HCT CO.,LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

Carrier Aggregation Report

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	**Date of Issue:** March 13, 2019 **Location:**
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA **Report No.:** HCT-RF-1903-FC019

FCC ID:	**A3LSMA6060**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-A6060
EUT Type:	Mobile Phone
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2

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)

Report prepared by : Jae Ryang Do
Engineer of Telecommunication Testing Center

Report approved by : Kwon Jeong
Manager of Telecommunication Testing Center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1903-FC019	March 13, 2019	- First Approval Report

Table of Contents

1. GENERAL INFORMATION 4
2. INTRODUCTION 5
2.1. DESCRIPTION OF EUT 5
2.2. MEASURING INSTRUMENT CALIBRATION 5
2.3. TEST FACILITY 5
3. DESCRIPTION OF TESTS 6
3.1 TEST PROCEDURE 6
3.2 RADIATED POWER 7
3.3 RADIATED SPURIOUS EMISSIONS 8
3.4 OCCUPIED BANDWIDTH 9
3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL 10
3.6 CHANNEL EDGE 11
4. LIST OF TEST EQUIPMENT 12
5. MEASUREMENT UNCERTAINTY 13
6. SUMMARY OF TEST RESULTS 14
7. SAMPLE CALCULATION 15
8. TEST DATA 17
8.1 Conducted Power 20
8.2 Equivalent Isotropic Radiated Power 22
8.3 Conducted Spurious Emissions 25
8.4 Channel Edge 45
8.5 Frequency Stability / Variation Of Ambient Temperature 54
8.6 Radiated Spurious Emissions 62
8.7 Occupied Bandwidth 65
8.8 Emission Designator. 77
9. ANNEX A_ TEST SETUP PHOTO 78

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMA6060
Application Type:	Certification
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	Mobile Phone
Model(s):	SM-A6060
Tx Frequency:	2557.5 – 2652.5 : 5 MHz 2560.0 – 2650.0 : 10 MHz 2562.5 – 2647.5 : 15 MHz 2565.0 – 2645.0 : 20 MHz
Date(s) of Tests:	February 18, 2019 ~ March 05, 2019
LTE CA :	CA 41C(Uplink)

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE.
It also supports IEEE 802.11 a/b/g/n/ac, Bluetooth, BTLE, NFC & ANT+.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Channel 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	- N/A (See SAR Report)
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12
Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI C63.26-2015 – Section 5.2 - ANSI/TIA-603-E-2016 – Section 2.2.17

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 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;

   $$P_{d(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

   Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.
3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

   These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

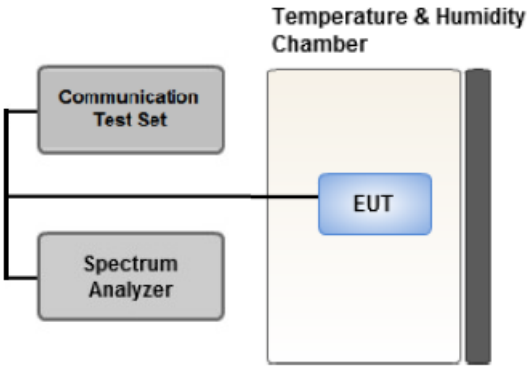
Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
   The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data

3.4 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.

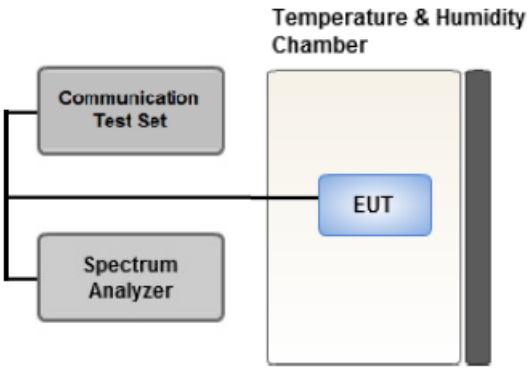
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 26dB 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 ≥ 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

3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

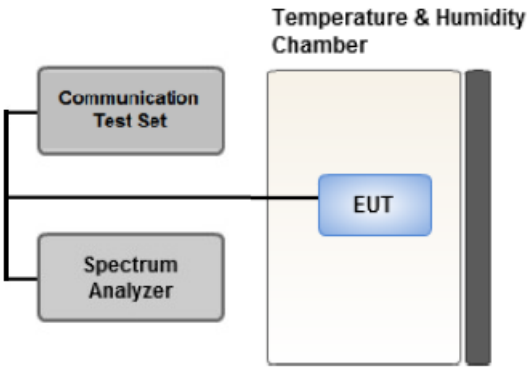
Test Overview

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 ≥ 3 MHz
3. Detector = Peak
4. Trace Mode = max hold
5. Sweep time = auto
6. Number of points in sweep ≥ 2 * Span / RBW

3.6 CHANNEL 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 channel 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 > 2% of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

1. The attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge.In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
2. All measurements were done at 3 channels.
3. The channel edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
REOHDE & SCHWARZ	SCU 18 / AMPLIFIER	10094	04/17/2018	Annual	04/17/2019
Wainwright	WHK1.2/15G-10EF/H.P.F	4	04/04/2018	Annual	04/04/2019
Wainwright	WHK3.3/18G-10EF/H.P.F	2	04/04/2018	Annual	04/04/2019
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	5001	06/07/2018	Annual	06/07/2019
Agilent	E3632A/DC Power Supply	KR75303243	05/09/2018	Annual	05/09/2019
Schwarzbeck	UHAP/ Dipole Antenna	557	03/31/2017	Biennial	03/31/2019
Schwarzbeck	UHAP/ Dipole Antenna	558	03/31/2017	Biennial	03/31/2019
ESPEC	SU-642 / Chamber	93000718	08/07/2018	Annual	08/07/2019
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	09/14/2018	Annual	09/14/2019
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	10/04/2018	Annual	10/04/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/25/2017	Biennial	04/25/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	04/25/2017	Biennial	04/25/2019
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY52090906	06/08/2018	Annual	06/08/2019
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/21/2018	Annual	06/21/2019
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/22/2018	Annual	10/22/2019
Agilent	8960 (E5515C)/ Base Station	MY48360800	09/27/2018	Annual	09/27/2019
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	08/23/2018	Biennial	08/23/2020
Schwarzbeck	VULB9160/ Bilog Antenna	9160-3368	08/09/2018	Biennial	08/09/2020
Schwarzbeck	VULB9160/ Hybrid Antenna	760	04/06/2017	Biennial	04/06/2019
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6201502997	08/13/2018	Annual	08/13/2019
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	01/30/2019	Annual	01/30/2020
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/19/2018	Annual	07/19/2019
REOHDE & SCHWARZ	ESU40 / EMI TEST RECEIVER	100524	07/27/2018	Annual	07/27/2019
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

Note:
1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

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)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.71

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(m)(4)	■ < 40 + 10log10 (P[Watts]) at Channel edges ■ < 43 + 10log10 (P[Watts]) between 5 and X MHz from Channel edges ■ < 55 + 10log10 (P[Watts]) beyond X MHz beyond from Channel edges ■ < 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz	PASS
Conducted Output Power	§2.1046	N/A	PASS
Frequency stability / variation of ambient temperature	§2.1055, §27.54	Emission must remain in band	PASS

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§27.50(h)(2)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(m)(4)	< 55 + 10log10 (P[Watts])	PASS

7. SAMPLE CALCULATION

7.1 ERP

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
40620	2593.0	-15.75	18.45	9.90	1.76	H	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3 Emission Designator

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

16QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

64QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers 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 Note

1. All tests were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth.
2. Channel bandwidth is shown in the tables below based only on the channel bandwidths that were supported in this device.

Channel Bandwidth (PCC)	Channel Bandwidth (SCC)	Maximum aggregated bandwidth (MHz)
10	20	40
15	15, 20	40
20	10, 15, 20	40
5, 10	20	40
15	15, 20	40
20	5, 10, 15, 20	40
10	15, 20	40
15	10, 15, 20	40
20	10, 15, 20	40
10	20	40
20	20	40

3. All modes of operation were investigated and the worst case configuration results are reported in this section. Please refer to the table below.

- Worst case(Radiated Spurious Emissions, Channel Edge)
: We have selected higher of the Conduction Output Power.

- Worst case(Radiated Spurious Emissions) : We have selected higher of the EIRP.

[Worst case]

Test Description	Mod	Operating frequency	PCC				SCC			
			BW (MHz)	Ch.	RB	RB Offset	BW (MHz)	Ch.	RB	RB Offset
Conducted Spurious Emissions	QPSK	Low	20	40340	1	99	10	40484	1	0
	QPSK	Mid	20	40740	1	0	10	40596	1	49
	QPSK	High	20	41140	1	0	10	40996	1	49
	QPSK	Low	20	40340	1	0	10	40484	1	49
	QPSK	Mid	20	40740	1	99	10	40596	1	0
	QPSK	High	20	41140	1	99	10	40996	1	0
Channel Edge	QPSK	Low	20	40340	1	99	10	40484	1	0
	QPSK	Mid	20	40740	1	0	10	40596	1	49
	QPSK	High	20	41140	1	0	10	40996	1	49
	QPSK	Low	20	40340	100	0	15	40511	75	0
	QPSK	Mid	20	40740	100	0	15	40569	75	0
	QPSK	High	15	41165	75	0	10	41045	50	0
Radiated Spurious Emissions	QPSK	Low	10	40290	1	49	20	40434	1	0
	QPSK	Mid	10	40740	1	0	20	40596	1	99
	QPSK	High	20	41140	1	0	10	40996	1	49

[Worst case]

Test Description	Mod	Operating frequency	PCC				SCC			
			BW (MHz)	Ch.	RB	RB Offset	BW (MHz)	Ch.	RB	RB Offset
Occupied Bandwidth	QPSK, 16QAM, 64QAM	Mid	5	40740	25	0	20	40623	100	0
			10	40740	50	0	15	40620	75	0
			10	40740	50	0	20	40596	100	0
			15	40740	75	0	10	40620	50	0
			15	40740	75	0	15	40590	75	0
			15	40740	75	0	20	40569	100	0
			20	40740	100	0	5	40623	25	0
			20	40740	100	0	10	40596	50	0
			20	40740	100	0	15	40569	75	0
			20	40740	100	0	20	40542	100	0
Frequency stability	QPSK	Low	5	40265	1	0	20	40382	1	0
			10	40290	1	0	20	40434	1	0
			15	40315	1	0	15	40465	1	0
			20	40340	1	0	20	40538	1	0
		High	5	41215	1	24	20	41098	1	99
			10	41190	1	49	20	41046	1	99
			15	41165	1	74	20	40994	1	99
			20	41140	1	99	20	40942	1	99

