TEST REPORT

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 : DRTFCC1802-0044					
2. Customer					
 Name (FCC): MOTREX CO., LTD. Name (IC): Motrex Co,. Ltd. 					
 Address (FCC) : (Mullae-dong 3(sam)-ga, Ace High-Tech City B/D), 1-1103, 775, Gyeongin-ro, Yeongdeungpo-gu, Sec South Korea 	oul,				
Address (IC) : 21, Daewangpangyo-ro 644beon-gil,Bundang-gu Seongnam-si 13494 Korea (Republic Of)					
3. Use of Report : FCC & IC Original Grant					
 Product Name / Model Name : Rear Seat Entertainment / MTXRSE100YPPE 					
FCC ID : BP9-MTXRSE100YPPE / IC : 23638-MTXRSE100YP					
5. Test Method Used : KDB558074 D01v04					
Test Specification : FCC Part 15.247					
RSS-247 Issue 2 (2017-02), RSS-GEN Issue 4 (2014-11)					
5. Date of Test : 2018.01.29 ~ 2018.02.26					
7. Testing Environment : See appended test report.					
3. Test Result : Refer to the attached test result.					
Tested by Reviewed by	ך				
Affirmation Name : Inhee Bae (Signature) Name : GeunKi Son (Signature)					
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2018.02.27.					
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If this report is required to confirmation of authenticity, please contact to report@dtnc.net

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Test Report Version

Test Report No.	Date	Description
DRTFCC1802-0044	Feb. 27, 2018	Initial issue



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1. EUT DESCRIPTION

FCC Equipment Class	Digital Transmission System(DTS)
Product	Rear Seat Entertainment
Model Name	MTXRSE100YPPE
Add Model Name	NA
Hardware Version	1.0.0
Software Version	1.0
Power Supply	DC 12 V
Frequency Range	▪ 802.11b/g/n(20/40 MHz) : 2412 MHz ~ 2462 MHz
Max. RF Output Power	2.4GHz Band • 802.11b : 18.23 dBm • 802.11g : 20.67 dBm • 802.11n (HT20) : 20.56 dBm • 802.11n (HT40) : 19.83 dBm
Modulation Type	• 802.11b: CCK, DSSS • 802.11g/n: OFDM
Antenna Specification	Antenna type: Internal Antenna Antenna gain: 3.190 dBi

2. INFORMATION ABOUT TESTING

2.1 Test mode

Test	Worst case data rate			lz)	
mode		Lowest	Middle	Highest	
TM 1	802.11b 11 Mbps	2412	2437	2462	
TM 2	802.11g 6 Mbps	2412	2437	2462	
ТМ 3	802.11n(HT20) MCS 0	2412	2437	2462	
TM 4	802.11n(HT40) MCS 0	2422	2437	2452	

Note 1: The worst case data rate is determined as above test mode according to the power measurements. Note 2: 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 ~ 24 °C
Relative humidity content	:	39 ~ 44 % R.H
Details of power supply	:	DC 12 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 C 63.4-2014 and ANSI C 63.10-2013. 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	1.0 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)	Parameter	Limit	Test Condition	Status Note 1	
15.247(a)	6 dB Bandwidth	> 500 kHz		С	
15.247(b)	Transmitter Output Power	< 1 Watt	Conducted	С	
15.247(d)	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW		С	
15.247(e)	Transmitter Power Spectral Density	· ////////////////////////////////////		С	
-	RSS-Gen [6.6]	Occupied Bandwidth (99 %)		С	
15.247(d)General Field Strength Limits15.205(Restricted Bands and Radiated15.209Emission Limits)		FCC 15.209 limits	Radiated	С	
15.207	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	NA Note 2	
15.203	Antenna Requirements	FCC 15.203	-	С	
Note 1: C =Comply NC =Not Comply NT =Not Tested NA =Not Applicable Note 2: This device is installed in a car. Therefore the power source is a battery of car.					

4. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 D01v04. 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 D01v04.

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 D01v04. 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 D01V04.

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 site is constructed in conformance with the requirements.

- 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 internal antenna is permanently attached on the PCB. 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)

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:

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of KDB558074

D01V04

- 1. Set resolution bandwidth (RBW) = 100 kHz.
- 2. Set the video bandwidth (VBW) ≥ 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 measured in the fundamental emission.

