TEST REPORT

Dt&C

DT&C Co., Ltd.

42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042 Tel : 031-321-2664, Fax : 031-321-1664

- 1. Report No : DRTFCC2002-0029(1)
- 2. Customer
 - Name : LG Electronics USA, Inc.
 - Address : 1000 Sylvan Ave. Englewood Cliffs, New Jersey, United States 07632
- 3. Use of Report : FCC Original Grant
- 4. Product Name / Model Name : Mobile Phone / LM-V601V FCC ID : ZNFV601V
- 5. Test Method Used : KDB558074 D01v05r02, ANSI C63.10-2013 Test Specification : FCC Part 15.247
- 6. Date of Test : 2020.01.08 ~ 2020.02.03
- 7. Testing Environment : See appended test report.
- 8. Test Result : Refer to the attached test result.

A 551	Tested by		Reviewed by	£	
Affirmation	Name : JungWoo Kim	Statut	Name : JaeJin Lee	HE.	(Signature)

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

2020.02.13.

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net



Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRTFCC2002-0029	Feb. 05, 2020	Initial issue	JungWoo Kim	JaeJin Lee
DRTFCC2002-0029(1)	Feb. 13, 2020	Update the add model name	JungWoo Kim	JaeJin Lee



Table of Contents

1. EUT DESCRIPTION	. 4
2. INFORMATION ABOUT TESTING	
2.1 Test mode	5
2.2 Auxiliary equipment	5
2.3 Tested environment	6
2.4 EMI suppression Device(s) / Modifications	6
2.5 Measurement Uncertainty	6
3. SUMMARY OF TESTS	. 7
4. TEST METHODOLOGY	. 8
4.1 EUT configuration	8
4.2 EUT exercise	8
4.3 General test procedures	8
4.4 Description of test modes	8
5. INSTRUMENT CALIBRATION	. 9
6. FACILITIES AND ACCREDITATIONS	. 9
6.1 Facilities	9
6.2 Equipment	9
7. ANTENNA REQUIREMENTS	. 9
8. TEST RESULT	10
8.1 6dB bandwidth	10
8.2 Maximum peak conducted output power	19
8.3 Maximum power spectral density	22
8.4 Out of band emissions at the band edge / conducted spurious emissions	
8.5 Radiated spurious emissions	64
8.6 Power-line conducted emissions	74
9. LIST OF TEST EQUIPMENT	77
	78
	81

1. EUT DESCRIPTION

FCC Equipment Class	Digital Transmission System(DTS)
Product	Mobile Phone
Model Name	LM-V601V
Add Model Name	LMV601V, V601V
Power Supply	DC 3.87 V
Frequency Range	▪ 802.11b/g/n/ac(20 MHz) : 2412 MHz ~ 2462 MHz
Max. RF Output Power	2.4GHz Band • 802.11b : 17.50 dBm • 802.11g : 22.64 dBm • 802.11n (HT20) : 22.01 dBm • 802.11ac (VHT20) : 21.94 dBm
Modulation Type	• 802.11b: CCK, DSSS • 802.11g/n/ac: OFDM
Antenna Specification	Antenna type: Internal antenna Antenna gain: -0.72 dBi

Transmitting configuration of EUT

Mode	Data rate
802.11b	1~11 Mbps
802.11g	6~54Mbps
802.11n(HT20)	MCS 0 ~ 7
802.11ac(VHT20)	MCS 0 ~ 8

2. INFORMATION ABOUT TESTING

2.1 Test mode

Test mode	Worst case data rate	Tested Frequency (MHz)			
TM 1	802.11b 5.5 Mbps (Single transmitting)	2412	2437	2462	
TM 2	802.11g 24 Mbps (Single transmitting)	2412 2437 2462			
ТМ 3	802.11n(HT20) MCS 4 (Single transmitting)	2412	2437	2462	
TM 4	802.11ac(VHT20) NSS1 MCS 6 (Single transmitting)	2412	2437	2462	

Note1: The worst case data rate was determined according to the power measurements.

Note2: The power measurement results for all modes and data rate were reported.

2.2 Auxiliary equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
-	-	-	-	-
-	-	-	-	-

2.3 Tested environment

Temperature	: 20 °C ~ 25 °C	
Relative humidity content	: 35 % ~ 45 %	
Details of power supply	: DC 3.87 V	

2.4 EMI suppression Device(s) / Modifications

EMI suppression device(s) added and/or modifications made during testing \rightarrow None

2.5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C63.4-2014 and ANSI C63.10-2013. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

Test items	Measurement uncertainty
Transmitter Output Power	0.7 dB (The confidence level is about 95 %, $k = 2$)
Conducted spurious emission	0.9 dB (The confidence level is about 95 %, k = 2)
AC conducted emission	2.4 dB (The confidence level is about 95 %, k = 2)
Radiated spurious emission (1 GHz Below)	5.1 dB (The confidence level is about 95 %, k = 2)
Radiated spurious emission (1 GHz ~ 18 GHz)	5.4 dB (The confidence level is about 95 %, k = 2)
Radiated spurious emission (18 GHz Above)	5.3 dB (The confidence level is about 95 %, k = 2)

3. SUMMARY OF TESTS

FCC Part Section(s)	RSS Std.	Parameter	Limit	Test Condition	Status Note 1
15.247(a)	RSS-247 [5.2]	6 dB Bandwidth	> 500 kHz		С
15.247(b)	RSS-247 [5.4]	Transmitter Output Power	< 1 Watt		С
15.247(d)	RSS-247 [5.5]	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW	Conducted	с
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8 dBm/3 kHz		с
-	RSS-Gen [6.6]	Occupied Bandwidth (99 %)	RSS-Gen(6.6)		NA
15.247(d) 15.205 15.209	RSS-247 [5.5] RSS-GEN [8.9] RSS-GEN [8.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 limits	Radiated	C Note 3, 4
15.207	RSS-Gen [8.8]	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	С
15.203	-	Antenna Requirements	FCC 15.203	_	С

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable

Note 2: For radiated emission tests below 30 MHz were performed on semi-anechoic chamber which is correlated with OATS.

