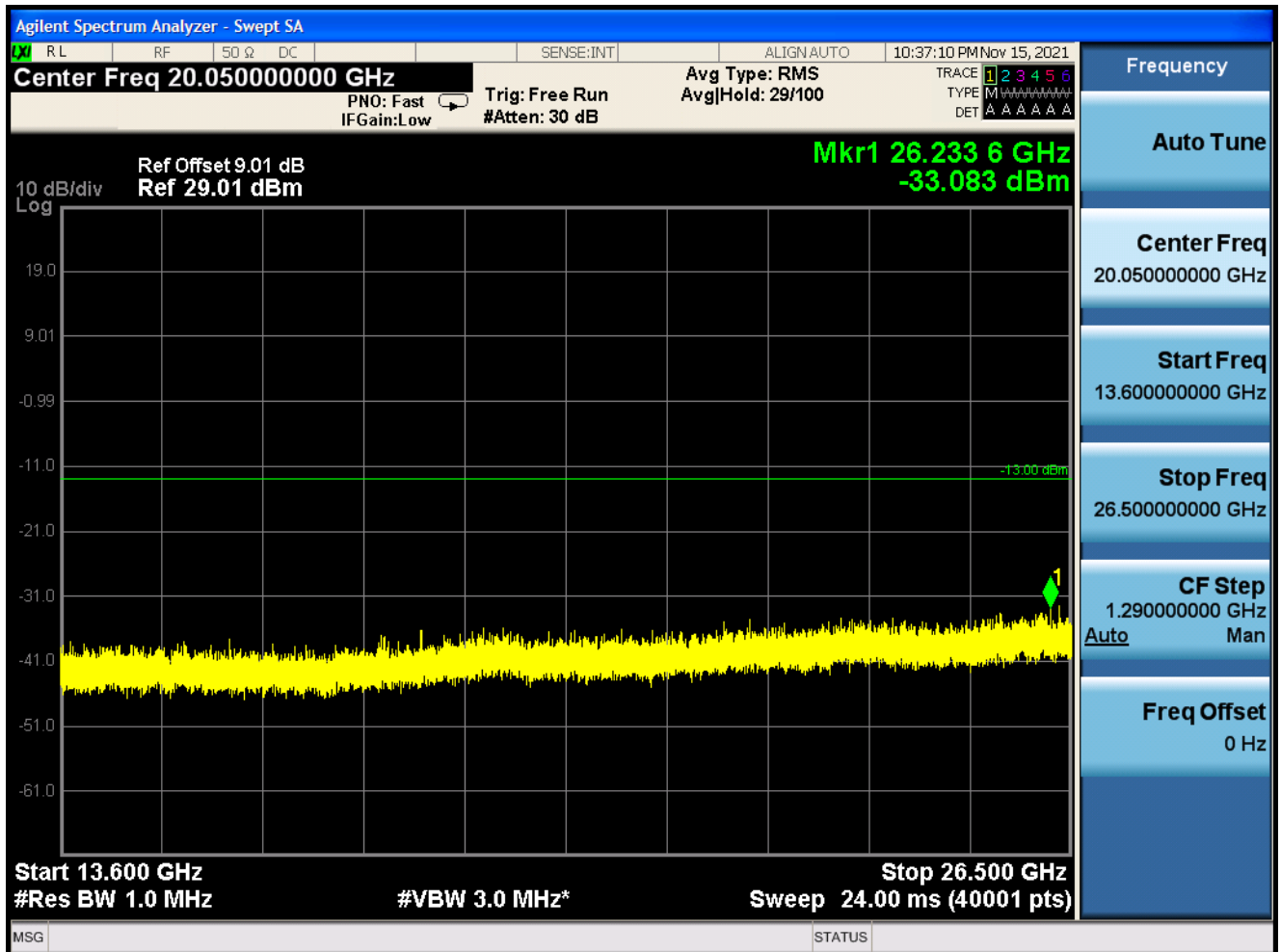




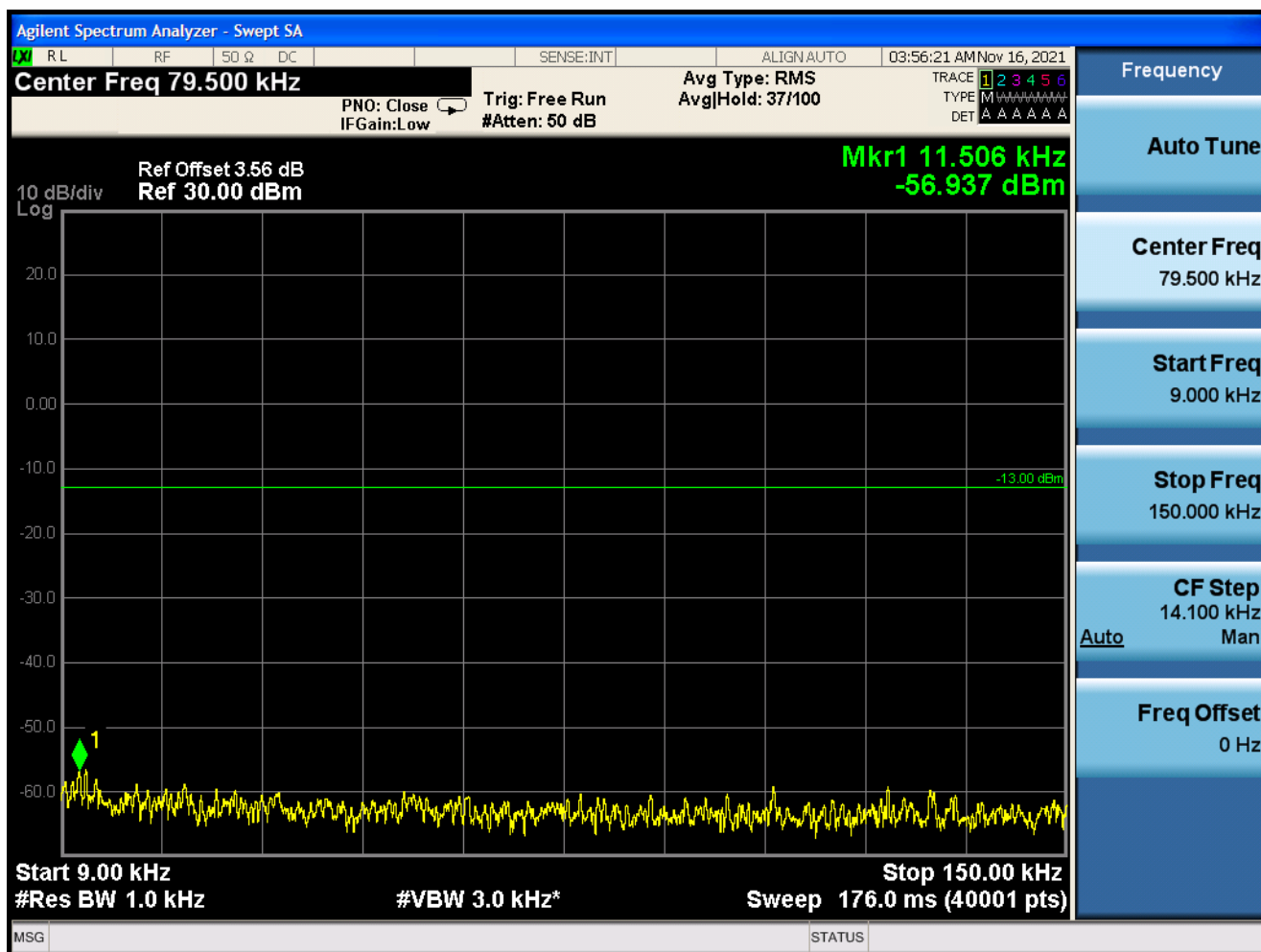


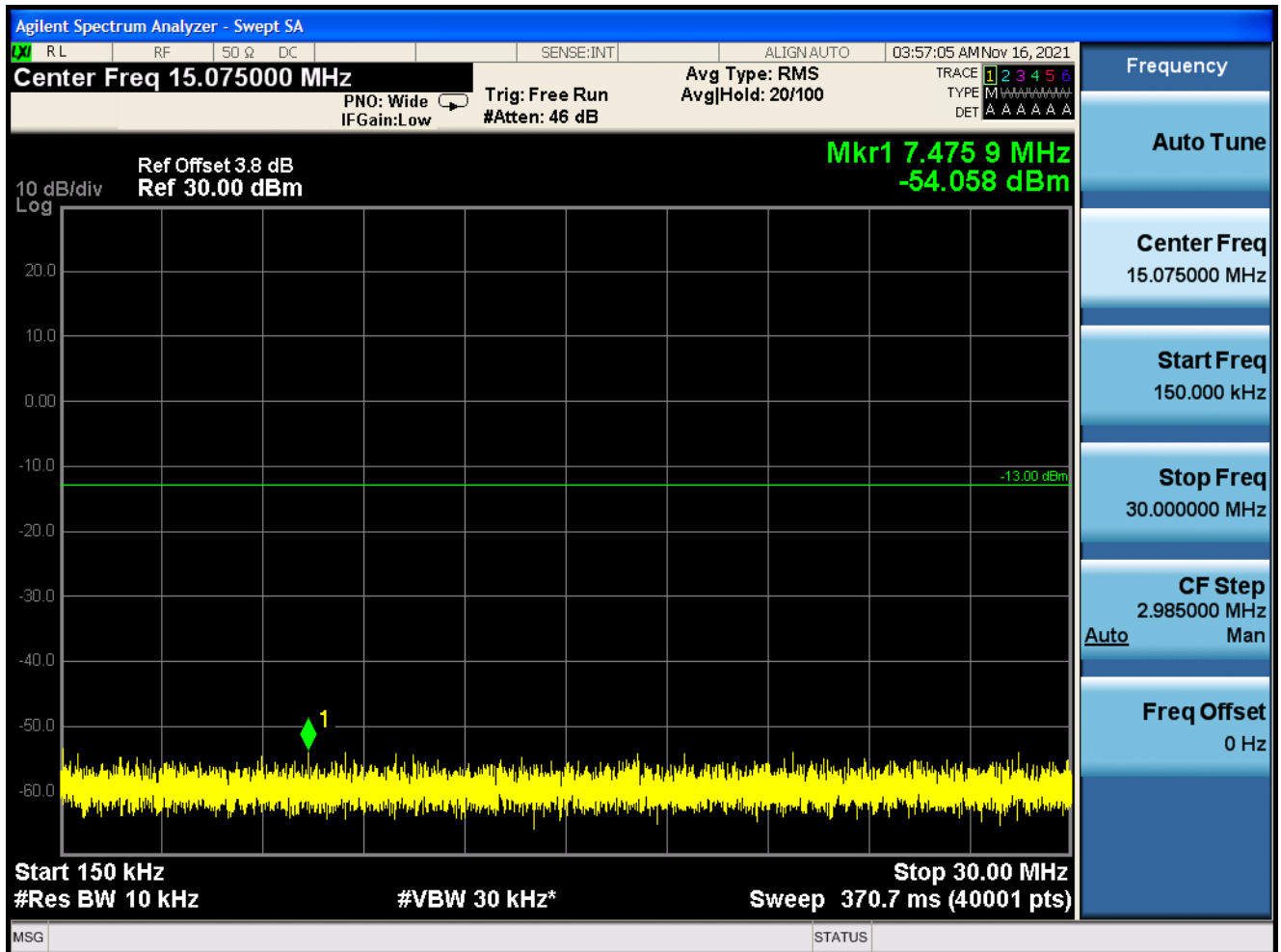


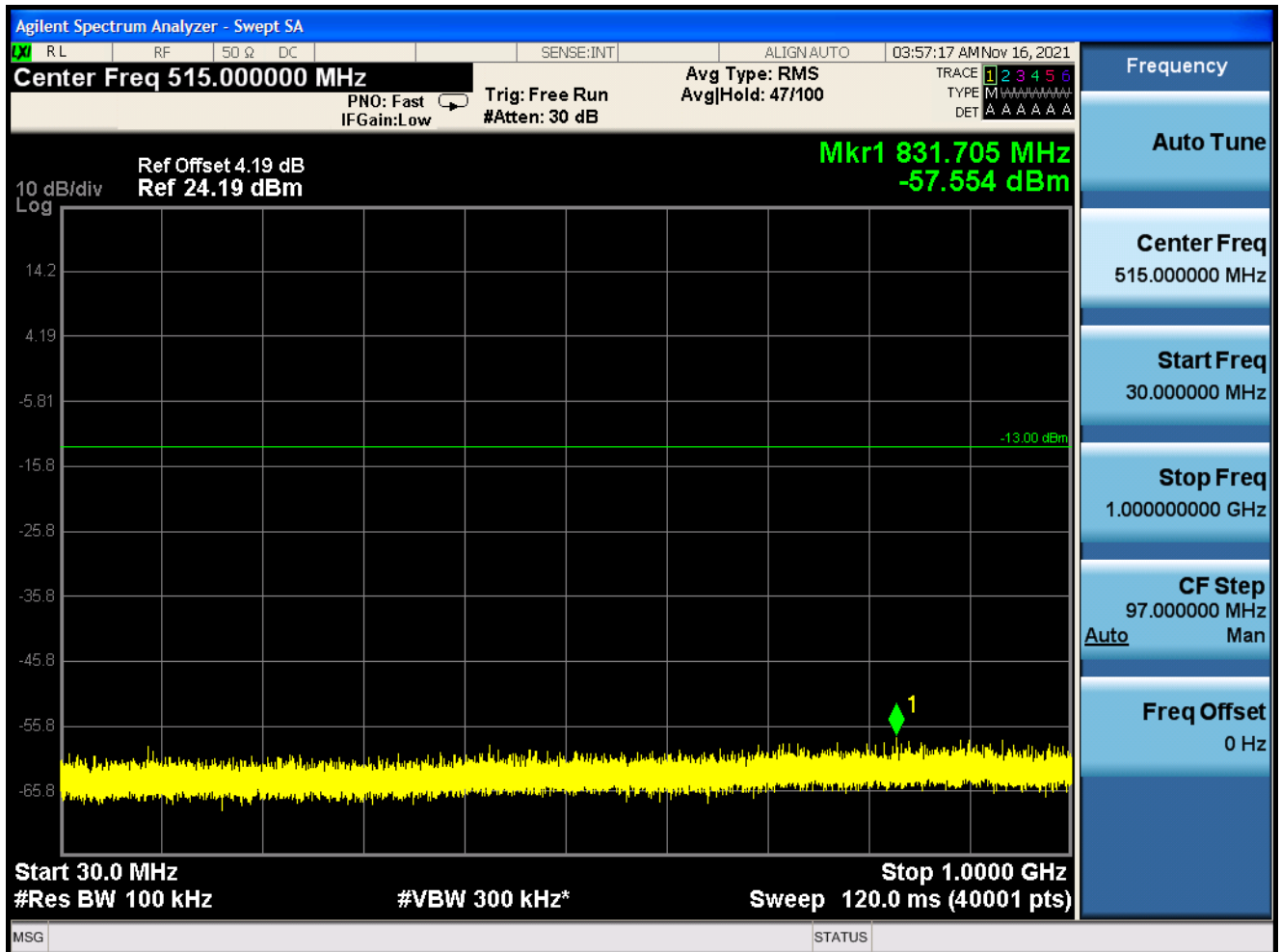


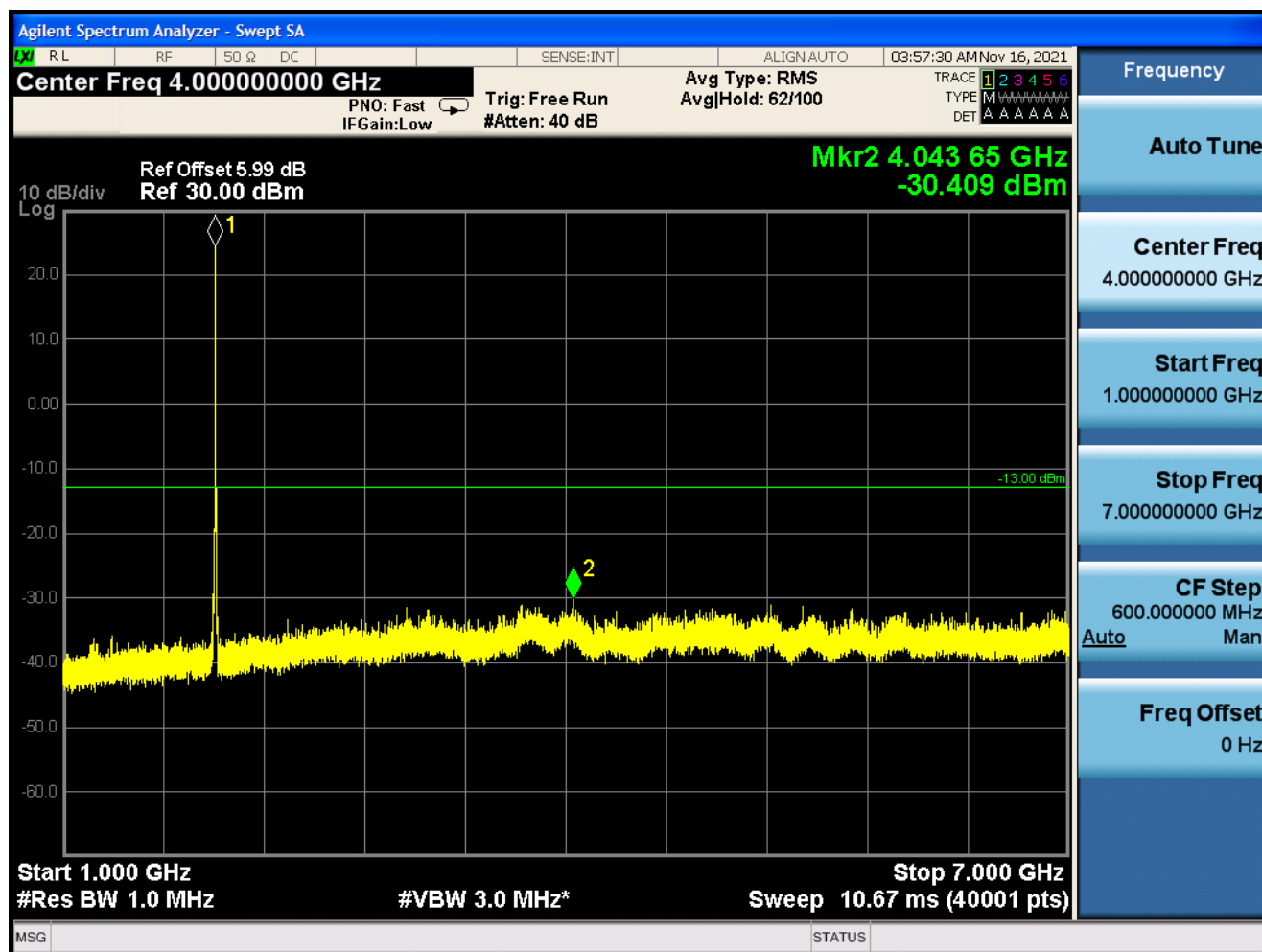


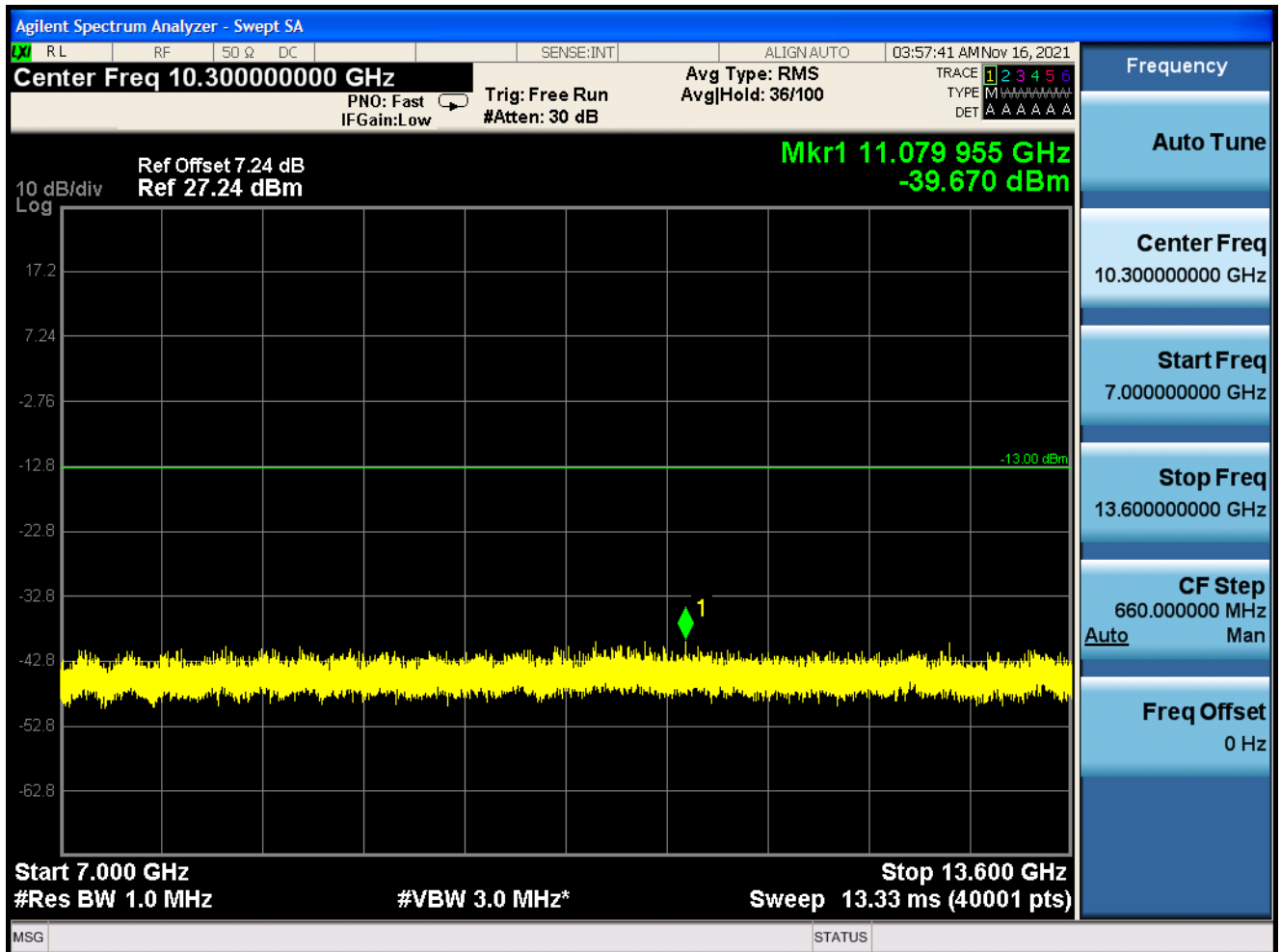
1.2.1.3 Test Channel=HCH

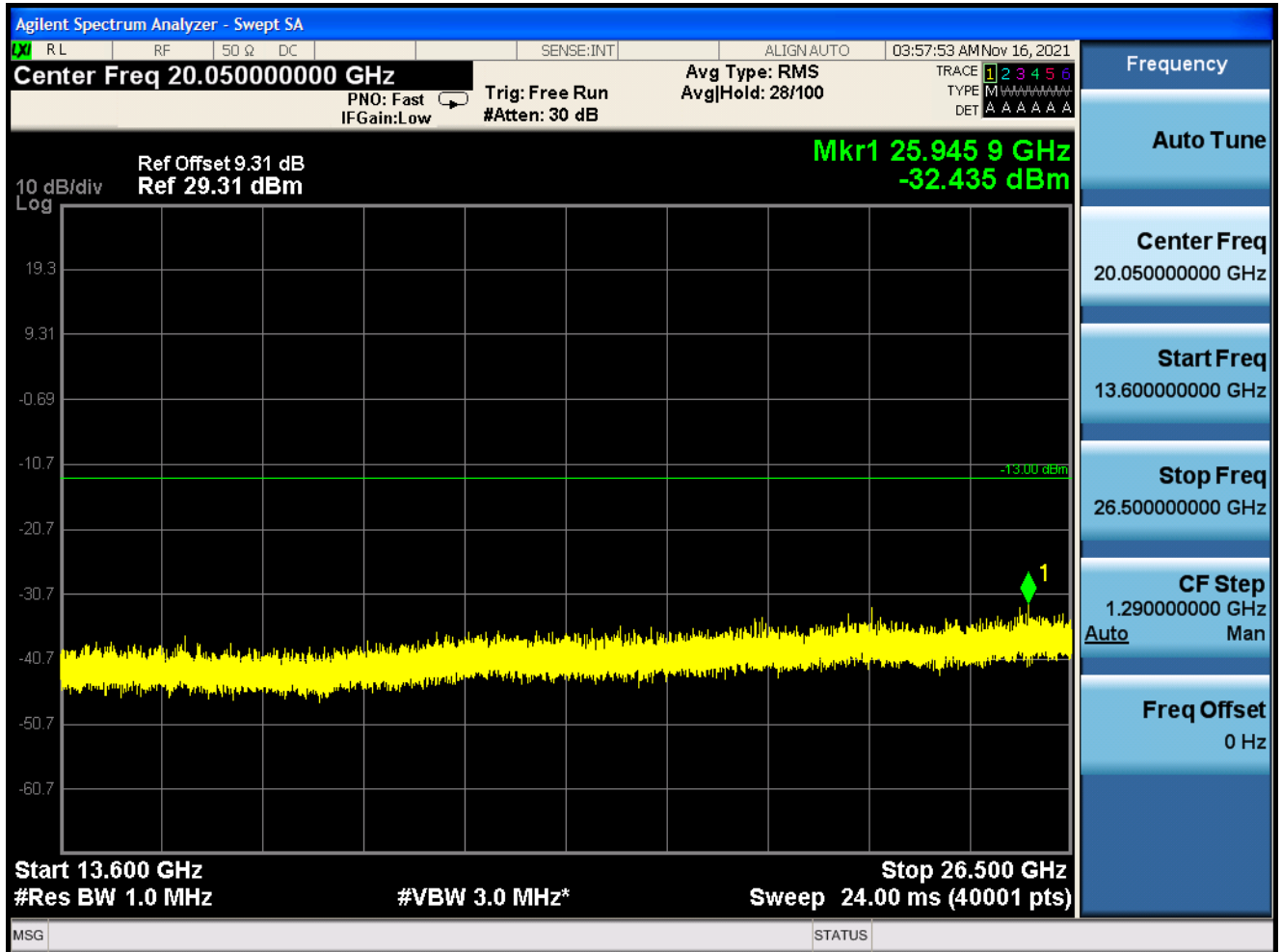












3.7. Field Strength of Spurious Radiation Test

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1852.4 MHz		
Mode:	3G_BAND 2_CH9262		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-63.77	7.67	-56.10	-13.00	-43.10	peak
2	5557.200	-67.70	12.49	-55.21	-13.00	-42.21	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1852.4 MHz		