Test Results: Comply

Test Mode	Frequency	Test Results[MHz]
	Lowest	7.758
TM 1	Middle	7.578
	Highest	7.673
	Lowest	15.380
TM 2	Middle	15.260
	Highest	15.810
	Lowest	16.910
ТМ 3	Middle	16.930
	Highest	17.050
	Lowest	35.170
TM 4	Middle	35.200
	Highest	35.080



RESULT PLOTS

6 dB Bandwidth

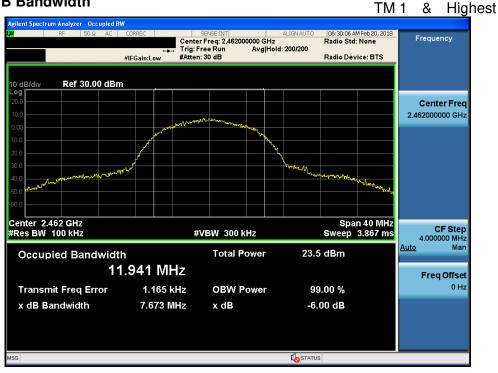


6 dB Bandwidth

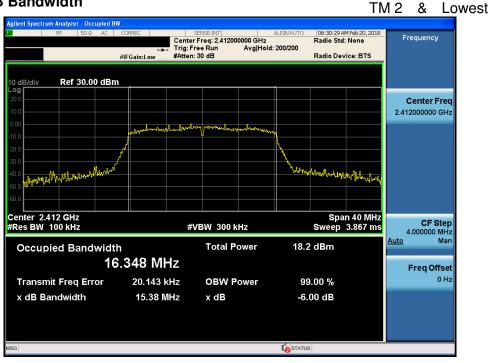
TM 1 & Middle



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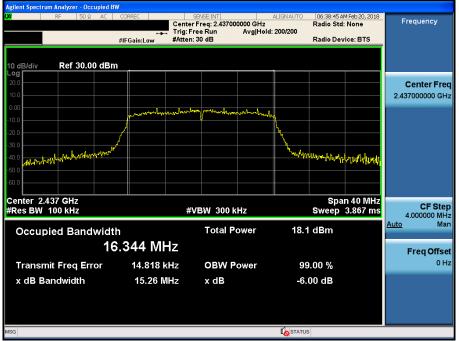


Dt&C

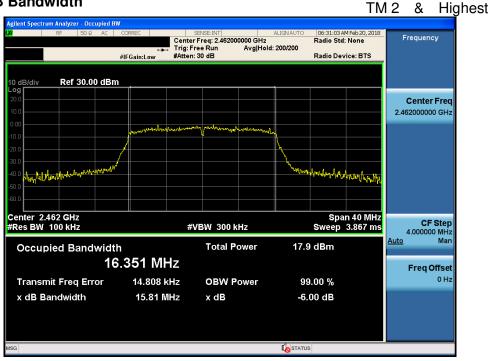


6 dB Bandwidth





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6 dB Bandwidth

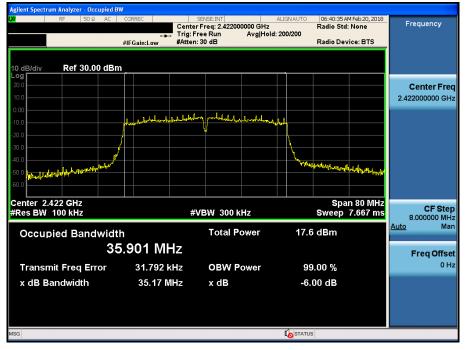




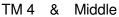
Dt&C

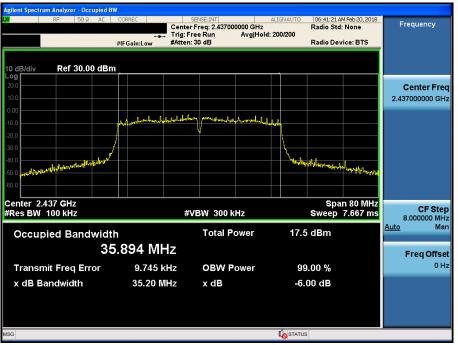
	TM	13 & Highest
Center Freq: 2.462000000 GHz Frig: Free Run Avg Hold: 20	Radio Std: None	Frequency
		Center Freq 2.462000000 GHz
-been more allowed and a		
	Marrie married and the grade	
#VBW 300 kHz	Span 40 MHz Sweep 3.867 ms	CF Step 4.000000 MHz
Total Power	18.0 dBm	<u>Auto</u> Man
<u>Z</u>		Freq Offset
z OBW Power	99.00 %	0 Hz
z xdB	-6.00 dB	
	STATUS	
	Center Freq: 2.46200000 GHz Trig: Free Run Avg Hold: 20 Akten: 30 dB #VBW 300 kHz Total Power Z Z OBW Power Z X dB	SENSE:INT ALIGNALTO 106:35:19.AM Feb 20, 2018 Center Free; 2.462000000 GHz Radio Std: None Trig: Free Run Avg Hold: 200/200 Atten: 30 dB Radio Device: BTS

TM 4 & Lowest

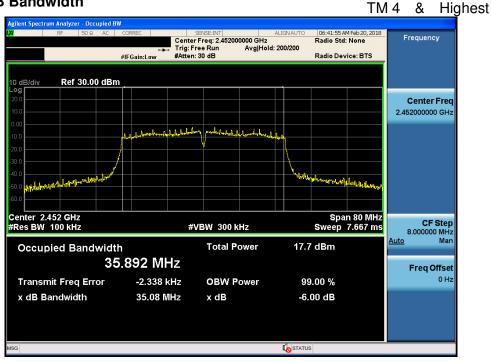


6 dB Bandwidth





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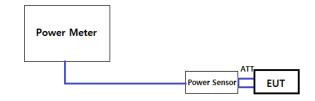