8.1 Conducted Power

PCC				SCC				Conducted. Power [dBm]
Bandwidth [MHz]	Channel	RB	RB Offset	Bandwidth [MHz]	Channel	RB	RB Offset	
5	40265	1	24	20	40382	1	0	23.51
10	40290	1	49	15	40410	1	0	23.46
10	40290	1	49	20	40434	1	0	23.42
15	40315	1	74	10	40435	1	0	23.80
15	40315	1	74	15	40465	1	0	23.86
15	40315	1	74	20	40486	1	0	23.84
20	40340	1	99	5	40457	1	0	23.82
20	***40340***	***1***	***99***	***10***	***40484***	***1***	***0***	***23.96***
20	40340	1	99	15	40511	1	0	23.86
20	40340	1	99	20	40538	1	0	23.78
5	40740	1	0	20	40623	1	99	23.59
10	40740	1	0	15	40620	1	74	23.52
10	40740	1	0	20	40596	1	99	23.52
15	40740	1	0	10	40620	1	49	23.48
15	40740	1	0	15	40590	1	74	23.50
15	40740	1	0	20	40569	1	99	23.54
20	40740	1	0	5	40623	1	24	23.50
20	***40740***	***1***	***0***	***10***	***40596***	***1***	***49***	***23.81***
20	40740	1	0	15	40569	1	74	23.68
20	40740	1	0	20	40542	1	99	23.65
5	41215	1	0	20	41098	1	99	23.58
10	41190	1	0	15	41070	1	74	23.70
10	41190	1	0	20	41046	1	99	23.71
15	41165	1	0	10	41045	1	49	23.58
15	41165	1	0	15	41015	1	74	23.68
15	41165	1	0	20	40994	1	99	23.67
20	41140	1	0	5	41023	1	24	23.65
20	***41140***	***1***	***0***	***10***	***40996***	***1***	***49***	***23.87***
20	41140	1	0	15	40969	1	74	23.77
20	41140	1	0	20	40942	1	99	23.71

PCC				SCC				Conducted. Power [dBm]
Bandwidth [MHz]	Channel	RB	RB Offset	Bandwidth [MHz]	Channel	RB	RB Offset	
5	40265	25	0	20	40382	100	0	21.64
10	40290	50	0	15	40410	75	0	21.64
10	40290	50	0	20	40434	100	0	21.64
15	40315	75	0	10	40435	50	0	21.69
15	40315	75	0	15	40465	75	0	22.13
15	40315	75	0	20	40486	100	0	22.11
20	40340	100	0	5	40457	25	0	21.59
20	40340	100	0	10	40484	50	0	21.60
20	***40340***	***100***	***0***	***15***	***40511***	***75***	***0***	***22.16***
20	40340	100	0	20	40538	100	0	22.14
5	40740	25	0	20	40623	100	0	21.88
10	40740	50	0	15	40620	75	0	21.90
10	40740	50	0	20	40596	100	0	21.92
15	40740	75	0	10	40620	50	0	21.02
15	40740	75	0	15	40590	75	0	21.91
15	40740	75	0	20	40569	100	0	21.92
20	40740	100	0	5	40623	25	0	20.98
20	40740	100	0	10	40596	50	0	21.01
20	***40740***	***100***	***0***	***15***	***40569***	***75***	***0***	***21.95***
20	40740	100	0	20	40542	100	0	21.93
5	41215	25	0	20	41098	100	0	21.90
10	41190	50	0	15	41070	75	0	22.00
10	41190	50	0	20	41046	100	0	22.00
15	***41165***	***75***	***0***	***10***	***41045***	***50***	***0***	***22.57***
15	41165	75	0	15	41015	75	0	21.98
15	41165	75	0	20	40994	100	0	22.01
20	41140	100	0	5	41023	25	0	22.36
20	41140	100	0	10	40996	50	0	22.28
20	41140	100	0	15	40969	75	0	22.01
20	41140	100	0	20	40942	100	0	21.98

8.2 Equivalent Isotropic Radiated Power

PCC			SCC			Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset						W	dBm
10	***40290***	***1/49***	***20***	***40434***	***1/0***	***-24.58***	***10.25***	***11.02***	***1.63***	***H***	***0.09***	***19.64***
15	40315	1/74	15	40465	1/0	-24.69	10.14	11.02	1.63	H	0.09	19.53
15	40315	1/74	20	40486	1/0	-24.75	10.08	11.02	1.63	H	0.09	19.47
20	40340	1/99	10	40484	1/0	-24.78	10.05	11.02	1.63	H	0.09	19.44
20	40340	1/99	15	40511	1/0	-24.88	9.95	11.02	1.63	H	0.09	19.34
20	40340	1/99	20	40538	1/0	-24.85	9.98	11.02	1.63	H	0.09	19.37
5	40265	1/24	20	40382	1/0	-24.73	10.10	11.02	1.63	H	0.09	19.49
20	40340	1/99	5	40457	1/0	-24.82	10.01	11.02	1.63	H	0.09	19.40
10	40290	1/49	15	40410	1/0	-24.62	10.21	11.02	1.63	H	0.09	19.60
15	40315	1/74	10	40435	1/0	-25.04	9.81	11.02	1.63	H	0.08	19.20
10	***40740***	***1/0***	***20***	***40596***	***1/99***	***-25.86***	***8.98***	***11.02***	***1.62***	***H***	***0.07***	***18.38***
15	40740	1/0	15	40590	1/74	-26.27	8.57	11.02	1.62	H	0.06	17.97
15	40740	1/0	20	40569	1/99	-26.30	8.54	11.02	1.62	H	0.06	17.94
20	40740	1/0	10	40596	1/49	-26.16	8.68	11.02	1.62	H	0.06	18.08
20	40740	1/0	15	40569	1/74	-26.10	8.74	11.02	1.62	H	0.07	18.14
20	40740	1/0	20	40542	1/99	-26.08	8.76	11.02	1.62	H	0.07	18.16
5	40740	1/0	20	40623	1/99	-26.29	8.55	11.02	1.62	H	0.06	17.95
20	40740	1/0	5	40623	1/24	-26.13	8.71	11.02	1.62	H	0.06	18.11
10	40740	1/0	15	40620	1/74	-25.88	8.96	11.02	1.62	H	0.07	18.36
15	40740	1/0	10	40620	1/49	-26.34	8.50	11.02	1.62	H	0.06	17.90
10	41190	1/0	20	41046	1/99	-28.23	6.71	11.13	1.65	H	0.04	16.19
15	41165	1/0	15	41015	1/74	-28.07	6.87	11.13	1.65	H	0.04	16.35
15	41165	1/0	20	40994	1/99	-28.24	6.70	11.13	1.65	H	0.04	16.18
20	***41140***	***1/0***	***10***	***40996***	***1/49***	***-27.79***	***7.15***	***11.13***	***1.65***	***H***	***0.05***	***16.63***
20	41140	1/0	15	40969	1/74	-27.98	6.96	11.13	1.65	H	0.04	16.44
20	41140	1/0	20	40942	1/99	-27.91	7.03	11.13	1.65	H	0.04	16.51
5	41215	1/0	20	41098	1/99	-28.84	6.10	11.13	1.65	H	0.04	15.58
20	41140	1/0	5	41023	1/24	-28.04	6.90	11.13	1.65	H	0.04	16.38
10	41190	1/0	15	41070	1/74	-28.11	6.83	11.13	1.65	H	0.04	16.31
15	41165	1/0	10	41045	1/49	-28.62	6.32	11.13	1.65	H	0.04	15.80

Note:

1. Modulation : QPSK
2. Limit : < 2 Watts

PCC			SCC			Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset						W	dBm
10	40290	1/49	20	40434	1/0	-25.73	9.10	11.02	1.63	H	0.07	18.49
15	40315	1/74	15	40465	1/0	-25.57	9.26	11.02	1.63	H	0.07	18.65
15	40315	1/74	20	40486	1/0	-25.64	9.19	11.02	1.63	H	0.07	18.58
20	40340	1/99	10	40484	1/0	-25.66	9.17	11.02	1.63	H	0.07	18.56
20	40340	1/99	15	40511	1/0	-25.54	9.29	11.02	1.63	H	0.07	18.68
20	40340	1/99	20	40538	1/0	-25.52	9.31	11.02	1.63	H	0.07	18.70
5	***40265***	***1/24***	***20***	***40382***	***1/0***	***-25.49***	***9.34***	***11.02***	***1.63***	***H***	***0.07***	***18.73***
20	40340	1/99	5	40457	1/0	-25.63	9.20	11.02	1.63	H	0.07	18.59
10	40290	1/49	15	40410	1/0	-25.61	9.22	11.02	1.63	H	0.07	18.61
15	40315	1/74	10	40435	1/0	-25.71	9.14	11.02	1.63	H	0.07	18.53
10	40740	1/0	20	40596	1/99	-26.44	8.40	11.02	1.62	H	0.06	17.80
15	40740	1/0	15	40590	1/74	-26.77	8.07	11.02	1.62	H	0.06	17.47
15	40740	1/0	20	40569	1/99	-26.79	8.05	11.02	1.62	H	0.06	17.45
20	40740	1/0	10	40596	1/49	-26.54	8.30	11.02	1.62	H	0.06	17.70
20	40740	1/0	15	40569	1/74	-26.74	8.10	11.02	1.62	H	0.06	17.50
20	40740	1/0	20	40542	1/99	-26.74	8.10	11.02	1.62	H	0.06	17.50
5	40740	1/0	20	40623	1/99	-26.84	8.00	11.02	1.62	H	0.05	17.40
20	40740	1/0	5	40623	1/24	-26.65	8.19	11.02	1.62	H	0.06	17.59
10	***40740***	***1/0***	***15***	***40620***	***1/74***	***-26.34***	***8.50***	***11.02***	***1.62***	***H***	***0.06***	***17.90***
15	40740	1/0	10	40620	1/49	-27.06	7.78	11.02	1.62	H	0.05	17.18
10	41190	1/0	20	41046	1/99	-28.81	6.13	11.13	1.65	H	0.04	15.61
15	41165	1/0	15	41015	1/74	-28.69	6.25	11.13	1.65	H	0.04	15.73
15	41165	1/0	20	40994	1/99	-28.74	6.20	11.13	1.65	H	0.04	15.68
20	41140	1/0	10	40996	1/49	-28.20	6.74	11.13	1.65	H	0.04	16.22
20	41140	1/0	15	40969	1/74	-28.53	6.41	11.13	1.65	H	0.04	15.89
20	41140	1/0	20	40942	1/99	-28.47	6.47	11.13	1.65	H	0.04	15.95
5	41215	1/0	20	41098	1/99	-29.28	5.66	11.13	1.65	H	0.03	15.14
20	***41140***	***1/0***	***5***	***41023***	***1/24***	***-28.38***	***6.56***	***11.13***	***1.65***	***H***	***0.04***	***16.04***
10	41190	1/0	15	41070	1/74	-28.70	6.24	11.13	1.65	H	0.04	15.72
15	41165	1/0	10	41045	1/49	-29.24	5.70	11.13	1.65	H	0.03	15.18

Note:

1. Modulation : 16QAM

2. Limit : < 2 Watts

PCC			SCC			Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset						W	dBm
10	40290	1/49	20	40434	1/0	-27.70	7.13	11.02	1.63	H	0.04	16.52
15	40315	1/74	15	40465	1/0	-27.53	7.30	11.02	1.63	H	0.05	16.69
15	40315	1/74	20	40486	1/0	-27.55	7.28	11.02	1.63	H	0.05	16.67
20	40340	1/99	10	40484	1/0	-27.71	7.12	11.02	1.63	H	0.04	16.51
20	40340	1/99	15	40511	1/0	-27.58	7.25	11.02	1.63	H	0.05	16.64
20	40340	1/99	20	40538	1/0	-27.62	7.21	11.02	1.63	H	0.05	16.60
5	***40265***	***1/24***	***20***	***40382***	***1/0***	***-27.43***	***7.40***	***11.02***	***1.63***	***H***	***0.05***	***16.79***
20	40340	1/99	5	40457	1/0	-27.51	7.32	11.02	1.63	H	0.05	16.71
10	40290	1/49	15	40410	1/0	-27.49	7.34	11.02	1.63	H	0.05	16.73
15	40315	1/74	10	40435	1/0	-27.85	7.00	11.02	1.63	H	0.04	16.39
10	***40740***	***1/0***	***20***	***40596***	***1/99***	***-28.33***	***6.51***	***11.02***	***1.62***	***H***	***0.04***	***15.91***
15	40740	1/0	15	40590	1/74	-29.06	5.78	11.02	1.62	H	0.03	15.18
15	40740	1/0	20	40569	1/99	-28.94	5.90	11.02	1.62	H	0.03	15.30
20	40740	1/0	10	40596	1/49	-28.62	6.22	11.02	1.62	H	0.04	15.62
20	40740	1/0	15	40569	1/74	-28.51	6.33	11.02	1.62	H	0.04	15.73
20	40740	1/0	20	40542	1/99	-28.66	6.18	11.02	1.62	H	0.04	15.58
5	40740	1/0	20	40623	1/99	-28.82	6.02	11.02	1.62	H	0.03	15.42
20	40740	1/0	5	40623	1/24	-28.79	6.05	11.02	1.62	H	0.04	15.45
10	40740	1/0	15	40620	1/74	-28.49	6.35	11.02	1.62	H	0.04	15.75
15	40740	1/0	10	40620	1/49	-28.93	5.91	11.02	1.62	H	0.03	15.31
10	41190	1/0	20	41046	1/99	-30.86	4.08	11.13	1.65	H	0.02	13.56
15	41165	1/0	15	41015	1/74	-30.42	4.52	11.13	1.65	H	0.03	14.00
15	41165	1/0	20	40994	1/99	-30.60	4.34	11.13	1.65	H	0.02	13.82
20	41140	1/0	10	40996	1/49	-30.06	4.88	11.13	1.65	H	0.03	14.36
20	41140	1/0	15	40969	1/74	-30.59	4.35	11.13	1.65	H	0.02	13.83
20	***41140***	***1/0***	***20***	***40942***	***1/99***	***-30.04***	***4.90***	***11.13***	***1.65***	***H***	***0.03***	***14.38***
5	41215	1/0	20	41098	1/99	-31.26	3.68	11.13	1.65	H	0.02	13.16
20	41140	1/0	5	41023	1/24	-30.41	4.53	11.13	1.65	H	0.03	14.01
10	41190	1/0	15	41070	1/74	-30.82	4.12	11.13	1.65	H	0.02	13.60
15	41165	1/0	10	41045	1/49	-30.72	4.22	11.13	1.65	H	0.02	13.70

Note:

1. Modulation : 64QAM

2. Limit : < 2 Watts

8.3 Conducted Spurious Emissions

PCC				SCC				Measurement Maximum Frequency (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)
BW [MHz]	Ch.	RB	RB Offset	BW [MHz]	Ch.	RB	RB Offset				
20	40340	1	99	10	40484	1	0	3.6815	27.976	-61.105	-33.129
20	40740	1	0	10	40596	1	49	6.1800	28.591	-61.419	-32.828
20	41140	1	0	10	40996	1	49	2.7448	27.976	-61.147	-33.171
20	40340	1	0	10	40484	1	49	3.6845	27.976	-61.818	-33.842
20	40740	1	99	10	40596	1	0	3.6725	27.976	-60.737	-32.761
20	41140	1	99	10	40996	1	0	3.7189	27.976	-61.273	-33.297
20	40340	100	0	15	40511	75	0	3.7104	27.976	-61.307	-33.331
20	40740	100	0	15	40569	75	0	3.3261	27.976	-61.747	-33.771
15	41165	75	0	10	41045	50	0	3.6426	27.976	-62.023	-34.047

Note:

1. Plots of the EUT's Conducted Spurious Emission are shown Page 26 ~ 43.
2. Modulation : QPSK
3. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
4. Factors for frequency :

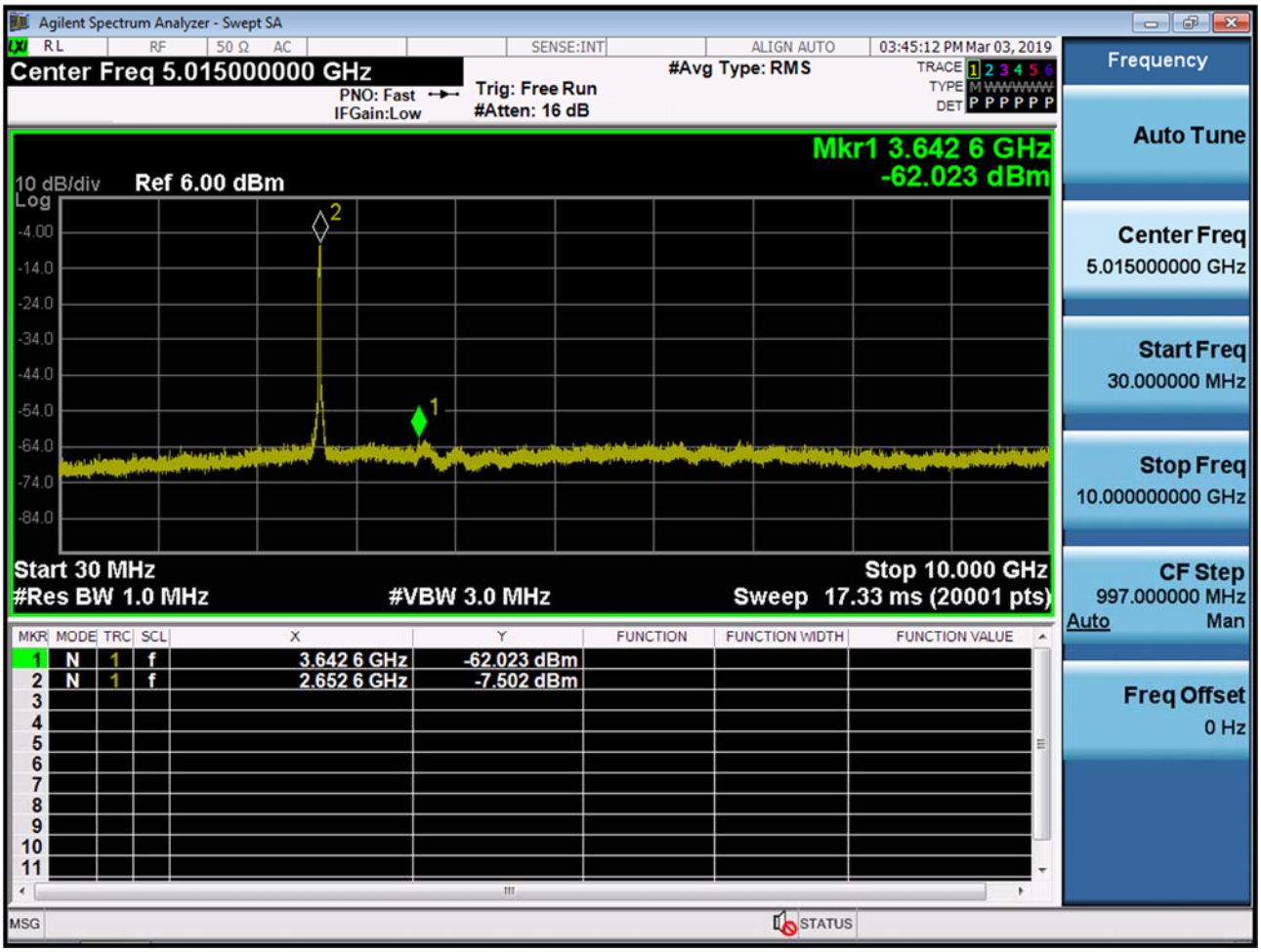
Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