Mode:	3G_BAND 2_CH9262		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3704.800	-67.92	7.67	-60.25	-13.00	-47.25	peak
2	5557.200	-73.41	12.49	-60.92	-13.00	-47.92	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1880 MHz		
Mode:	3G_BAND 2_CH9400		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-61.36	7.77	-53.59	-13.00	-40.59	peak
2	5640.000	-65.12	12.72	-52.40	-13.00	-39.40	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1880 MHz		
Mode:	3G_BAND 2_CH9400		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-68.00	7.77	-60.23	-13.00	-47.23	peak
2	5640.000	-70.68	12.72	-57.96	-13.00	-44.96	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1907.6 MHz		
Mode:	3G_BAND 2_CH9538		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3815.200	-61.82	7.90	-53.92	-13.00	-40.92	peak
2	5722.800	-66.81	12.96	-53.85	-13.00	-40.85	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	1907.6 MHz		
Mode:	3G_BAND 2_CH9538		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3815.200	-68.55	7.90	-60.65	-13.00	-47.65	peak
2	5722.800	-69.22	12.96	-56.26	-13.00	-43.26	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	826.4 MHz		
Mode:	3G_BAND 5_CH4132		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1652.800	-60.93	2.15	-58.78	-13.00	-45.78	peak
2	2479.200	-61.69	4.85	-56.84	-13.00	-43.84	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	826.4 MHz		
Mode:	3G_BAND 5_CH4132		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1652.800	-65.65	2.15	-63.50	-13.00	-50.50	peak