8.2 Maximum peak conducted output power

Test Requirements and limit, §15.247(b)

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

1. PKPM1 Peak power meter method of KDB558074 D01V04

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 D01V04

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

Erog		Maximum Peak Conducted Output Power (dBm) for 802.11b												
Freq. (MHz)	Det.	Data Rate [Mbps]												
		1	2	5.5	11	-	-	-	-					
0410	PK	17.66	17.70	17.75	17.83	-	-	-	-					
2412	AV	14.21	14.28	14.36	14.41	-	-	-	-					
0407	PK	18.05	18.12	18.17	18.23	-	-	-	-					
2437	AV	14.71	14.79	14.84	14.91	-	-	-	-					
2462	PK	17.89	17.94	17.96	18.05	-	-	-	-					
2462	AV	14.55	14.63	14.68	14.72	-	-	-	-					

Erog			Maxim	um Peak Co	nducted Ou	tput Power	(dBm) for <u>8</u>	02.11 <u>g</u>					
Freq. (MHz)	Det.	Data Rate [Mbps]											
		6	9	12	18	24	36	48	54				
0410	PK	20.43	20.39	20.33	20.27	20.23	20.18	20.14	20.11				
2412	AV	11.32	11.26	11.23	11.19	11.15	11.13	11.07	11.03				
2437	PK	20.67	20.62	20.59	20.53	20.47	20.43	20.36	20.31				
2437	AV	11.62	11.57	11.53	11.48	11.44	11.39	11.31	11.25				
2462	PK	20.28	20.25	20.20	20.15	20.11	20.07	20.04	19.96				
2462	AV	10.83	10.77	10.72	10.66	10.63	10.54	10.50	10.48				

Eroa		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						
0410	PK	20.56	20.51	20.47	20.43	20.38	20.35	20.31	20.29						
2412	AV	11.02	10.98	10.95	10.90	10.86	10.83	10.77	10.74						
2437	PK	20.46	20.42	20.37	20.33	20.29	20.21	20.16	20.11						
2437	AV	11.31	11.27	11.22	11.16	11.13	11.08	11.06	11.02						
2462	PK	20.12	20.08	20.02	19.95	19.91	19.86	19.82	19.77						
2462	AV	10.56	10.52	10.46	10.42	10.39	10.33	10.28	10.24						

Erog			Maximum	Peak Condu	cted Outpu	t Power (dB	m) for <u>802.</u>	11n(HT40)							
Freq. (MHz)	Det.		Data Rate [MCS]												
		0	1	2	3	4	5	6	7						
0400	PK	19.83	19.78	19.71	19.66	19.62	19.59	19.57	19.53						
2422	AV	10.12	10.08	10.05	10.01	9.97	9.92	9.87	9.85						
2437	PK	19.63	19.55	19.52	19.47	19.43	19.39	19.34	19.31						
2437	AV	10.15	10.11	10.07	10.03	9.98	9.95	9.91	9.89						
0450	PK	19.62	19.57	19.52	19.49	19.44	19.41	19.37	19.33						
2452	AV	10.15	10.14	10.11	10.09	10.04	9.97	9.90	9.84						

8.3 Maximum power spectral density

Test requirements and limit, §15.247(e)

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

Method PKPSD of KDB558074 D01V04 is used.

- 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 : $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- 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.

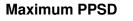
9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.

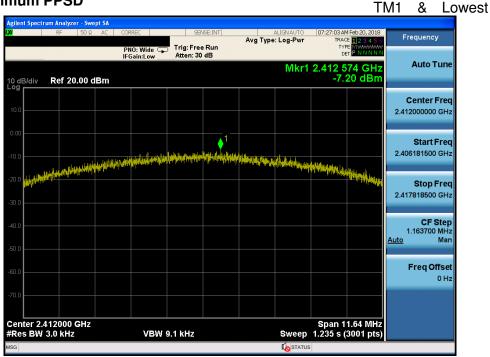
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Results: Comply

Test Mode	Frequency	RBW	PKPSD [dBm]
	Lowest	3 kHz	-7.20
TM 1	Middle	3 kHz	-7.25
	Highest	3 kHz	-7.13
	Lowest	3 kHz	-12.47
TM 2	Middle	3 kHz	-12.48
	Highest	3 kHz	-12.56
	Lowest	3 kHz	-12.75
TM 3	Middle	3 kHz	-12.43
	Highest	3 kHz	-12.43
	Lowest	3 kHz	-16.79
TM 4	Middle	3 kHz	-16.25
	Highest	3 kHz	-15.81