5. Limit : -25.0 dBm

Frequency Range : 30MHz ~ 10GHz

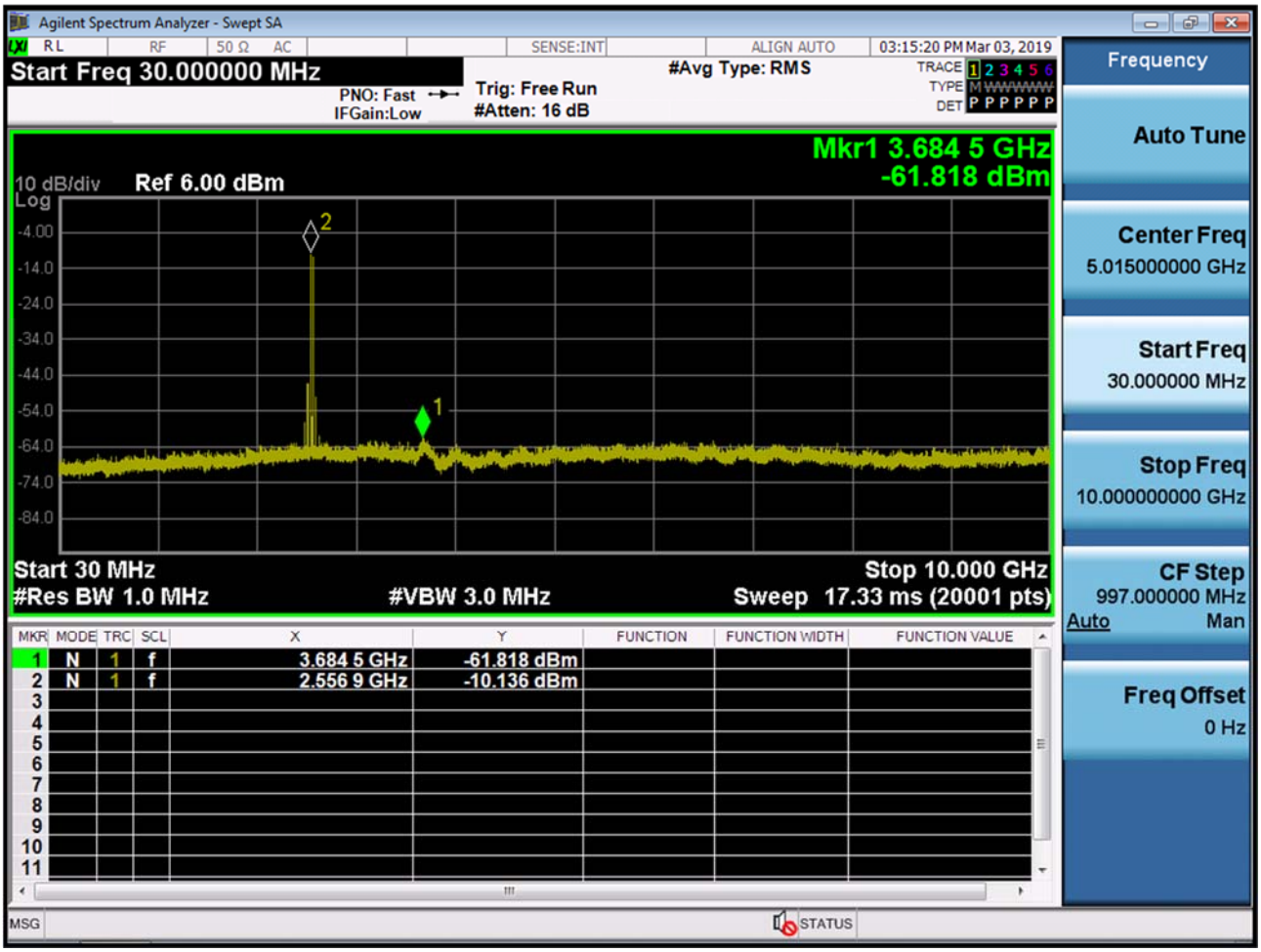
PCC 15MHz Ch41165 RB75 Offset0

SCC 10MHz Ch41045 RB50 Offset0



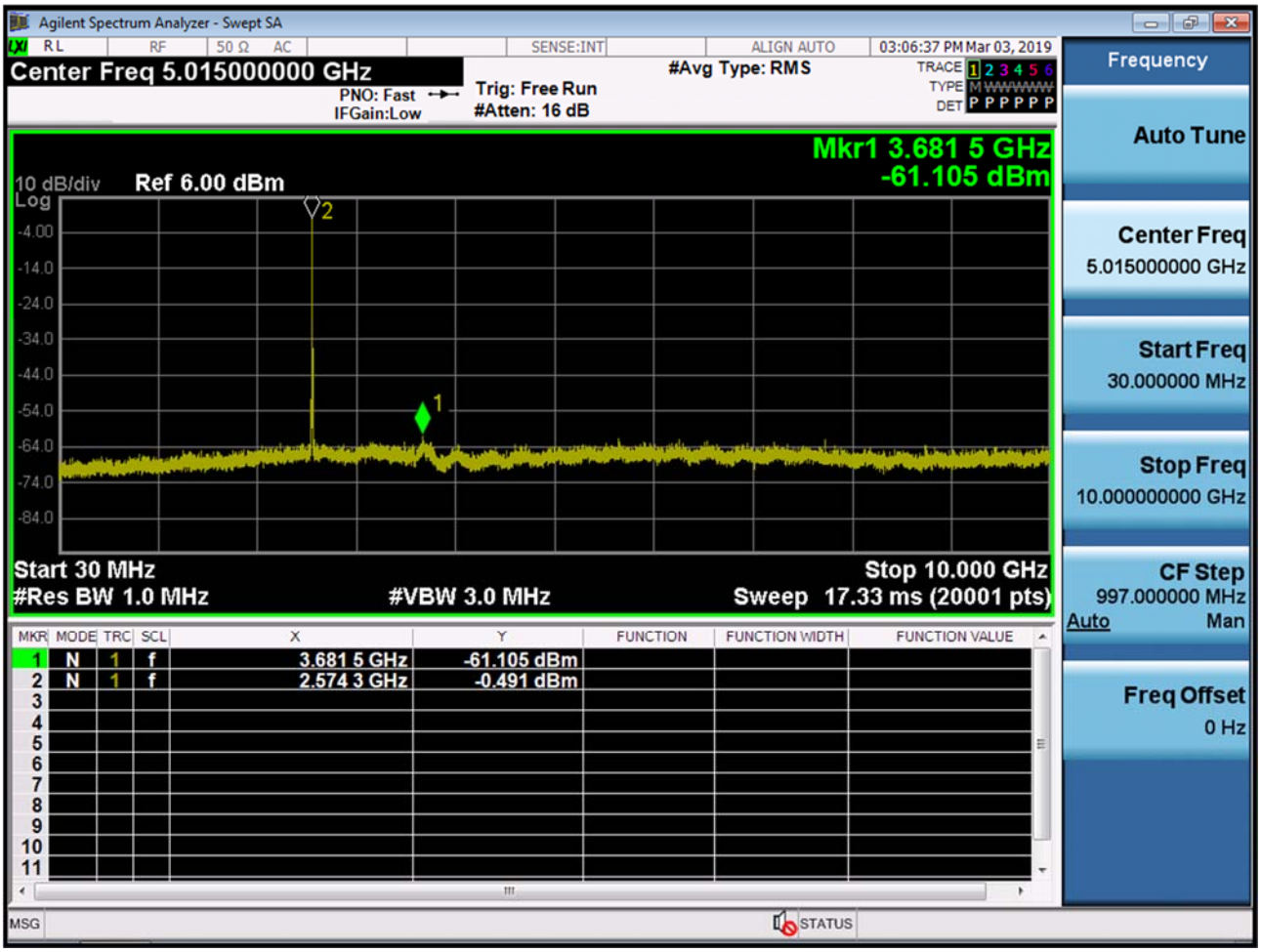
PCC 20MHz Ch40340 RB1 Offset0

SCC 10MHz Ch40484 RB1 Offset49



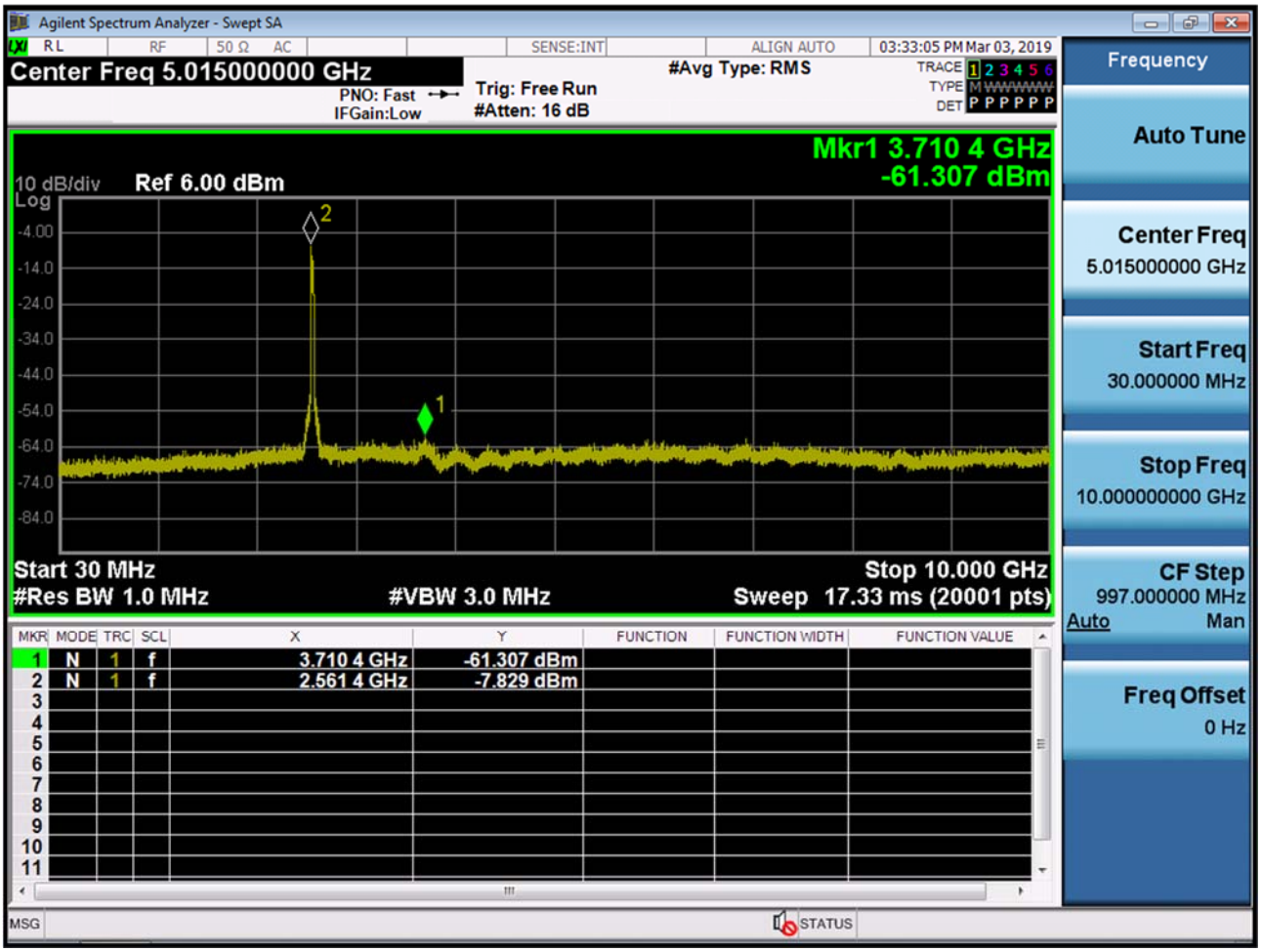
PCC 20MHz Ch40340 RB1 Offset99

SCC 10MHz Ch40484 RB1 Offset0



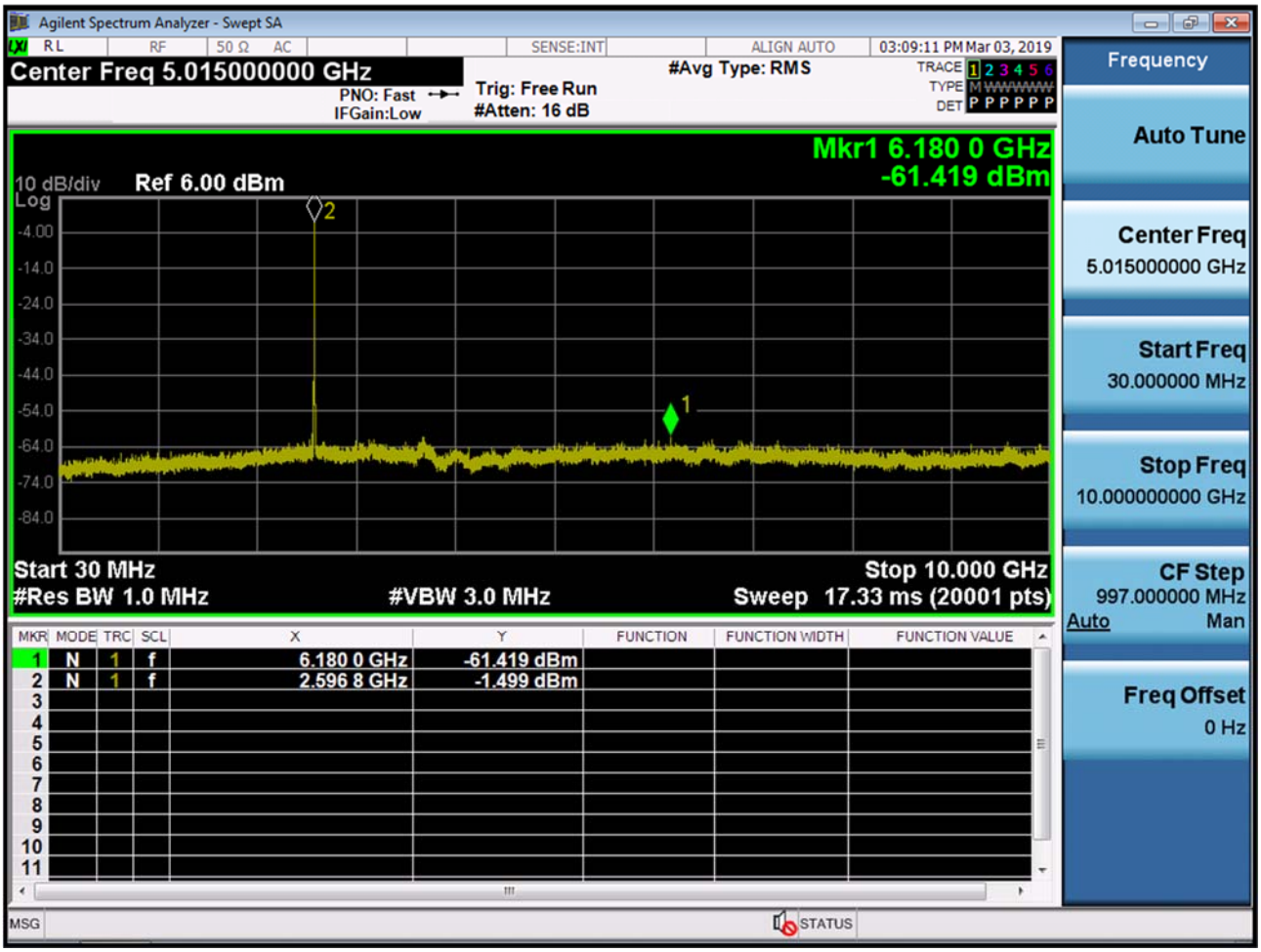
PCC 20MHz Ch40340 RB100 Offset0

SCC 15MHz Ch40511 RB75 Offset0