2	2479.200	-65.73	4.85	-60.88	-13.00	-47.88	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	836.4 MHz		
Mode:	3G_BAND 5_CH4182		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1672.800	-61.97	2.19	-59.78	-13.00	-46.78	peak
2	2509.200	-62.80	4.97	-57.83	-13.00	-44.83	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	836.4 MHz		
Mode:	3G_BAND 5_CH4182		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1672.800	-63.53	2.19	-61.34	-13.00	-48.34	peak
2	2509.200	-65.61	4.97	-60.64	-13.00	-47.64	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	846.6 MHz		
Mode:	3G_BAND 5_CH4233		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-60.46	2.23	-58.23	-13.00	-45.23	peak
2	2539.800	-61.53	5.06	-56.47	-13.00	-43.47	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic		
Frequency:	846.6 MHz		
Mode:	3G_BAND 5_CH4233		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1693.200	-63.86	2.23	-61.63	-13.00	-48.63	peak
2	2539.800	-64.95	5.06	-59.89	-13.00	-46.89	peak

3.8. Frequency Stability (Temperature & Voltage Variation) Test

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA Band V	TM1	LCH	TN	VL	0.67	0.00	±2.5	PASS
			TN	VN	2.73	0.00	±2.5	PASS
			TN	VH	2.62	0.00	±2.5	PASS
		MCH	TN	VL	3.08	0.00	±2.5	PASS
			TN	VN	2.73	0.00	±2.5	PASS
			TN	VH	2.85	0.00	±2.5	PASS
		HCH	TN	VL	3.01	0.00	±2.5	PASS
			TN	VN	2.73	0.00	±2.5	PASS