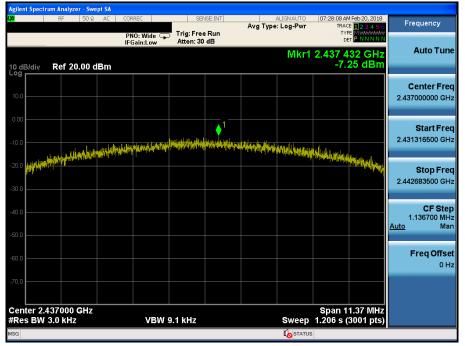
RESULT PLOTS

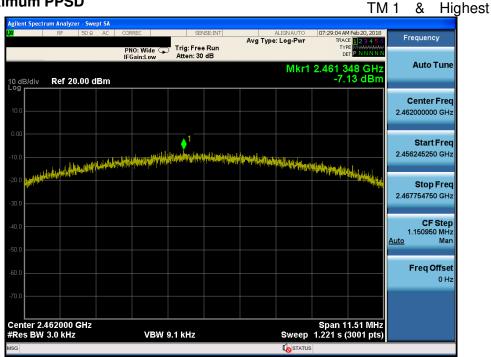




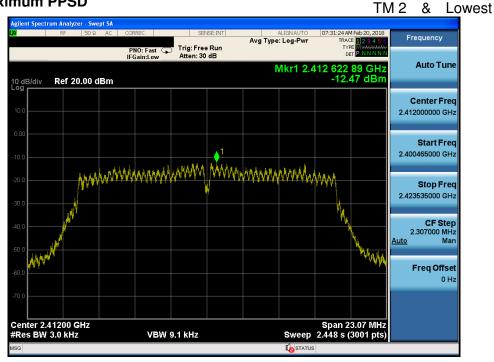
Maximum PPSD

TM 1 & Middle



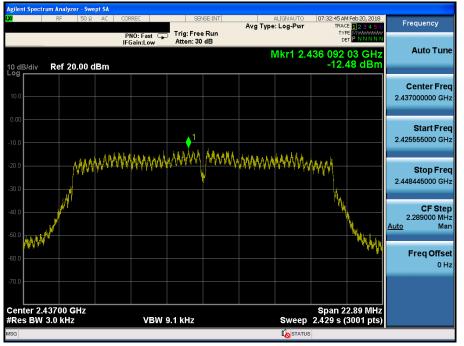


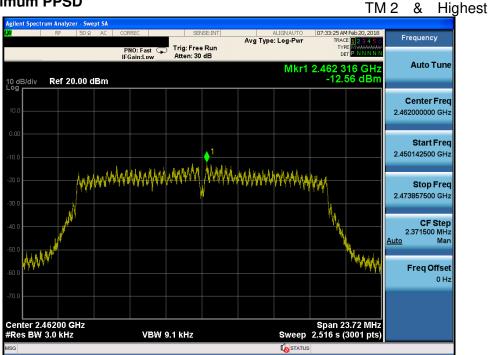
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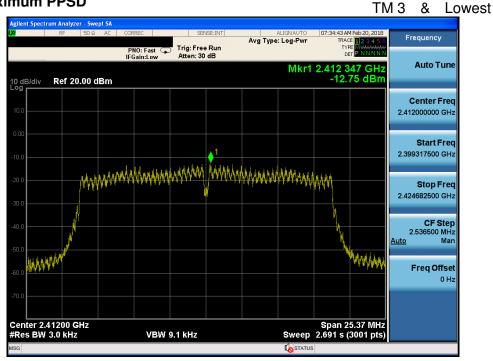


TM2 & Middle



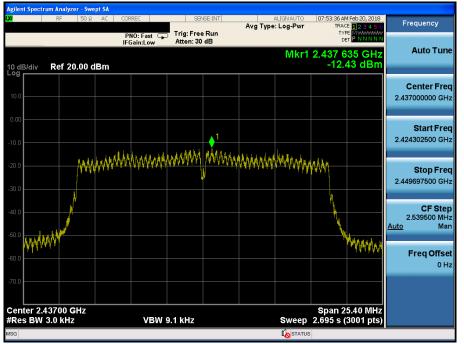


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Maximum PPSD

TM3 & Middle



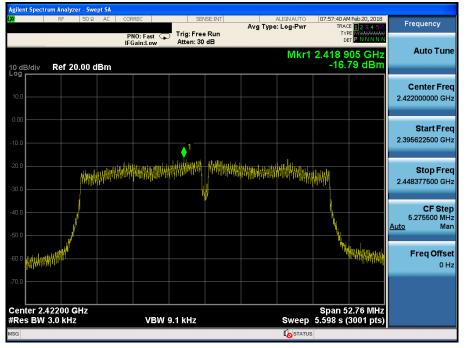
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Maximum PPSD