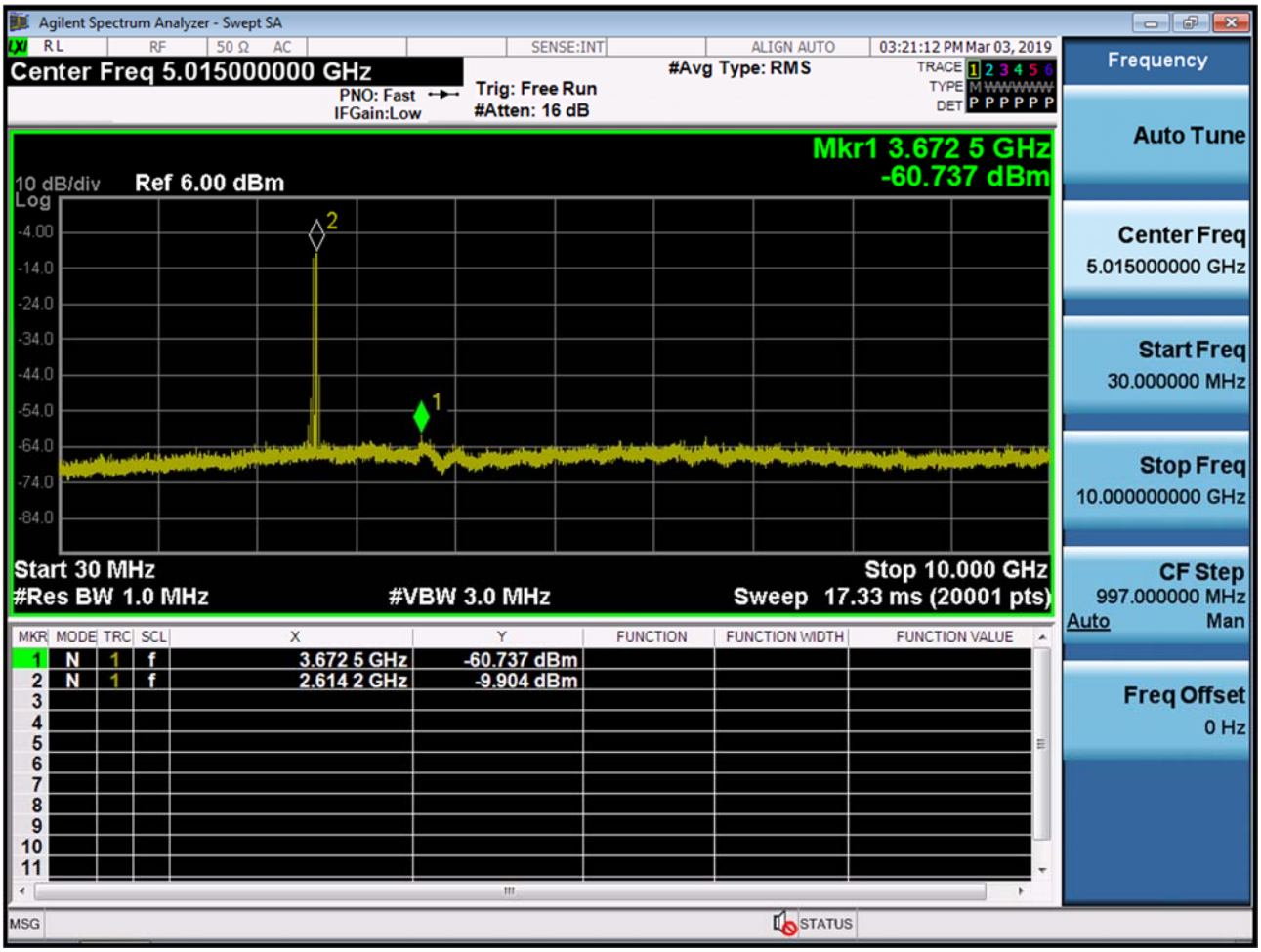
PCC 20MHz Ch40740 RB1 Offset0

SCC 10MHz Ch40596 RB1 Offset49



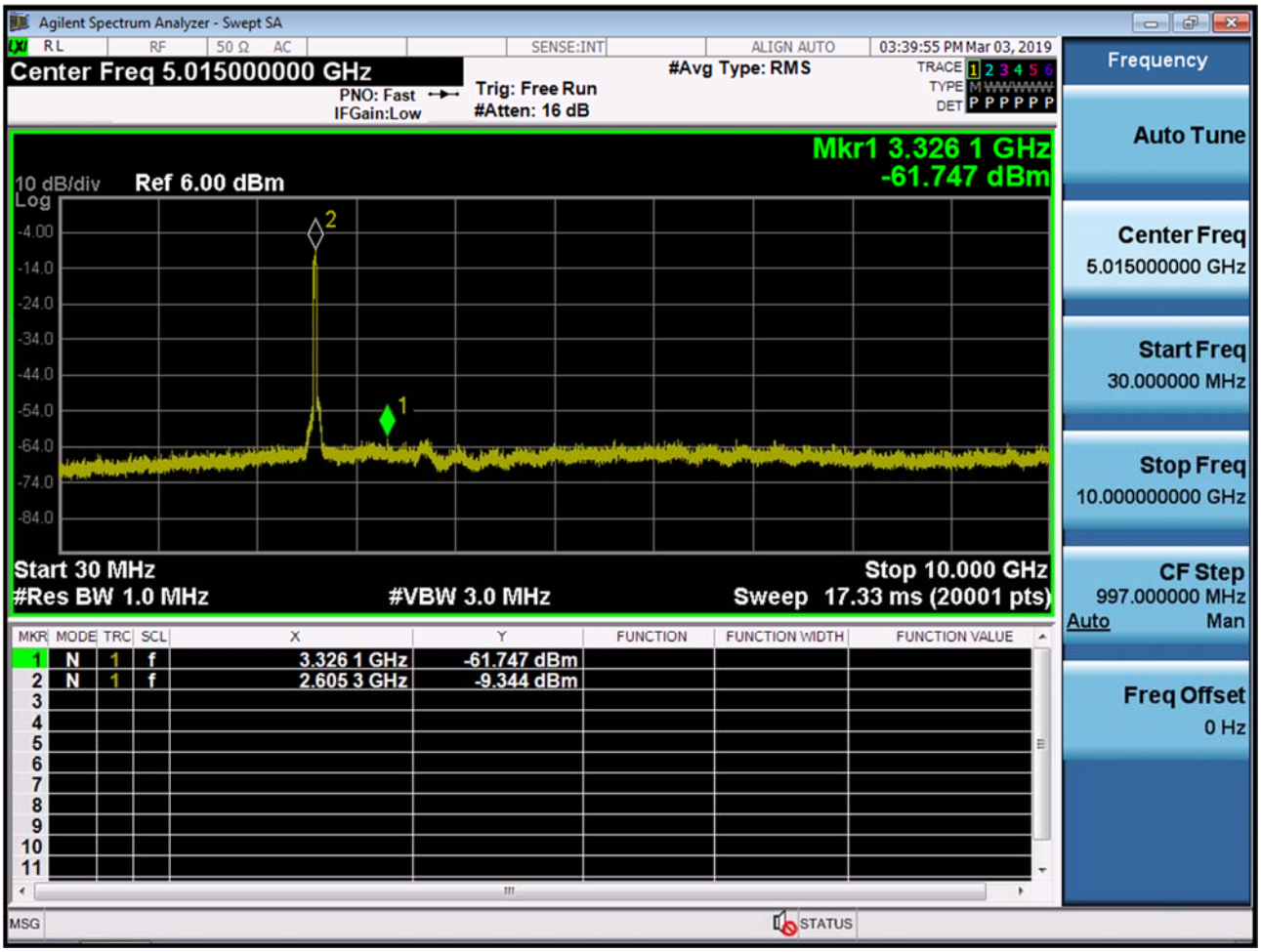
PCC 20MHz Ch40740 RB1 Offset99

SCC 10MHz Ch40596 RB1 Offset0



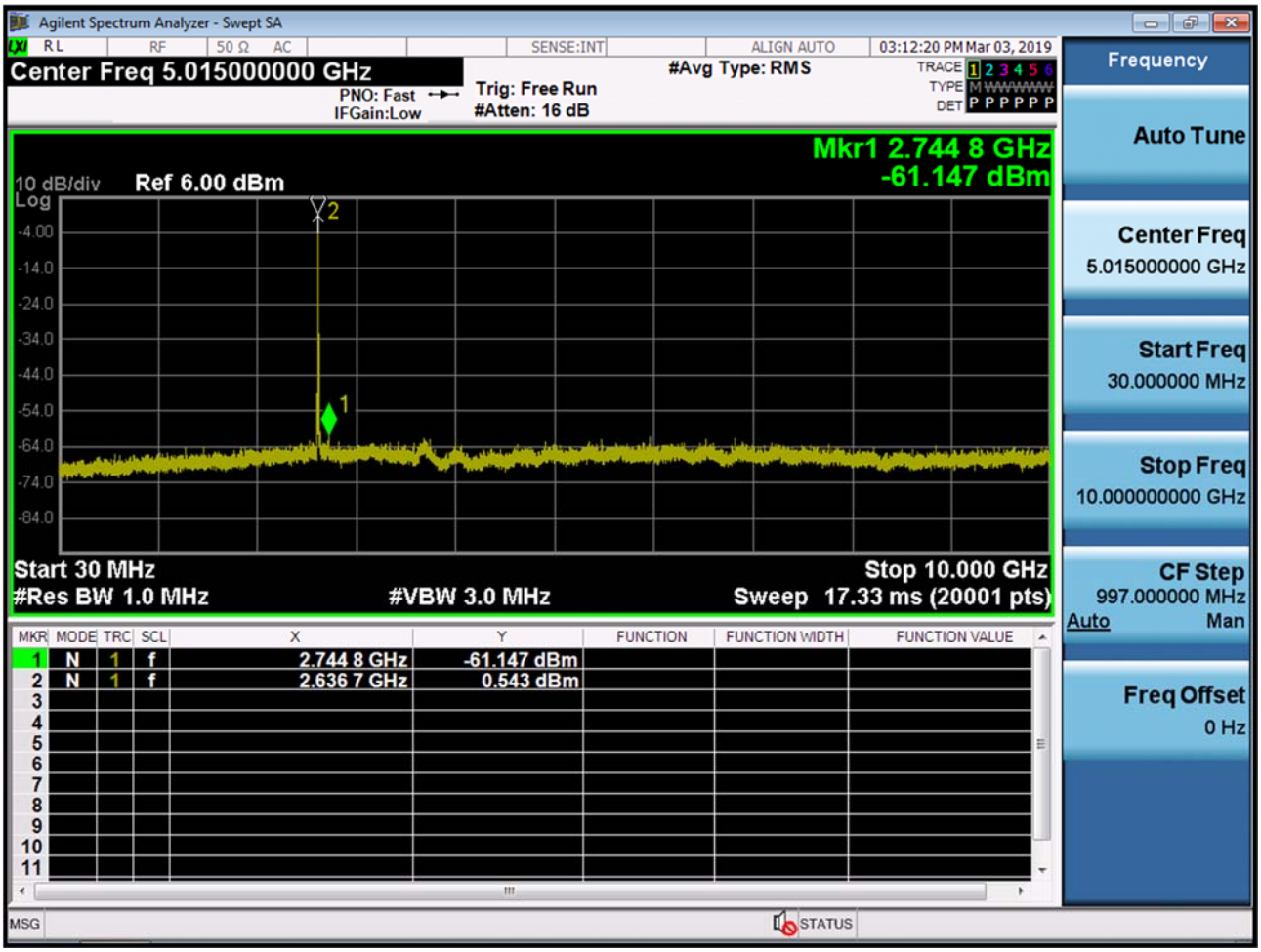
PCC 20MHz Ch40740 RB100 Offset0

SCC 15MHz Ch40569 RB75 Offset0



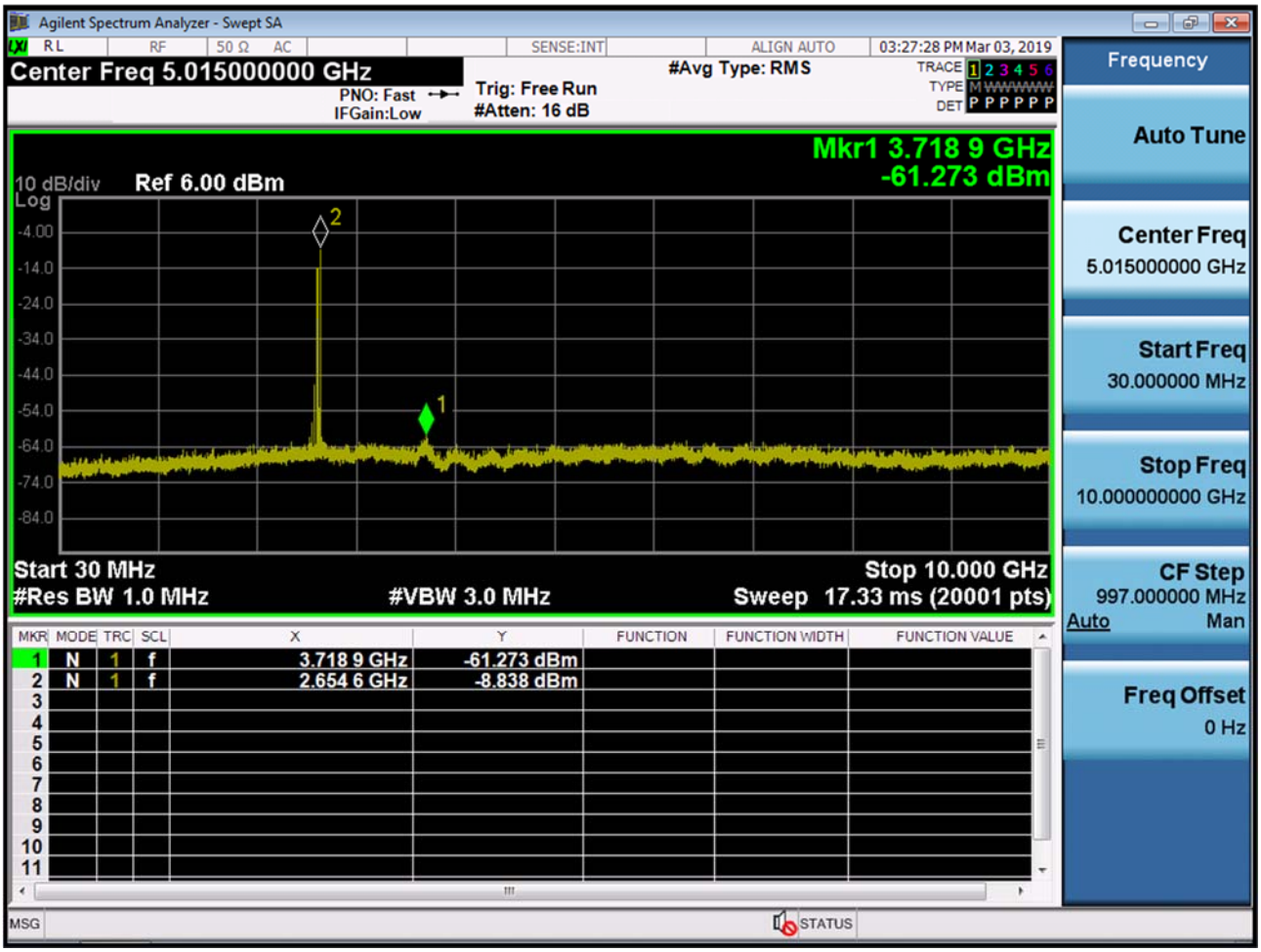
PCC 20MHz Ch41140 RB1 Offset0

SCC 10MHz Ch40996 RB1 Offset49



PCC 20MHz Ch41140 RB1 Offset99

SCC 10MHz Ch40996 RB1 Offset0