Note 3: This test item was performed in each axis and the worst case data was reported.

Note 4: This device supports wireless charging & Can use Dual Screen.

So per KDB648474 D03v01r0, the radiated test items were performed all not charging, charging and Dual Screen conditions, the handset is placed on the representative charging pad under normal conditions and in a simulated call configuration.



4. TEST METHODOLOGY

The measurement procedures described in the ANSI C63.10-2013 and the guidance provided in KDB558074 D01v05r02 were used in measurement of the EUT.

The EUT was tested per the guidance of KDB558074 D01v05r02. And ANSI C63.10-2013 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing.

4.1 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.

4.2 EUT exercise

The EUT was operated in the test 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 Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

4.3 General test procedures

Conducted Emissions

The power-line conducted emission test procedure is not described on the KDB558074 D01v05r02.

So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10-2013.

The EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector

Radiated Emissions

Basically the radiated tests were performed with KDB558074 D01v05r02. But some requirements and procedures like test site requirements, EUT setup and maximizing procedure were fulfilled with the requirements in Section 5 and 6 of the ANSI C63.10 as stated on section 12.1 of the KDB558074 D01v05r02.

The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes.

4.4 Description of test modes

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.



5. 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.

6. FACILITIES AND ACCREDITATIONS

6.1 Facilities

DT&C Co., Ltd.

The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042. The test site complies with the requirements of § 2.948 according to ANSI C63.4-2014.

- FCC MRA Accredited Test Firm No. : KR0034

www.dtnc.net		
Telephone	•	+ 82-31-321-2664
FAX	:	+ 82-31-321-1664

6.2 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, loop, horn. Spectrum analyzers with pre-selectors and peak, 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."

7. ANTENNA REQUIREMENTS

7.1 According to FCC 47 CFR §15.203

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The antenna is attached on the device by means of unique coupling method (Spring Tension). Therefore this E.U.T Complies with the requirement of §15.203

8. TEST RESULT

8.1 6dB bandwidth

■ Test Requirements and limit, §15.247(a) & RSS-247 [5.2]

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

Test Configuration:

Refer to the APPENDIX I.

Test Procedure:

- KDB558074 D01v05r02 Section 8.2
- ANSI C63.10-2013 Section 11.8.2

Option 2

- 1. Set resolution bandwidth (RBW) = 100 kHz.
- 2. Set the video bandwidth (VBW) \ge 3 x RBW.

(RBW : 100 kHz / VBW : 300 kHz)

3. Detector = Peak.

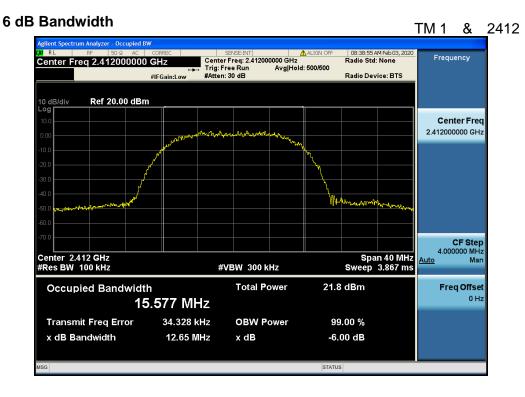
- 4. Trace mode = **Max hold**.
- 5. Sweep = Auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level in the fundamental emission.

Test Results: Comply

Test Mode	Frequency	Test Results[MHz]
	2412	12.65
TM1	2437	13.10
	2462	13.11
	2412	16.45
TM 2	2437	16.47
	2462	16.43
	2412	15.31
ТМ 3	2437	16.55
	2462	15.14
	2412	17.75
ТМ 4	2437	17.73
	2462	17.69

RESULT PLOTS



6 dB Bandwidth

TM 1 & 2437



6 dB Bandwidth



Dt&C

6 dB Bandwidth



6 dB Bandwidth

TM 2 & 2437



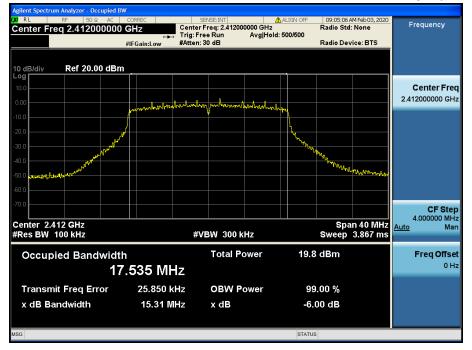
Dt&C

6 dB Bandwidth



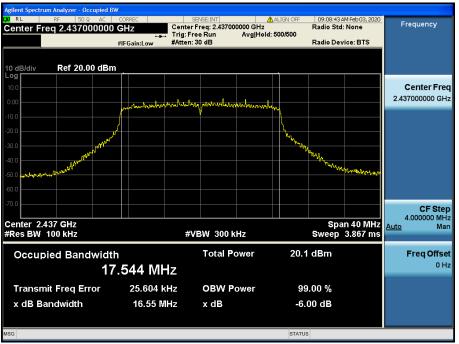
6 dB Bandwidth

TM 3 & 2412



6 dB Bandwidth

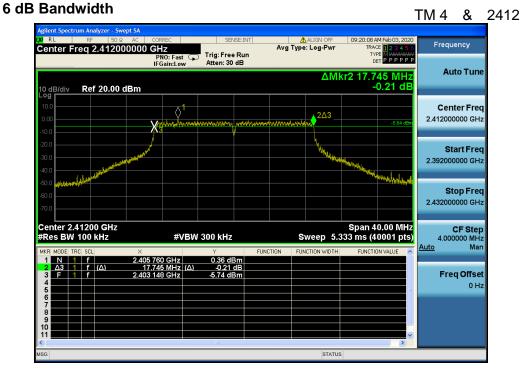
TM 3 & 2437



6 dB Bandwidth



🛈 Dt&C



6 dB Bandwidth

TM 4 & 2437



Dt&C

6 dB Bandwidth

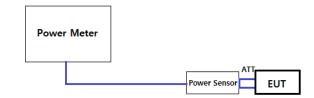


8.2 Maximum peak conducted output power

■ Test Requirements and limit, §15.247(b) & RSS-247 [5.4]

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

1. PKPM1 Peak power meter method of KDB558074 D01v05r02

The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

2. Method AVGPM-G (Measurement using a gated RF average power meter) of KDB558074 D01v05r02

The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.