			TN	VH	3.60	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA Band II	TM1	LCH	TN	VL	-3.22	0.00	±2.5	PASS
			TN	VN	-3.94	0.00	±2.5	PASS
			TN	VH	-1.13	0.00	±2.5	PASS
		MCH	TN	VL	-1.65	0.00	±2.5	PASS
			TN	VN	-3.94	0.00	±2.5	PASS
			TN	VH	0.06	0.00	±2.5	PASS
		HCH	TN	VL	-3.56	0.00	±2.5	PASS
			TN	VN	-3.94	0.00	±2.5	PASS
			TN	VH	0.43	0.00	±2.5	PASS

Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA Band V	TM1	LCH	VN	-30	0.18	0.00	±2.5	PASS
			VN	-20	5.77	0.01	±2.5	PASS
			VN	-10	1.95	0.00	±2.5	PASS
			VN	0	-2.20	0.00	±2.5	PASS
			VN	10	1.51	0.00	±2.5	PASS
			VN	20	1.02	0.00	±2.5	PASS
			VN	30	1.60	0.00	±2.5	PASS
			VN	40	-1.07	0.00	±2.5	PASS
			VN	50	-0.64	0.00	±2.5	PASS
WCDMA Band V	TM1	MCH	VN	-30	1.34	0.00	±2.5	PASS
			VN	-20	3.16	0.00	±2.5	PASS