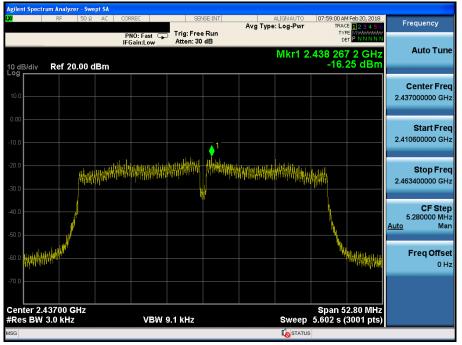
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TM 4 & Lowest



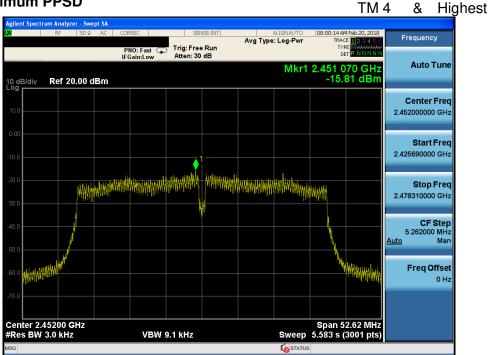
Maximum PPSD

TM4 & Middle



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Maximum PPSD





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

Test requirements and limit, §15.247(d)

§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 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

The transmitter output is connected to a spectrum analyzer.

- Measurement Procedure 1 – Reference Level of KDB558074 D01v04

- 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.

- Measurement Procedure 2 - Unwanted Emissions of KDB558074 D01v04

- 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 ≥ 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 POINT : 40001

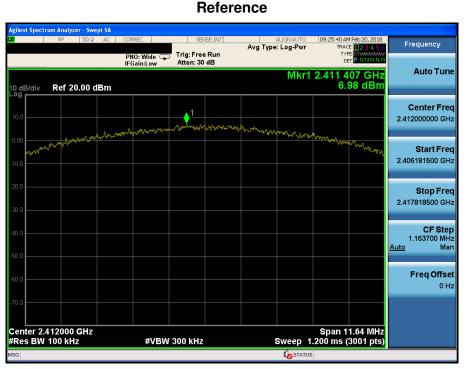
Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~25 GHz RBW = 1 MHz, VBW = 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

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

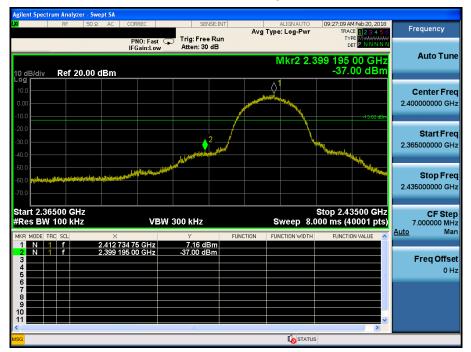
If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