Test Results: Comply

F	-	Maximum Peak Conducted Output Power (dBm) for 802.11b											
Freq. (MHz)	Det.	Data Rate [Mbps]											
		1	2	5.5	11	-	-	-	-				
2412	PK	17.10	17.11	17.10	17.15	-	-	-	-				
2412	AV	14.12	14.10	14.19	14.14	-	-	-	-				
2437	PK	17.49	17.47	17.50	17.48	-	-	-	-				
2437	AV	14.33	14.31	14.41	14.32	-	-	-	-				
2462	PK	17.26	17.27	17.28	17.28	-	-	-	-				
2462	AV	14.29	14.29	14.37	14.29	-	-	-	-				

F actor		Maximum Peak Conducted Output Power (dBm) for <u>802.11g</u>										
Freq. (MHz)	Det.	Data Rate [Mbps]										
		6	9	12	18	24	36	48	54			
2412	PK	19.57	19.70	18.74	20.55	22.34	22.03	21.96	22.05			
2412	AV	13.86	13.89	13.55	13.60	13.28	13.25	13.27	13.23			
2437	PK	19.82	20.00	18.97	20.71	22.64	22.15	22.13	22.27			
2437	AV	14.21	14.24	13.22	13.83	13.58	13.52	13.60	13.53			
2462	PK	19.49	19.72	19.04	20.64	22.21	21.98	21.96	22.11			
2462	AV	13.98	14.00	13.18	13.78	13.44	13.39	13.35	13.38			



F ree		Maximum Peak Conducted Output Power (dBm) for <u>802.11n(HT20)</u>											
Freq. (MHz)	Det.	Data Rate [MCS]											
		0	1	2	3	4	5	6	7				
2412	PK	18.71	18.67	19.48	19.44	21.80	21.48	21.46	21.73				
2412	AV	12.64	12.62	12.31	12.28	12.38	12.36	12.39	12.39				
2437	PK	18.87	18.85	19.72	19.72	22.01	21.73	21.70	21.83				
2437	AV	12.91	12.89	12.63	12.61	12.56	12.54	12.56	12.52				
2462	PK	18.85	18.75	19.54	19.70	21.78	21.57	21.55	21.65				
2462	AV	12.84	12.81	12.54	12.54	12.52	12.49	12.53	12.51				

Ere e		Maximum Peak Conducted Output Power (dBm) for <u>802.11ac(VHT20)</u>											
Freq. (MHz)	Det.	Data Rate [MCS]											
		0	1	2	3	4	5	6	7	8			
2412	PK	18.72	18.71	19.41	19.45	21.78	21.62	21.90	21.61	21.82			
2412	AV	12.63	12.64	12.30	12.29	12.41	12.39	12.42	12.39	12.39			
2437	PK	18.90	18.81	19.66	19.64	21.73	21.76	21.94	21.66	21.93			
2437	AV	12.90	12.90	12.65	12.64	12.56	12.52	12.55	12.56	12.53			
2462	PK	18.94	18.89	19.63	19.68	21.71	21.65	21.76	21.55	21.73			
2462	AV	12.84	12.83	12.54	12.55	12.53	12.52	12.51	12.51	12.53			

8.3 Maximum power spectral density

Test requirements and limit, §15.247(e) & RSS-247 [5.2]

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Configuration:

Refer to the APPENDIX I.

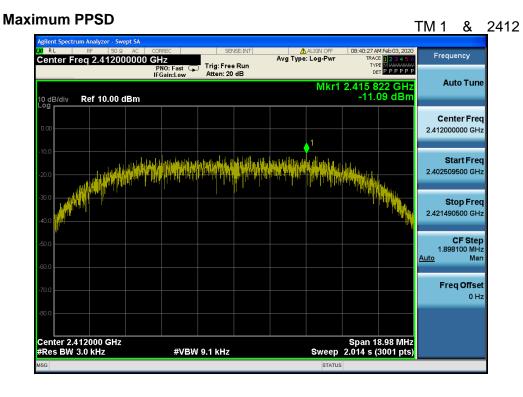
Test Procedure

- KDB558074 D01v05r02 Section 8.4
- ANSI C63.10-2013 Section 11.10.2
- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to **1.5 times** the DTS bandwidth.
- 3. Set the RBW to : **3 kHz** ≤ RBW ≤ **100 kHz**
- 4. Set the VBW ≥ 3 x RBW
- 5. Detector = **Peak**
- 6. Sweep time = Auto couple
- 7. Trace mode = Max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Results: Comply

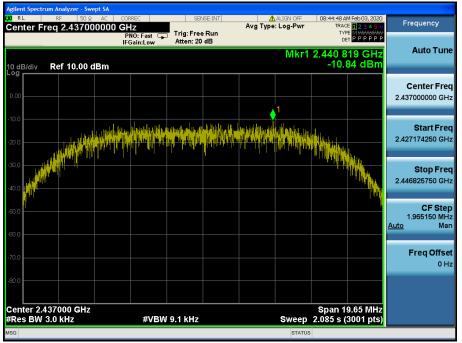
Test Mode	Frequency	RBW	PKPSD [dBm]	Limit [dBm]
	2412	3 kHz	-11.09	8.00
TM 1	2437	3 kHz	-10.84	8.00
	2462	3 kHz	-10.73	8.00
	2412	3 kHz	-11.77	8.00
TM 2	2437	3 kHz	-10.97	8.00
	2462	3 kHz	-11.07	8.00
	2412	3 kHz	-11.54	8.00
TM 3	2437	3 kHz	-11.61	8.00
	2462	3 kHz	-10.89	8.00
	2412	3 kHz	-13.07	8.00
TM 4	2437	3 kHz	-12.40	8.00
	2462	3 kHz	-12.26	8.00