			VN	-10	2.76	0.00	±2.5	PASS
			VN	0	-2.27	0.00	±2.5	PASS
			VN	10	0.69	0.00	±2.5	PASS
			VN	20	0.50	0.00	±2.5	PASS
			VN	30	-0.46	0.00	±2.5	PASS
			VN	40	0.53	0.00	±2.5	PASS
			VN	50	4.26	0.01	±2.5	PASS
WCDMA Band V	TM1	HCH	VN	-30	3.48	0.00	±2.5	PASS
			VN	-20	1.53	0.00	±2.5	PASS
			VN	-10	1.94	0.00	±2.5	PASS
			VN	0	2.49	0.00	±2.5	PASS
			VN	10	5.65	0.01	±2.5	PASS
			VN	20	3.65	0.00	±2.5	PASS
			VN	30	-1.46	0.00	±2.5	PASS
			VN	40	3.95	0.00	±2.5	PASS
			VN	50	-0.32	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
WCDMA Band II	TM1	LCH	VN	-30	-3.95	0.00	±2.5	PASS
			VN	-20	2.32	0.00	±2.5	PASS
			VN	-10	1.79	0.00	±2.5	PASS
			VN	0	0.89	0.00	±2.5	PASS
			VN	10	0.61	0.00	±2.5	PASS
			VN	20	-3.31	0.00	±2.5	PASS