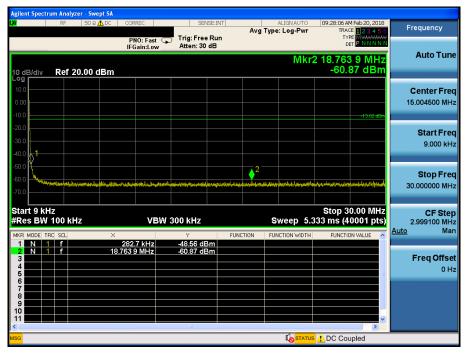
RESULT PLOTS

TM 1 & Lowest

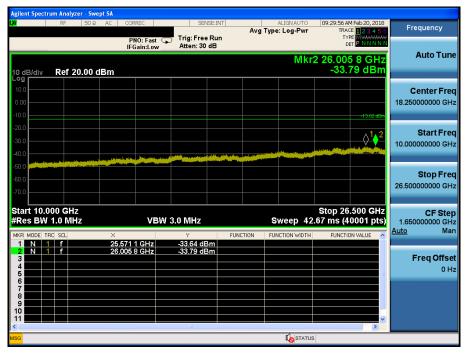


Low Band-edge





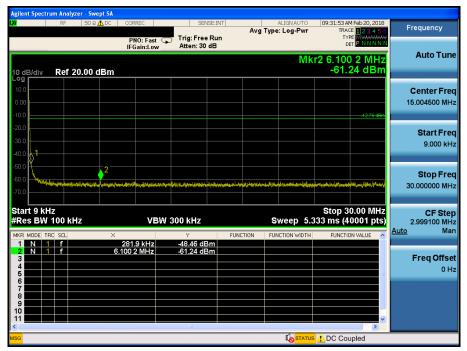
RF SO.Q. AC CORREC SERVELINT ALIGNAUTO D92304AMP620,2018 Frequency Image: PRO: Fast Provide and P	Agilent Spectrum Analyzer - Swept	SA				
PN0: Fast IFGsint.low Trig: Free Run Atter: 30 dB Program Pro	LXU RF 50Ω A	AC CORREC	SENSE:INT			Frequency
Mkr4 5.777 71 GHz 45.15 dBm Auto Tune 100 1 45.15 dBm Center Freq 5.01500000 GHz 200 400 42 3 5.01500000 GHz 400 42 3 3 30.00000 MHz 400 42 3 3 30.00000 GHz 400 42 3 40.0000 GHz 30.00000 GHz 400 42 3 40.000000 GHz 30.00000 GHz 400 42 3 40.000000 GHz 30.000000 GHz 400 42 43 5.000000 GHz 30.000000 GHz 500 10.000 GHz 5.000000 GHz 99.00000 GHz 99.00000 GHz 400 1 1 5.000000 GHz 99.00000 GHz 99.00000 GHz 500 10.000 GHz 10.000 GHz 99.00000 GHz 99.00000 GHz 99.00000 GHz 1 1 1 1 1 1 1 1 2 N 1 1 1 1 3.000000 MHz 44.90 GBm		PNO: Fast 🕞 IEGain:Low		Avg Type: Log-Pwr	TYPE M MAAAAAAAAA	
100 1	10 dB/div Ref 20.00 dB	m		Mkr	4 5.777 71 GHz -45.15 dBm	Auto Tune
300 42 3 30,000000 MHz 400 42 3 30,000000 MHz 400 42 3 40,0000000 MHz 400 42 3 40,0000000 MHz 400 42 3 40,0000000 MHz 400 40,0000000 MHz 50,00000 MHz 50,00000 MHz 400 10,00000000 GHz 50,00000 MHz 50,00000 MHz 500 10,000 Hz 10,000 GHz 50,00000 MHz 1 1 1 10,000 GHz 10,000 GHz 2 N 1 1 50,717 T1 GHz 414,90 GBm 10,000 GHz 3 N 1 1 5,777 T1 GHz 414,90 GBm 10,000 GHz Freq Offset 6 1 1 1 1,00000000 GHz 10,000 GHz 10,0000000 GHz 10 1 1 1 1,00000000 GHz 10,00000000 GHz 10,00000000 GHz 11 1 1 1 1 1,000000000 GHz 10,00000000 GHz 10,000000000 GHz 10 1 1 1 1 1,00000000000	10.0 0.00					
800 Stop Freq 700 Stop Freq 701 Stop Freq 702 Stop Freq 703 Stop Freq 704 Stop Freq 705 Stop Freq 7 Stop Freq 8 Stop Freq 9 Stop Freq 10 Stop Freq 11 Stop Freq 12 Stop Freq 13 Stop Freq	-30.0			42 3 3		
#Res BW 1.0 MHz VBW 3.0 MHz Sweep 18.67 ms (40001 pts) 997.000000 MHz MKR MODE TRC SCL X Y FUNCTION FUNCTION VIDTH	-60.0					
MRR Mode: Tric: X Y Function Function value 1 N 1 f 2.41233 GHz 13.78 dBm 2 N 1 f 5.907 07 GHz -44.36 dBm 3 N 1 f 7.235 07 GHz -44.36 dBm 3 N 1 f 7.235 07 GHz -44.49 dBm 4 N 1 f 5.777 71 GHz -45.15 dBm		VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	997.000000 MHz
2 N 1 f 5.907 07 GHz -44.36 dBm				INCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	2 N 1 f 3 N 1 f 4 N 1 f 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5.907 07 GHz 7.235 07 GHz	-44.36 dBm -44.49 dBm			
	7					
MSG In Status	MSG					