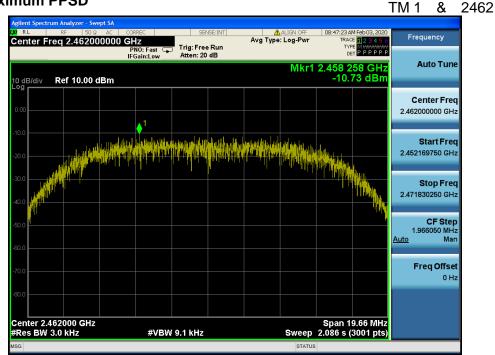
RESULT PLOTS



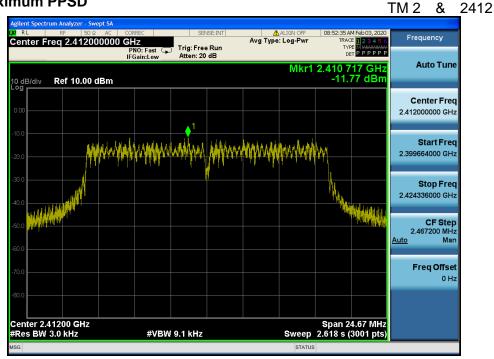
Maximum PPSD

TM 1 & 2437



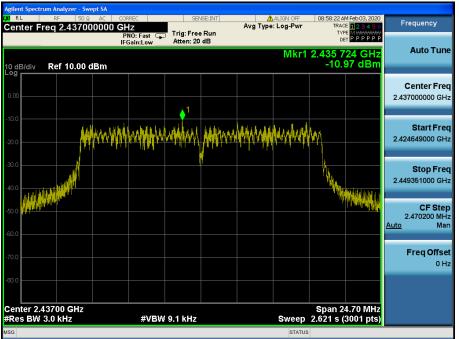


Maximum PPSD



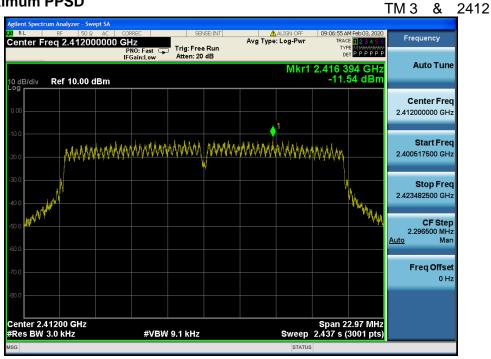
Maximum PPSD

<u>TM 2 & 2437</u>





Maximum PPSD



Maximum PPSD

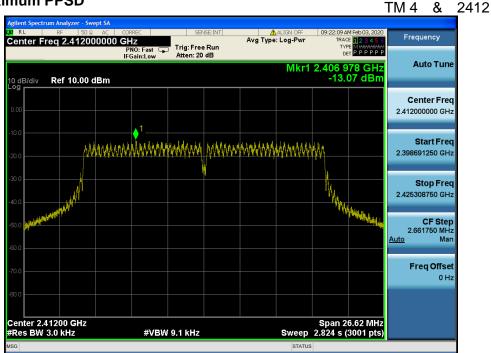
TM 3 & 2437



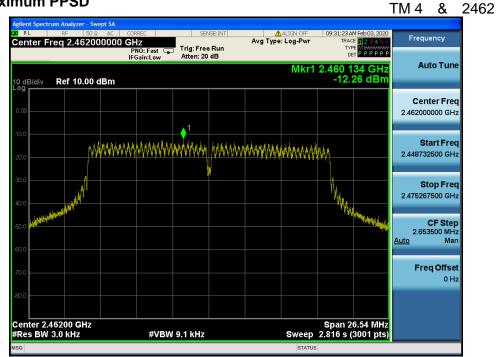


Dt&C

Maximum PPSD







8.4 Out of band emissions at the band edge / conducted spurious emissions

Test requirements and limit, §15.247(d) & RSS-247 [5.5]

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level. If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level. If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in band average PSD level.

In either case, attenuation to levels below the general emission limits specified in §15.209(a) is not required.

Test Configuration:

Refer to the APPENDIX I.

Test Procedure

- KDB558074 D01v05r02 Section 8.5
- ANSI C63.10-2013 Section 11.11

Reference level measurement

- 1. Set instrument center frequency to DTS channel center frequency.
- 2. Set the span to \geq 1.5 times the DTS bandwidth.
- 3. Set the RBW = 100 kHz.
- 4. Set the VBW \geq 3 x RBW.
- 5. Detector = Peak.
- 6. Sweep time = Auto couple.
- 7. Trace mode = Max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum PSD level.

Emission level measurement

- 1. Set the center frequency and span to encompass frequency range to be measured.
- 2. Set the RBW = 100 kHz. (Actual 1 MHz , See below note)
- 3. Set the VBW \geq 3 x RBW. (Actual 3 MHz, See below note)
- 4. Detector = **Peak**.
- 5. Ensure that the number of measurement points \geq Span / RBW.
- 6. Sweep time = Auto couple.
- 7. Trace mode = **Max hold.**
- 8. Allow the trace to stabilize. (this may take some time, depending on the extent of the span)
- 9. Use the peak marker function to determine the maximum amplitude level.