			VN	30	-1.66	0.00	±2.5	PASS
			VN	40	1.39	0.00	±2.5	PASS
			VN	50	-1.24	0.00	±2.5	PASS
WCDMA Band II	TM1	MCH	VN	-30	-3.11	0.00	±2.5	PASS
			VN	-20	1.14	0.00	±2.5	PASS
			VN	-10	0.26	0.00	±2.5	PASS
			VN	0	3.77	0.00	±2.5	PASS
			VN	10	-0.17	0.00	±2.5	PASS
			VN	20	-1.85	0.00	±2.5	PASS
			VN	30	-0.93	0.00	±2.5	PASS
			VN	40	-0.96	0.00	±2.5	PASS
			VN	50	-0.43	0.00	±2.5	PASS
WCDMA Band II	TM1	HCH	VN	-30	-0.35	0.00	±2.5	PASS
			VN	-20	4.90	0.00	±2.5	PASS
			VN	-10	0.58	0.00	±2.5	PASS
			VN	0	-2.99	0.00	±2.5	PASS
			VN	10	0.27	0.00	±2.5	PASS
			VN	20	-3.72	0.00	±2.5	PASS
			VN	30	4.20	0.00	±2.5	PASS
			VN	40	-0.05	0.00	±2.5	PASS
			VN	50	-4.17	0.00	±2.5	PASS

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