Frequency Range : 10GHz ~ 26.5GHz

PCC 15MHz Ch41165 RB75 Offset0

SCC 10MHz Ch41045 RB45 Offset0

PCC 20MHz Ch40340 RB1 Offset0

SCC 10MHz Ch40484 RB1 Offset49

PCC 20MHz Ch40340 RB1 Offset99

SCC 10MHz Ch40484 RB1 Offset0

PCC 20MHz Ch40340 RB100 Offset0

SCC 15MHz Ch40511 RB75 Offset0

PCC 20MHz Ch40740 RB1 Offset0

SCC 10MHz Ch40596 RB1 Offset49

PCC 20MHz Ch40740 RB1 Offset99

SCC 10MHz Ch40596 RB1 Offset0

PCC 20MHz Ch40740 RB1 Offset99

SCC 10MHz Ch40596 RB1 Offset0

PCC 20MHz Ch40740 RB1 Offset0

SCC 15MHz Ch40569 RB75 Offset0

PCC 20MHz Ch41140 RB1 Offset0

SCC 10MHz Ch40996 RB1 Offset49

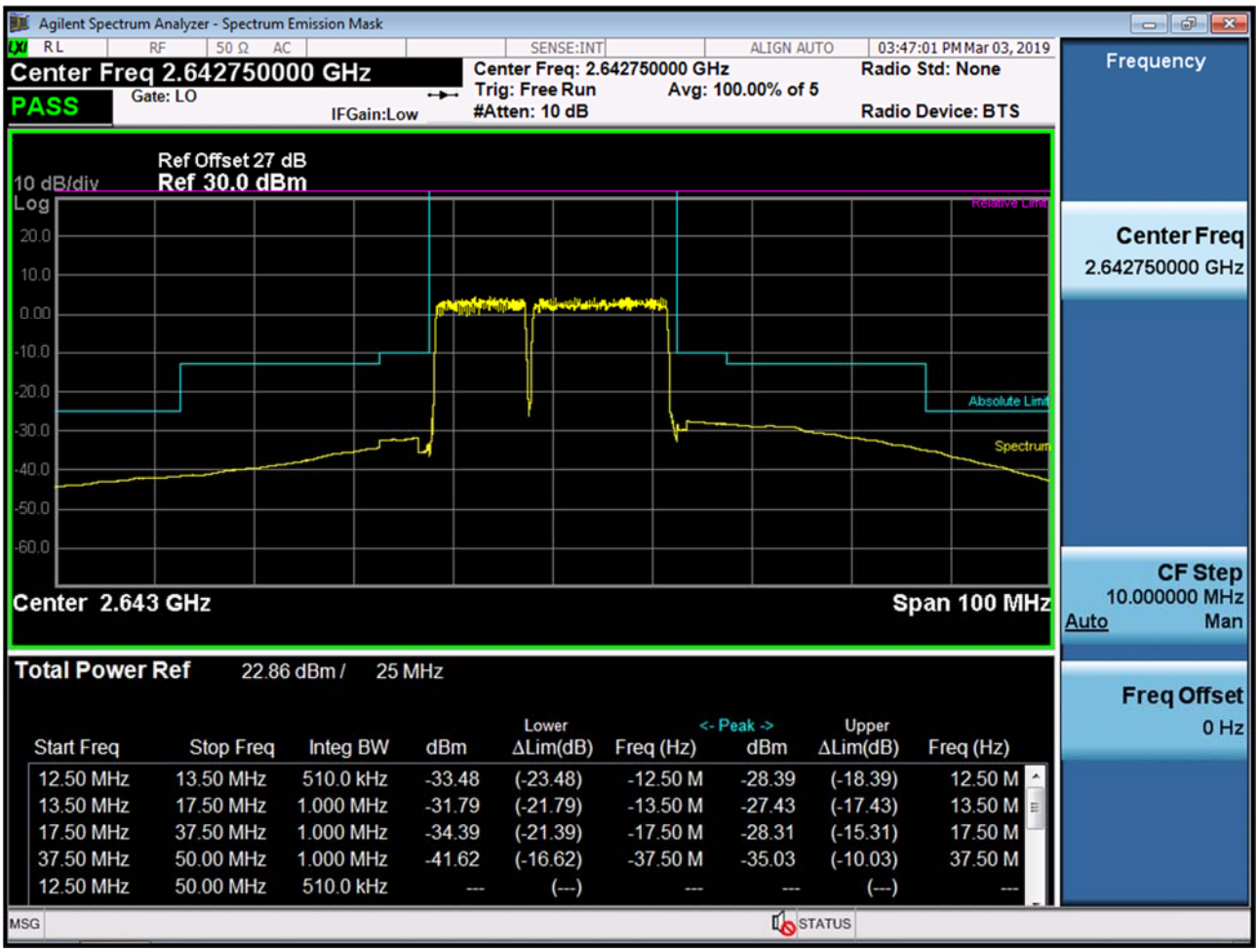
PCC 20MHz Ch41140 RB1 Offset99

SCC 10MHz Ch40996 RB1 Offset0

8.4 Channel Edge

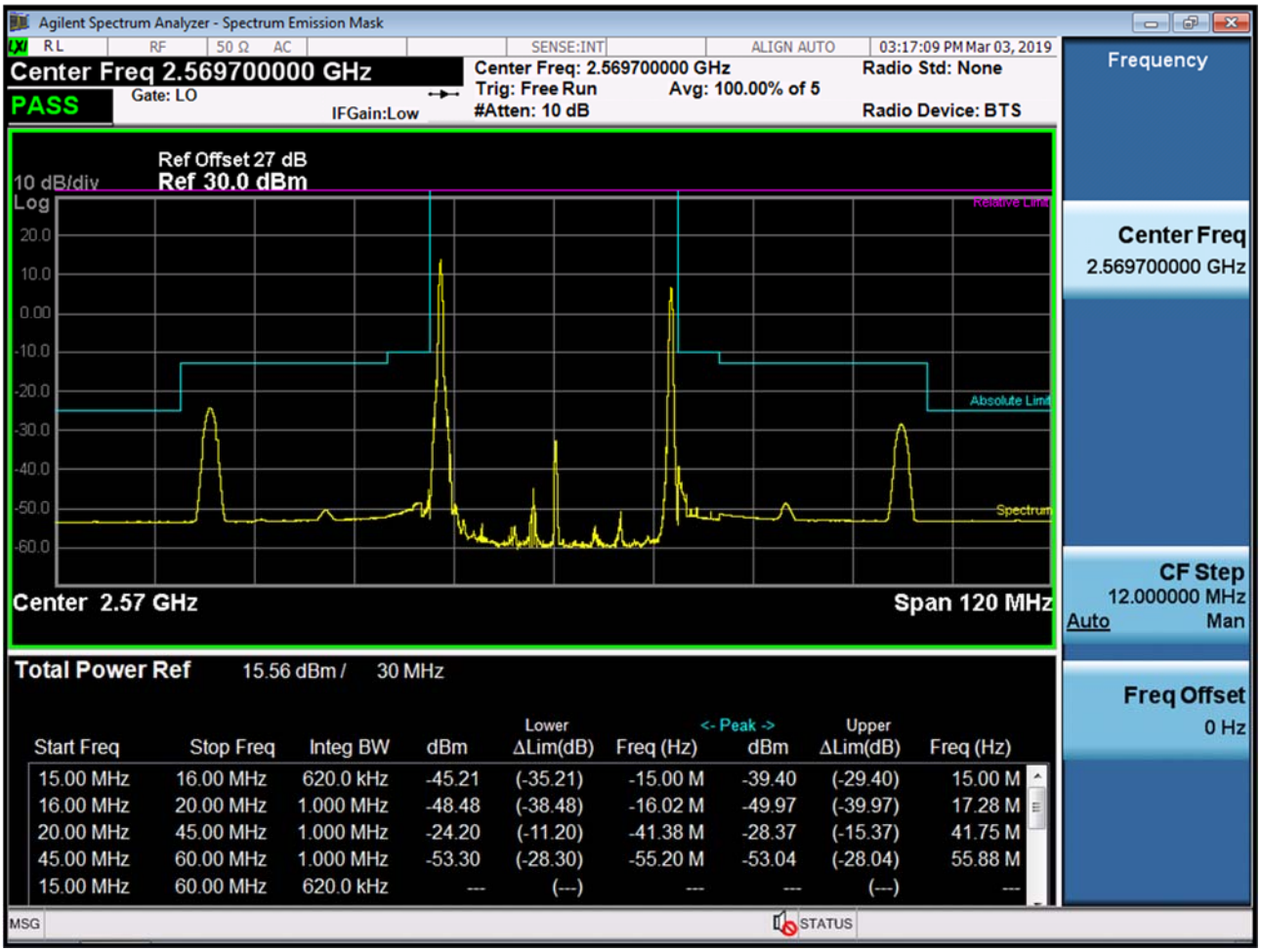
PCC 15MHz Ch41165 RB75 Offset0,

SCC 10MHz Ch41045 RB45 Offset0



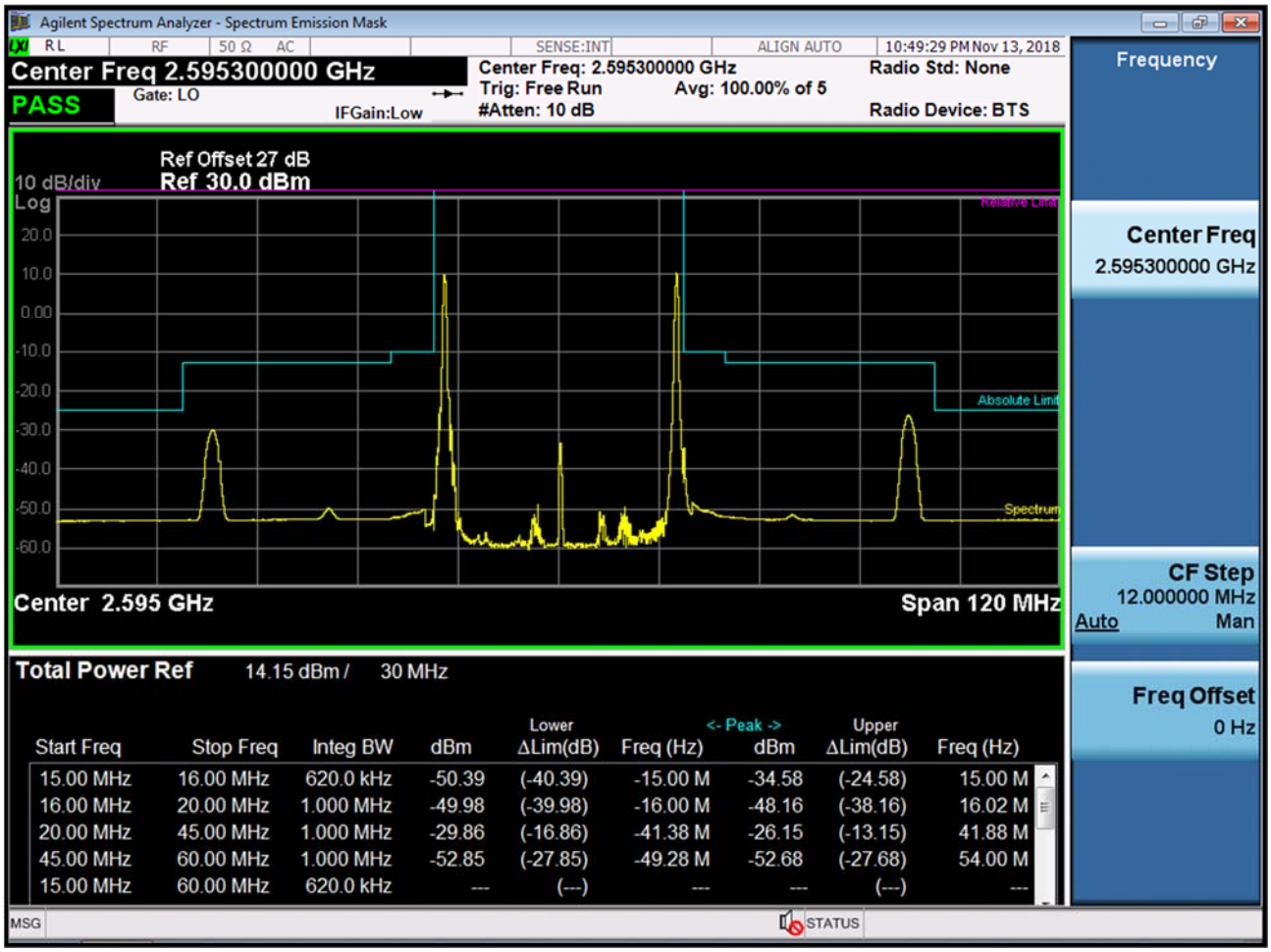
PCC 20MHz Ch40340 RB1 Offset0,

SCC 10MHz Ch40484 RB1 Offset49



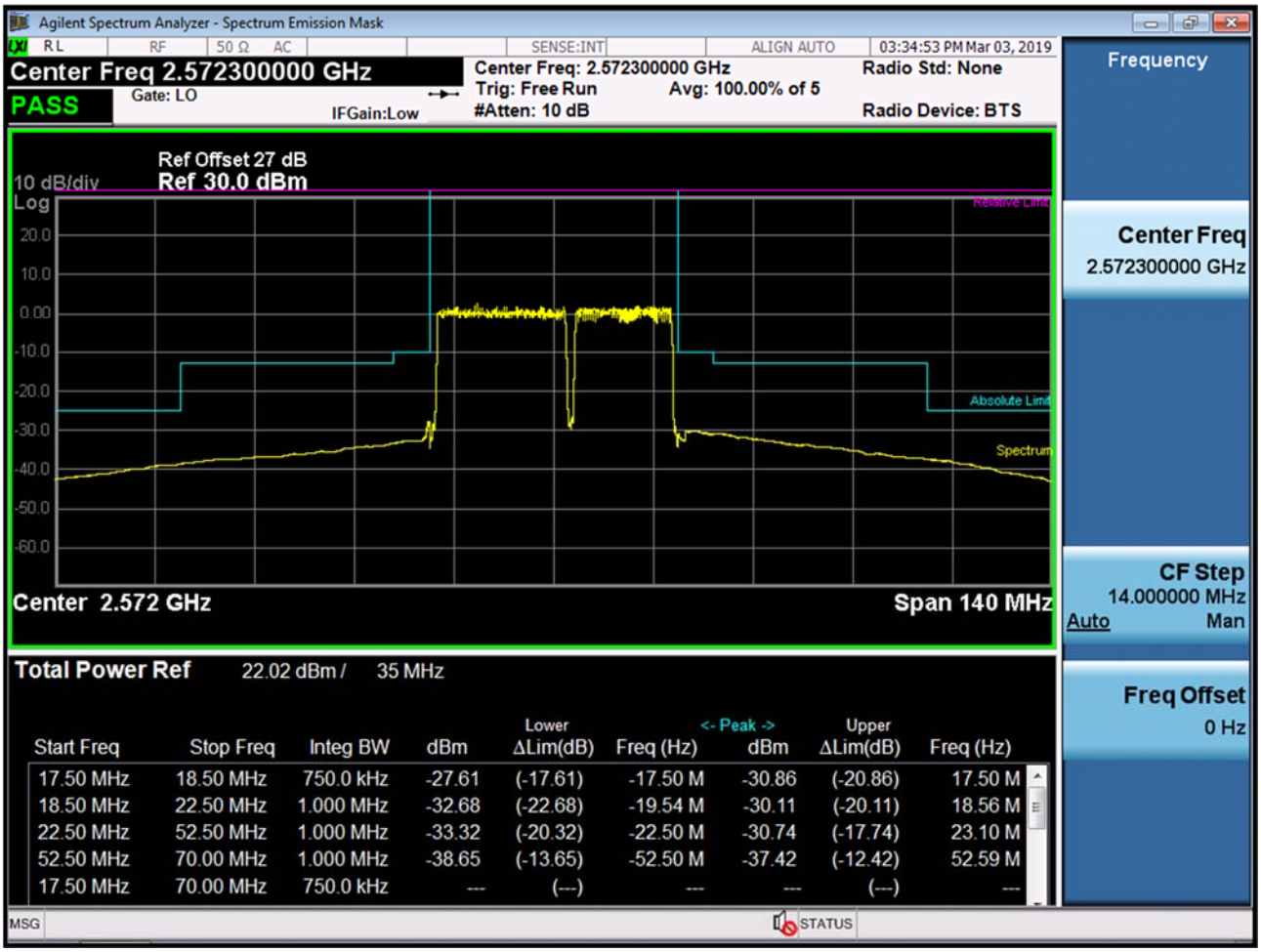
PCC 20MHz Ch40340 RB1 Offset99,