Note: The conducted spurious emission was tested with below settings. Frequency range: 9 kHz ~ 30 MHz RBW = 100 kHz, VBW = 300 kHz, Sweep time = Auto, Detector = Peak, Trace = Max hold, Sweep points: 40001 Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~ 25 GHz

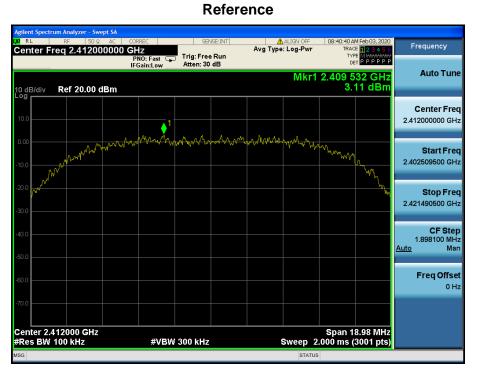
RBW = 1 MHz, VBW = 3 MHz, Sweep time = Auto, Detector = Peak, Trace = Max hold, Sweep points: 40001

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

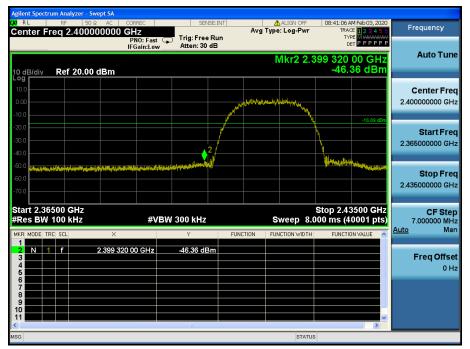
If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

RESULT PLOTS

TM 1 & 2412



Low Band-edge



Agilent Spectrum Analyzer - Sw WRL RF 50 Q Center Freq 15.004	▲DC CORREC	SENSE:INT	Aug Type: Log-Pwr	08:41:14 AM Feb 03, 2020 TRACE 1 2 3 4 5 6 TYPE MWAAAAAAA DET P P P P P P	Frequency
10 dB/div Ref 20.00				Mkr1 283.4 kHz -47.45 dBm	Auto Tune
Log 10.0 					Center Freq 15.004500 MHz
-20.0				-16.89 dBm	Start Freq 9.000 kHz
-50.0	ารรักษีของออกก็ไม้การรากกรูกกระจากสีสุราที่มีป	ารการแรงสาวเหตุการการการการการการการการการการการการการก	รุกสารที่ของสารที่สุดสารที่สุดสารที่สุดสารที่สุดสารที่สุดสารที่สุดสารที่สุดสารที่สารที่สุดสารที่สารที่สารที่สาร	All Anno si ali sente per anno si al	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	X		Sweep 5.	Stop 30.00 MHz 333 ms (40001 pts) FUNCTION VALUE	CF Step 2.999100 MHz <u>Auto</u> Man
1 N 1 F 2 3 4 4 5 6	283.4 kHz	-47.45 dBm			Freq Offset 0 Hz
7 8 9 9 10 11				×	
MSG			STATU	DC Coupled	

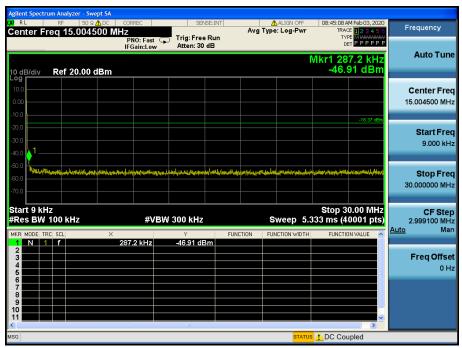
Agilent Spectr	um Analyzer - Swept SA RF 50 Ω AC						
	req 5.01500000	0 GHz	ast 😱 Trig: Free		ALIGN OFF	08:41:22 AM Feb 03, 202 TRACE 1 2 3 4 5 TYPE	Frequency
		PNU: F IFGain:l				TYPE M WARMAN DET PPPPP	
10 dB/div	Ref 20.00 dBm	1			Mk	r5 3.257 29 GHz -36.01 dBm	1
10.0 0.00)1 					Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0		² ∕3 ∢		a paganéng ng kétatan ji a pagai		-16.89 dBn	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0							Stop Freq 10.000000000 GHz
Start 30 M #Res BW		;	≇VBW 3.0 MHz		Sweep 1	Stop 10.000 GHz 3.67 ms (40001 pts	997.000000 MHz
MKR MODE TF		<	Y	FUNCTION	N FUNCTION WIDTH	FUNCTION VALUE	Auto Man
1 N 1 2 N 1 3 N 1 4 N 1 5 N 1	f f f	2.415 07 GH 2.392 14 GH 2.679 53 GH 3.198 96 GH 3.257 29 GH	Iz -35.37 dl Iz -35.93 dl Iz -35.93 dl	3m 3m 3m			Freq Offset 0 Hz
6 7 8 9 10							-
11						×	
MSG					STATU	IS	

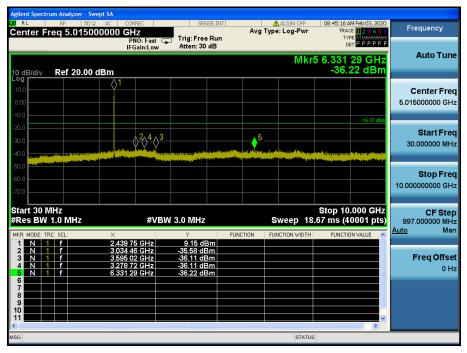


TM 1 & 2437

Reference







Agilent Spectrum Analyzer - S	wept SA				
	Ω AC CORREC	SENSE:INT	ALIGN OFF	08:45:24 AM Feb 03, 2020	Frequency
Center Freq 17.500	0000000 GHz PN0: Fast	Trig: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WANNAM	requercy
	IFGain:Low	Atten: 30 dB		DETPPPPP	
			Mkr3.2	4.924 625 GHz	Auto Tune
10 dB/div Ref 20.00	dBm			-26.32 dBm	
10.0					O antan Enan
					Center Freq
0.00					17.500000000 GHz
-10.0				-16.37 cm	
-20.0					Start Freq
-30.0				and the part of th	10.000000000 GHz
-40 0 - a collected as his electronication		and a second	and an and a second	and a second distant of the second distance of the	10.00000000 GH2
-50.0					
					Stop Freq
-60.0					25.000000000 GHz
-70.0					20.000000000000
Start 10.000 GHz #Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz
MKR MODE TRC SCL	× 24.747 625 GHz	Y F -26.07 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f	24.250 000 GHz	-26.25 dBm			
3 N 1 f	24.924 625 GHz	-26.32 dBm			Freq Offset
4				=	0 Hz
6					
7 8					
9					
10				~	
<		III III		>	
MSG			STATUS		