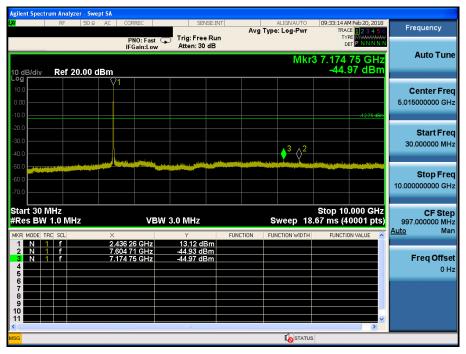


TM 1 & Middle

Reference



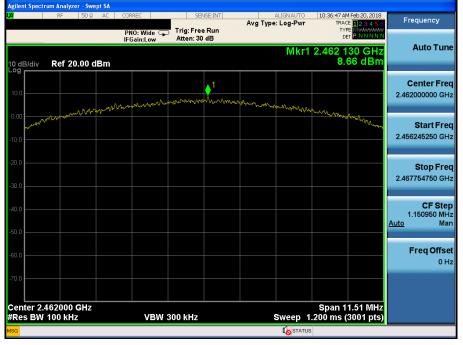




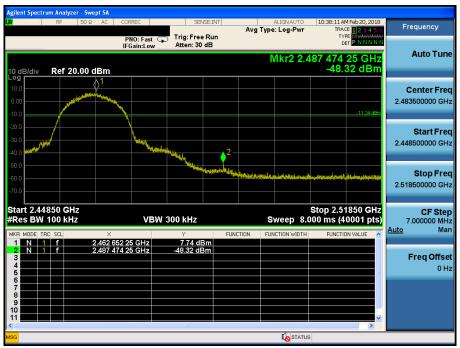
Agilent Spect	rum Anal	yzer - Swe	pt SA									
LXI	RF	50 Ω	AC	CORREC		SENS	INT		ALIGN AUTO		4 Feb 20, 2018	Frequency
				PNO: F IFGain:	ast 😱 Low	Trig: Free F Atten: 30 d		Avg	Type: Log-Pwr	TY	E 123456 E M WWWWW F P N N N N N	Trequency
10 dB/div	Ref	20.00 d	Bm						Mkr) 1 GHz 70 dBm	Auto Tune
Log 10.0 0.00 -10.0											-12.75-dBm	Center Freq 18.250000000 GHz
-20.0 -30.0 -40.0			مر البريم ويتري						2			Start Freq 10.000000000 GHz
-50.0		and the second sec										Stop Freq 26.500000000 GHz
Start 10.0 #Res BW					VBW 3	B.0 MHz			Sweep 42	Stop 26 .67 ms (4	.500 GHz 0001 pts)	CF Step 1.65000000 GHz
MKR MODE T	1 f			980 7 GH		, -34.11 dBr	1	CTION	FUNCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Man
2 N 3 4 5 5	1 f		21.	830 1 GH		-37.70 dBn					=	Freq Offset 0 Hz
6 7 8 9												
11											>	
MSG												

TM 1 & Highest

Reference

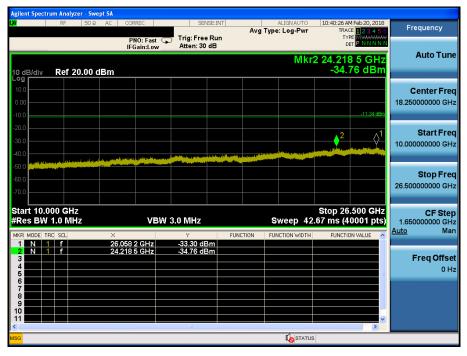


High Band-edge



	t Spec	ctrun		ılyzer - Sw														
L <mark>XI</mark>			RF	50 \$	2 🧥 DC 📗	CORF	REC		SEN	ISE:INT		Ava T		LIGNAUTO		M Feb 20, 201		Frequency
						PN	0: Fast	Ģ	Trig: Free Atten: 30				,, .		T		Ał I	
_						IFG	ain:Low	·	Atten: 30	ab								Auto Tune
			B - 6	~~~~	-150									WIKE		3 5 MH: 37 dBn		
10 di Log	3/div		Rer	20.00	aBm										-00.			
10.0																		Center Freq
0.00	-																	15.004500 MHz
-10.0	-															-11.34 dB		
-20.0																		Start Freq
-30.0																		9.000 kHz
-40.0	<u>k</u> 1-																	
-50.0	K—											2						
-60.0	4			and also so allo dest	مراقبة وأرماد	and sources	e feste e su		the state of the state of			مراجع ومعالم	نا ماد.	a . an is a data	ورار الذي راور ار ورار و الروا			Stop Freq
-70.0		_		and a second second second	The Constant of Co	in the last	يليو و دواني ا				and all life.	i dan di bin		in a second s				30.000000 MHz
- 1																	4	
Star #Re				kH7			VB	W 3	00 kHz				S	veen 5:	Stop : 333 ms (/	30.00 MH: 10001 pts	ŝ	CF Step 2.999100 MHz
MKR				NU 15	×				Y	_	FUNC	7101		CTION WIDTH				Auto Man
1	N	1 HL	f				9 kHz		-48.07 dE	3m	FUNC	TION	FUN	CTION WIDTH	FUNCT	UN VALUE		
2 3	Ν	1	f		17.	593 5	MHz		-60.37 dE	3m								Freq Offset
4																		0 Hz
5																		
7																		
9																		
10																	-	
<									111					-1				
MSG															DC Co	upled		

Agilent Spectrum Analyzer - Swe					
LXI RF 50 Ω	AC CORREC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	10:39:55 AM Feb 20, 2018 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast	Trig: Free Run		TYPE MWWWWWWWW DET P N N N N N	
	IFGain:Low	Atten: 30 dB			Auto Tune
			Mkr	2 3.194 23 GHz -44.84 dBm	
10 dB/div Ref 20.00 d	Bm V1			-44.04 UDIII	
10.0					Center Freq
0.00					5.015000000 GHz
-10.0				-11.34 dBm	
-20.0					
-30.0					Start Freq
-40.0	2				30.000000 MHz
-50.0		All and the second s	and a superior to the second		
-50.0 Hereita in the second s			the state of the second s		Stop Freq
					10.00000000 GHz
-70.0					
Start 30 MHz				Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	VBW	/ 3.0 MHz	Sweep 18	.67 ms (40001 pts)	997.000000 MHz
MKR MODE TRC SCL	×	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.461 93 GHz 3.194 23 GHz	13.67 dBm -44.84 dBm			
3	3.134 23 6112	-44.04 GBIII			Freq Offset
4 5				=	0 Hz
6					
8					
9					
11				~	
<			rf		
MSG			K STATU	5	