SCC 10MHz Ch40484 RB1 Offset0



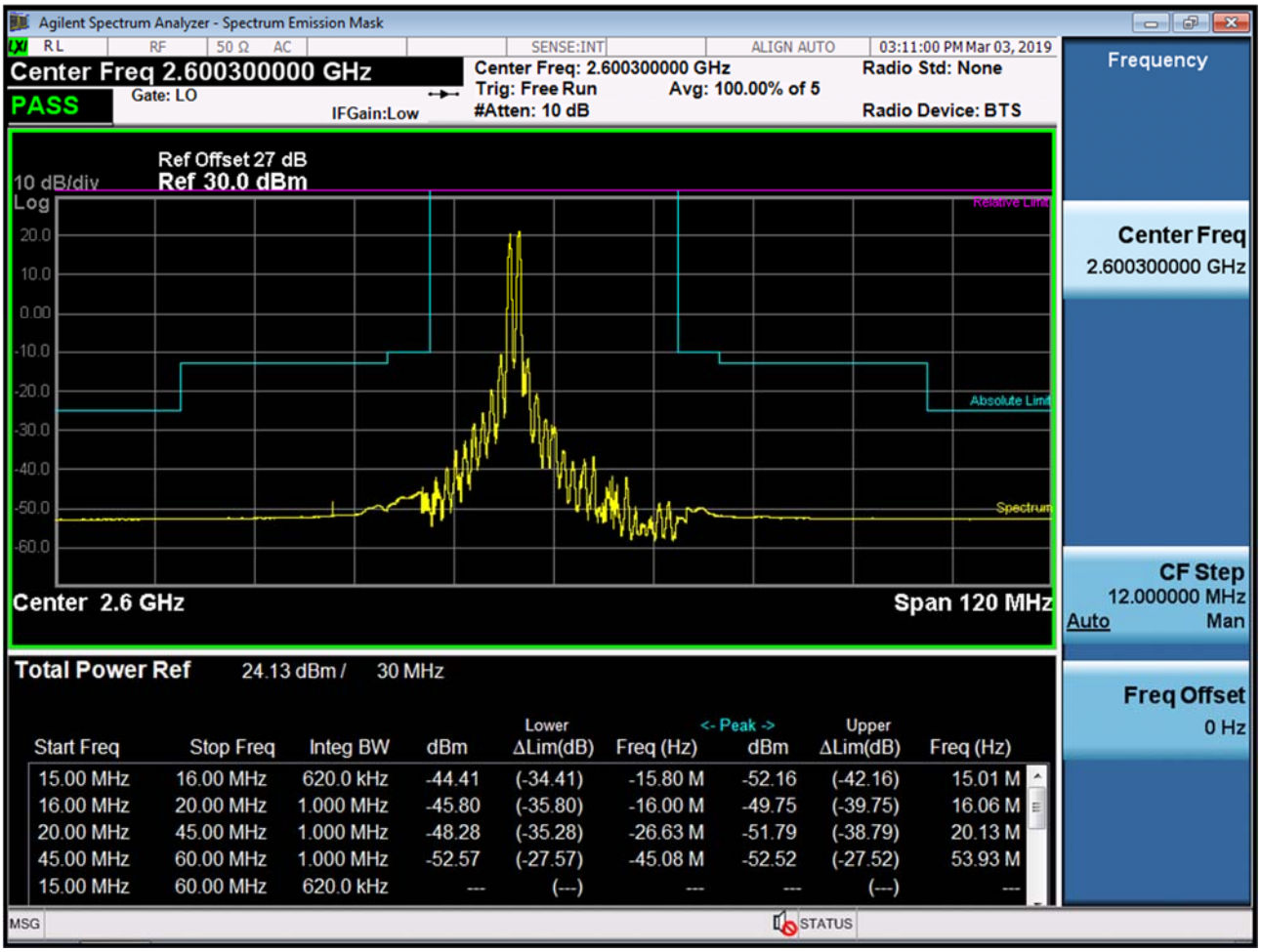
PCC 20MHz Ch40340 RB100 Offset0,

SCC 15MHz Ch40511 RB75 Offset0



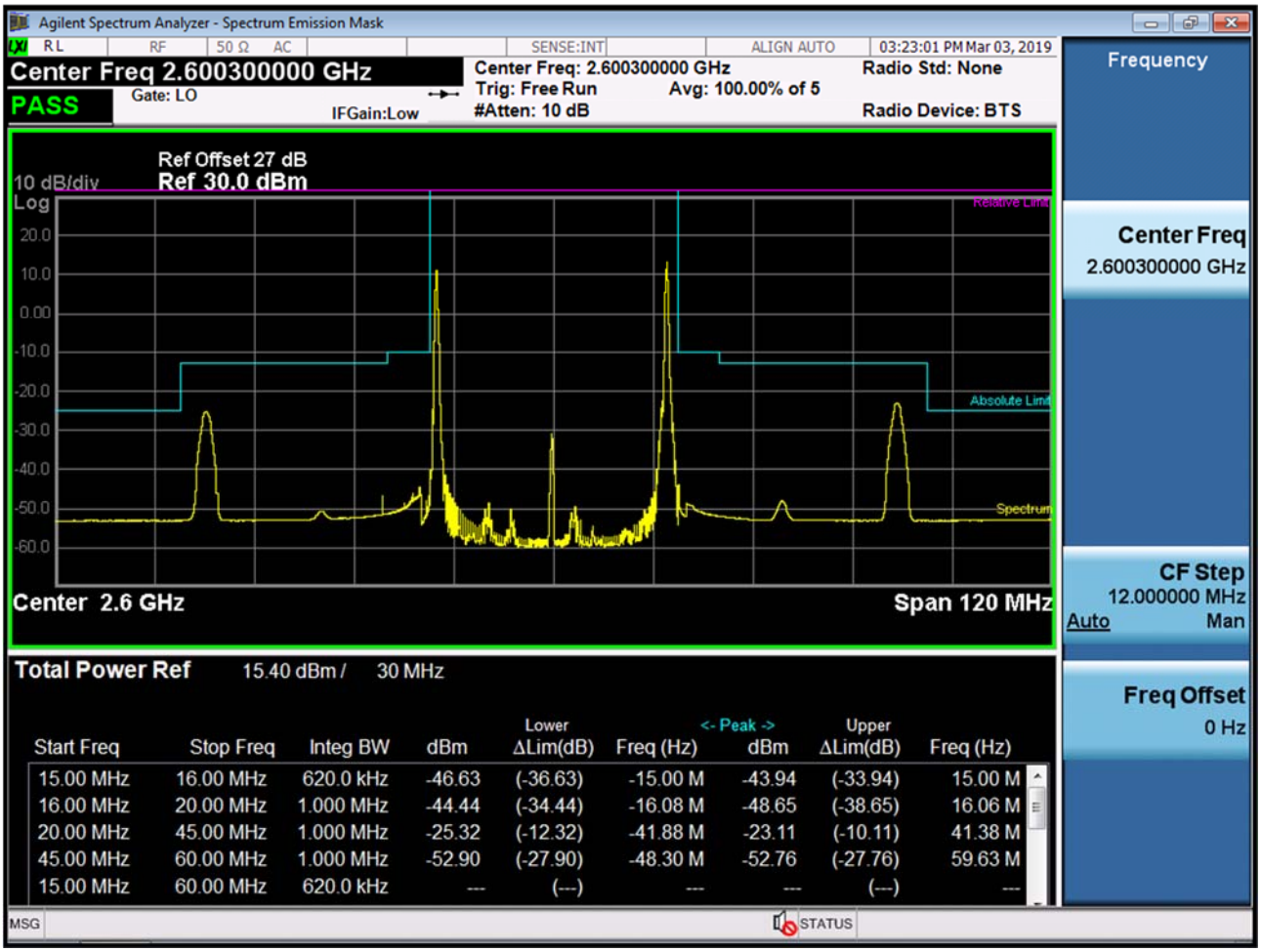
PCC 20MHz Ch40740 RB1 Offset0,

SCC 10MHz Ch40596 RB1 Offset49



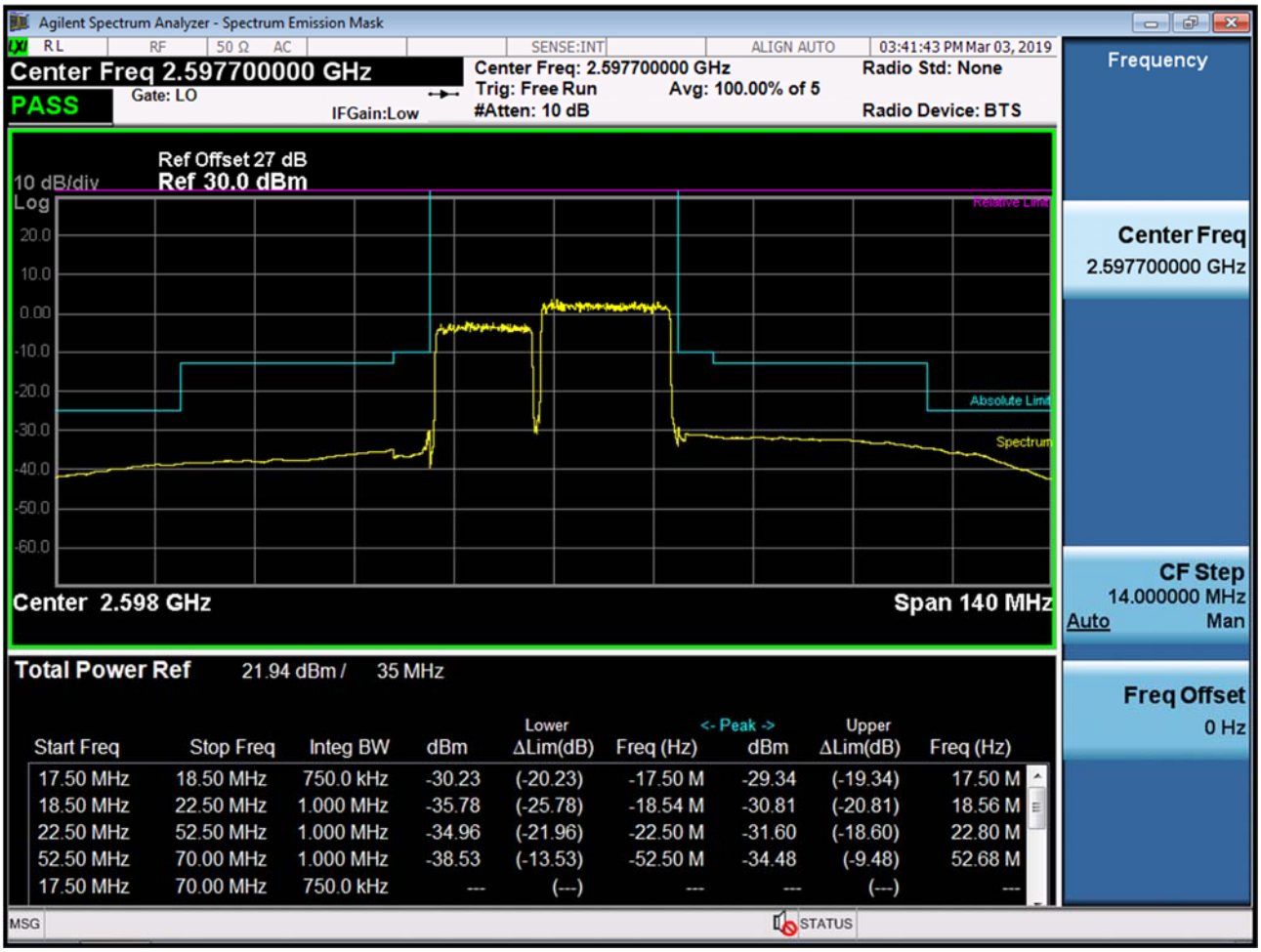
PCC 20MHz Ch40740 RB1 Offset99,

SCC 10MHz Ch40596 RB1 Offset0



PCC 20MHz Ch40740 RB100 Offset0,

SCC 15MHz Ch40569 RB75 Offset0



PCC 20MHz Ch41140 RB1 Offset0,

SCC 10MHz Ch40996 RB1 Offset49