TM 1 & 2462

Reference



High Band-edge



TDt&C

Agilent Spectrum Analyzer - Swe					
IX RL RF 50 Ω₂ Center Freq 15.0045	00 MHz	SENSE: INT	ALIGN OFF	08:48:11 AM Feb 03, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P	Frequency
	PNO: Fast G IFGain:Low	Atten: 30 dB			Auto Tune
10 dB/div Ref 20.00 c	IBm			Mkr1 290.2 kHz -48.03 dBm	Auto Tune
Log 10.0 0.00					Center Freq 15.004500 MHz
-10.0				-16.07 dBm	
-20.0					Start Freq 9.000 kHz
-50.0 -60.0 -70.0	on al galler land and an angle angle a spare that and	chelfedrande etter solie producerie	าสสีที่สู่สีที่สูงที่สามารถสมุกว่ามากันแล้งที่สุดเสียงไปเกรรม -	aldılardıraşından çaşılardı tüşədəri i	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz		V 300 kHz		Stop 30.00 MHz .333 ms (40001 pts)	CF Step 2.999100 MHz Auto Man
MKR MODE TRC SCL	× 290.2 kHz	۲ -48.03 dBm	FUNCTION FUNCTION WIDTH	H FUNCTION VALUE	
2 3 4 5					Freq Offset 0 Hz
6 7 8 9					
10 11 <				×	
MSG			STAT	us 🕂 DC Coupled	

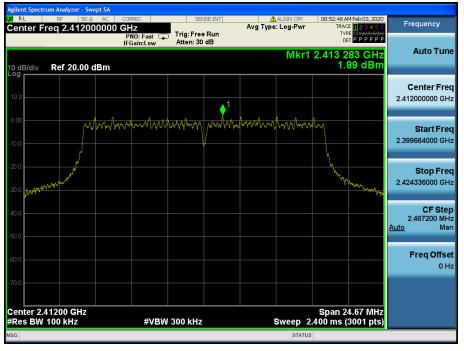
	um Analyzer - Sv								
Center F	RF 50 G		RREC Z	SENSE	Av	ALIGN OFF g Type: Log-Pwi	TRA	M Feb 03, 2020	Frequency
		P	NO:Fast G Gain:Low	Trig: Free R Atten: 30 dB			TY D		
			Guilleon			Mk	r5 2.031	98 GHz	Auto Tune
10 dB/div	Ref 20.00	dBm						87 dBm	
Log 10.0		1							Conton Error
0.00									Center Freq 5.015000000 GHz
-10.0									3.013000000 GHZ
-20.0								-16.07 dBm	
-30.0		5	3 🚜 🛛						Start Freq
-40.0		. The same state of the same of the		a an	and a line of the second second	ور برون و المحدث الم		and contributions	30.000000 MHz
-50.0	Contrast in the second second second	يختد فسأعتم ختراك						and the second data second	
-60.0									Stop Freq
-70.0									10.00000000 GHz
Start 30 N			-40 (55)					.000 GHz	CF Step
#Res BW			#VB	N 3.0 MHz			8.67 ms (4		997.000000 MHz Auto Man
MKR MODE TH	RC SCL	× 2.459 4	4 GHz	۷ 9.59 dBm	FUNCTION	FUNCTION WIDT	H FUNCTI	DN VALUE	
2 N 1	f	3.294 6	8 GHz	-35.48 dBm					Freq Offset
3 N 1 4 N 1	f	2.854 7 3.336 0	15 GHz	-35.77 dBm -35.82 dBm					0 Hz
5 N 1	f	2.031 9	8 GHz	-35.87 dBm				=	0112
7									
9									
10									
<				1111				<u>></u>	
MSG						STAT	US		



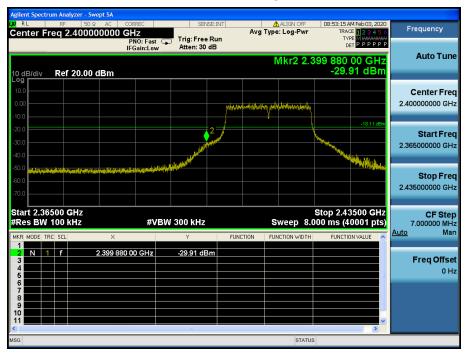


TM 2 & 2412

Reference



Low Band-edge



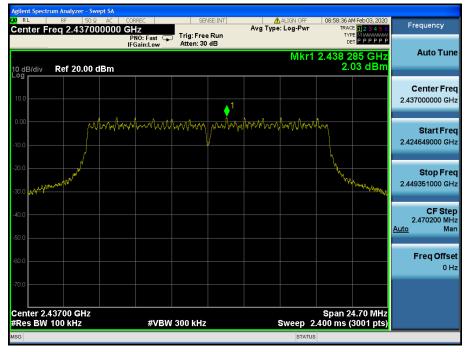
Agilent Spectrum Analyzer - Swe					
		SENSE:INT	ALIGN OFF	08:53:23 AM Feb 03, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 15.0045	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type. Log-rwi		
10 dB/div Ref 20.00 c	lBm		N	/kr1 290.2 kHz -47.97 dBm	Auto Tune
					Center Fred 15.004500 MH:
-20.0 -30.0 -40.0 2 1				-18.11 dBm	Start Fred 9.000 kH:
-60.0	ŧġŧĸĴĴĤŀŀIJĨŒŗĂĨŧţţIJŢŀĸŗĸĸĸĸŦĸĸŊ	ม่หลังกรุ่งเก่าใหม่เข้าหลุ่ม ใกล้ามีการร่าง _เ สหระ	hantostus madatten adams fasiki baki se	hainni 21849 gagta İngin (ang Dipata Alaq	Stop Free 30.000000 MH
Start 9 kHz ¢Res BW 100 kHz		300 kHz		Stop 30.00 MHz 33 ms (40001 pts)	CF Stej 2.999100 MH Auto Ma
MKR MODE TRC SCL 1 N 1 f 2 3 4 5	× 290.2 kHz	Y FUNC -47.97 dBm	TION FUNCTION WIDTH	FUNCTION VALUE	Freq Offse
6 7 8 9 10					
11 sg			STATUS	DC Coupled	

LXI RL	um Analyzer - Swept S RF 50 Q A req 5.0150000		SENSE:INT	ALIGN OFF	08:53:31 AM Feb 03, 202 TRACE 1 2 3 4 5 TYPE M WWWW	Frequency
10 dB/div	Ref 20.00 dBr	PNO: Fast 🕞 IFGain:Low) Trig: Free Run Atten: 30 dB	 Mkr	5 2.641 39 GHz -35.67 dBm	Auto Tune
Log 10.0 0.00		♦ 1				Center Freq 5.015000000 GHz
and the second second				and a funda a farfar a funda a farfar a funda a farfar a	-18.11 dBn	Start Freq 30.000000 MHz
-50.0						Stop Freq 10.000000000 GHz
Start 30 N #Res BW	1.0 MHz	X		Sweep 18	Stop 10.000 GHz 67 ms (40001 pts FUNCTION VALUE	997.000000 MHz
1 N 1 2 N 1 3 N 1 4 N 1 5 N 1 6 7	f f f	2.408 84 GHz 2.395 38 GHz 3.147 62 GHz 5.743 06 GHz 2.641 39 GHz	9.35 dBm -27.99 dBm -34.86 dBm -35.58 dBm -35.67 dBm			Freq Offset 0 Hz
8 9 10 11			100		>	
MSG				STATUS		



TM 2 & 2437

Reference



Agilent Spectrum										
Center Fre	RF 50 ຊ. q 15.0045	00 MHz	RREC	Trig: Free			ALIGN OFF	TRAC	M Feb 03, 2020 E 1 2 3 4 5 6 PE M WANNE T P P P P P P	Frequency
10 dB/div	Ref 20.00 (Gain:Low	Atten: 30	dB			/kr1 28		Auto Tune
10.0										Center Fred 15.004500 MHz
-10.0 -20.0 -30.0 -40.0									-17.97 dBm	Start Fred 9.000 kHz
-50.0 -60.0 -70.0	shell finde and showing for a	a, or population, also population	الوقاعيورول معاول مريا	unningen inngenten Afgannen Afg	where you and the form	n g den general p erfiet.	den in the second s	alutita proposati	yandfarsyndyweiswiges	Stop Free 30.000000 MH;
Start 9 kHz #Res BW 10		×	#VB	W 300 kHz Y	FUNCT		weep 5.3	33 ms (4	0.00 MHz 0001 pts)	CF Step 2.999100 MH Auto Mar
1 N 1 2 3 4 5 6	f	285	5.7 kHz	-46.86 dB	m				=	Freq Offse 0 H:
7 8 9 10 11										
< ISG							STATUS	L DC Cou	ıpled	



Agilent Spectrum Analyzer - Swe					
Center Freq 5.01500		SENSE: INT	ALIGN C Avg Type: Log-P		Frequency
	PNO: Fast G IFGain:Low	Atten: 30 dB		DETPPPP	Auto Tune
10 dB/div Ref 20.00 c	lBm		ľv	1kr5 3.415 06 GHz -36.27 dBm	Auto Tune
Log 10.0 0.00 -10.0					Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0	<u>↓</u> 2 <u>↓</u> 3 <u>↓</u> 5			-17.97 dBm	Start Freq 30.000000 MHz
-60.0 -60.0 -70.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep	Stop 10.000 GHz 18.67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	× 2.435 76 GHz	ү 9.66 dBm	FUNCTION FUNCTION W	IDTH FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.641 39 GHz 3.145 63 GHz 5.814 34 GHz 3.415 06 GHz	-35.49 dBm -36.19 dBm -36.26 dBm -36.27 dBm			Freq Offset 0 Hz
6 7 8 9 10					
11 11				×	
MSG			ST	TATUS	

Agilent Spectrum Analyzer - Swept	SA				
X RL RF 50 Ω Center Freg 17.50000		SENSE:INT	ALIGN OFF	08:59:00 AM Feb 03, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 17.50000	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type. Log-t wi	TYPE MWAWAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	
			Mkr3 2	21.673 375 GHz	Auto Tune
10 dB/div Ref 20.00 dB	3m			-27.60 dBm	
10.0					Center Freq
0.00					17.500000000 GHz
-10.0					
-20.0				<u>-72°</u>	Start Freq
-30.0					10.000000000 GHz
-40.0		a dala di Antonio di An	- Hit Al / Markens to contactificate of the second second		
-50.0					Stop Freq
-60.0					25.000000000 GHz
-70.0					
Start 10.000 GHz				Stop 25.000 GHz	CF Step
#Res BW 1.0 MHz	#VBM	/ 3.0 MHz	Sweep 40	.00 ms (40001 pts)	1.500000000 GHz Auto Man
MKR MODE TRC SCL	× 4.742 000 GHz	ץ -26.13 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Man
2 N 1 f 2	4.141 250 GHz	-26.46 dBm			Freg Offset
4	21.673 375 GHz	-27.60 dBm			0 Hz
6				=	0112
7					
9					
11				×	
MSG			STATUS		
Mod			STATUS		

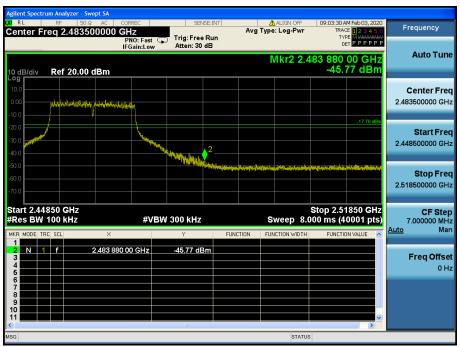
Pages: 44 / 100

TM 2 & 2462

Reference



High Band-edge



Agilent Spectrum Analyzer - Swept SA		SENSE: INT	ALIGN OFF	09:03:38 AM Feb 03, 2020	
Center Freq 15.004500		Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WAWAWA DET P P P P P	Frequency
10 dB/div Ref 20.00 dBm				Mkr1 295.4 kHz -47.61 dBm	Auto Tune
10.0 0.00 -10.0					Center Freq 15.004500 MHz
-20.0 -30.0 -40.0				-17.76 dBm	Start Freq 9.000 kHz
-50.0 -60.0 -70.0	مۇمىرۇرىيەت ئەيدەرىكەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيەت ئەركىيە ئەركىيەت ئەركىيەت ئەرك	er legenselngeschiperstreakteringens	zeric sinaanadiraalikkin siyaaqadiraangimanga		Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz		300 kHz	-	Stop 30.00 MHz 333 ms (40001 pts)	CF Step 2.999100 MHz Auto Man
MKR MODE TRC SCL >>	295.4 kHz	Y F -47.61 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset
6 7 8 9 10 11					
MSG		III	STATU	s LDC Coupled	

Agilent Spectrum Analyzer					
Center Freq 5.015	50 Ω AC CORREC	SENSE:INT	Avg Type: Log-Pwr	09:03:47 AM Feb 03, 2020 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE MUMANANA DET PPPPPP	
10 dB/div Ref 20.0	00 dBm		Mkr	5 3.214 92 GHz -36.40 dBm	Auto Tune
Log 10.0 0.00					Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0			4 Hit was different in program in the object of the second second second second second second second second second	-17.76 dBm	Start Freq 30.000000 MHz
-50.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	× 2.460 19 GHz	Y FUR 9.87 dBm	TTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.685 01 GHz 2.685 01 GHz 2.890 64 GHz 5.781 69 GHz 3.214 92 GHz	-35.87 dBm -36.19 dBm -36.26 dBm -36.40 dBm		3	Freq Offset 0 Hz
6 7 8 9 10					
<pre>11</pre>				×	
MSG			STATUS		

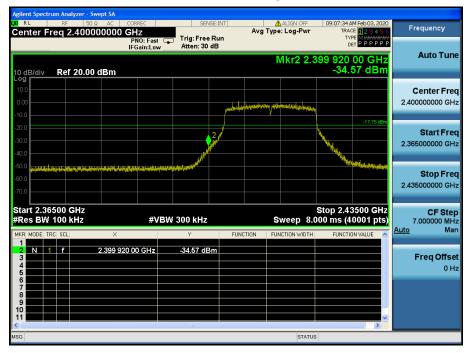


TM 3 & 2412

Reference



Low Band-edge



Dt&C

Agilent Spectrum Analyzer - Sw		SENSE:IN		ALIGN OFF	00.07.40 44 5-6 00.0000	
Center Freq 15.0045	500 MHz			Type: Log-Pwr	09:07:42 AM Feb 03, 2020 TRACE 1 2 3 4 5 6 TYPE	Frequency
	PNO: Fast ⊂ IFGain:Low	Atten: 30 dB			TYPE MWWWWW DET P P P P P	Auto Tune
10 dB/div Ref 20.00	dBm			ſ	/lkr1 281.9 kHz -44.82 dBm	Auto Tune
Log 10.0						Center Freq
0.00						15.004500 MHz
-10.0					-17.75 dBm	
-30.0						Start Freq
-40.0						9.000 kHz
	والمتعادية ويتماد والمتعادية والمتعادية والمتعاد	، مەيچىزا رار ارارولىرىزدارارارارارارار	ennes de la contractione	the contraction of the second second	Latistopackiniachingarantation territy	Stop Freq
-60.0						30.000000 MHz
Start 9 kHz #Res BW 100 kHz	#VB	W 300 kHz		Sweep 5.3	Stop 30.00 MHz 33 ms (40001 pts)	2.999100 MH
MKR MODE TRC SCL	× 281.9 kHz	Y -44.82 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Man
	201.9 KHZ	-44.62 dBm				Freq Offset
4					-	0 Hz
6						
8						
10					×	
MSG				CTATUS	DC Coupled	
130				STATUS		

Agilent Spectrum Analyzer - Swept SA	CORREC	SENSE:INT	ALIGN OFF	09:07:50 AM Feb 03, 2020	
Center Freq 5.01500000			Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WANNAM	Frequency
	IFGain:Low	Atten: 30 dB		DETPPPP	Auto Tune
10 dB/div Ref 20.00 dBm			Mkr	5 5.759 51 GHz -36.25 dBm	Auto Tune
Log	1				Center Freq
0.00					5.015000000 GHz
-10.0				-17.75 dBm	
-20.0	∧ ² ∧43		5		Start Freq
-40.0	Y		ويعارفه ويعاقب والمعارفة والمغر والمع	وتوريه والتلقي وتقاربه ويرويه والتعا	30.000000 MHz
-50.0					04
+60.0					Stop Freq 10.00000000 GHz
-70.0					
Start 30 MHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL X			NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 2.6	114 57 GHz 547 37 GHz	9.54 dBm -35.29 dBm			
4 N 1 f 3.1	259 78 GHz 160 58 GHz	-36.20 dBm -36.24 dBm			Freq Offset 0 Hz
6	759 51 GHz	-36.25 dBm			011L
7 8					
9 10 10 10 10 10 10 10 10 10 10 10 10 10					
<pre>11</pre>		111		>	
MSG			STATUS	3	

Dt&C