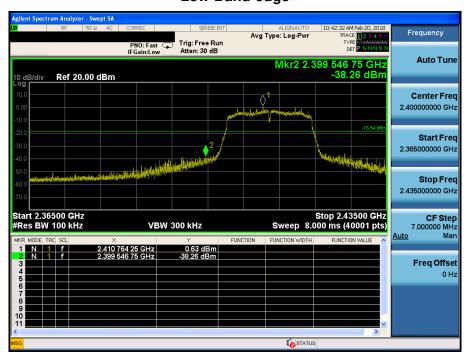


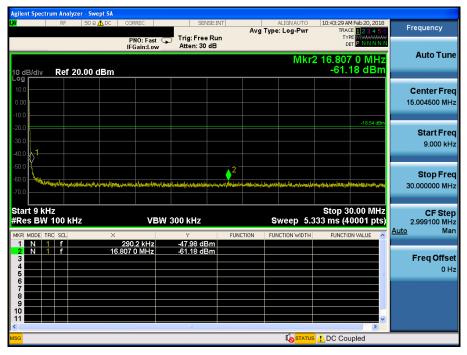
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TM 2 & Lowest

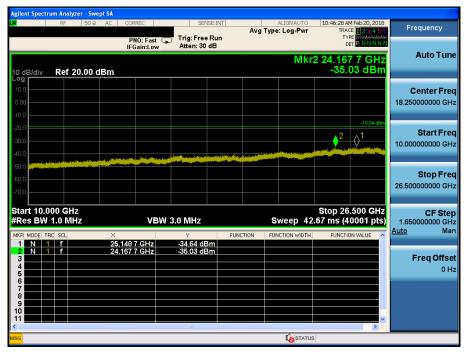


Low Band-edge





Agilent Spectrum Analyzer - Sw	ept SA				
LXI RF 50 Ω	AC CORREC	SENSE:INT	ALIGNAUTO	10:45:44 AM Feb 20, 2018	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr	TRACE 23456 TYPE MWWWWWW DET PNNNNN	
10 dB/div Ref 20.00	dBm		Mkr	2 6.340 01 GHz -44.80 dBm	Auto Tune
10.0					Center Freq 5.015000000 GHz
-20.0				-18.54 dBm	Start Freq 30.000000 MHz
-60.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	VB	W 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	× 2.410 84 GHz	Y 8.85 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 4 5 6	6.340 01 GHz	-44.80 dBm			Freq Offset 0 Hz
8 9 10					
11				>	
MSG					

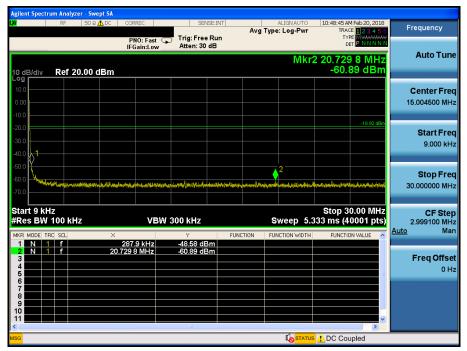


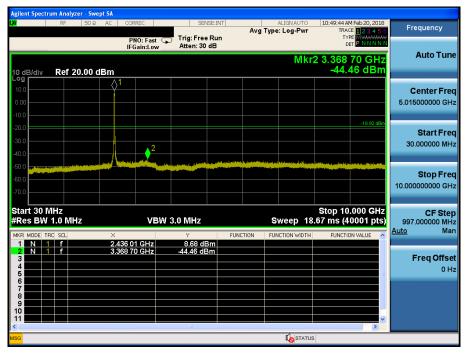
🛈 Dt&C

TM 2 & Middle

Reference







Agilent Spectre	um Ana	lyzer - Swe	pt SA									
L <mark>XI</mark>	RF	50 Ω	AC	CORREC		SENS	E:INT	Avg T	ALIGNAUTO	TRAC	M Feb 20, 2018 CE 1 2 3 4 5 6	Frequency
				PNO: F IFGain:	ast 🖵	Trig: Free F Atten: 30 d				TY	PE MWWWWW ET P N N N N N	
				ii Gaini.	200				Mkr	2 24 36	6 GHz	Auto Tune
10 dB/div	Ref	20.00 0	iBm								51 dBm	
Log 10.0												Conton From
0.00												Center Freq 18.25000000 GHz
-10.0												10.20000000 0112
-20.0											-18.92 dBm	
-30.0										<mark>∂</mark> 2		Start Freq 10.00000000 GHz
-40.0				. 44.	la contra d	AND DESCRIPTION OF A DE	and the substantion of the substant	and the second				10.00000000 0112
-50.0		ala a su a			-			- Income State				
-60.0												Stop Freq 26.50000000 GHz
-70.0												28.50000000 GH2
Start 10.0	00 G	Hz								Stop 26	.500 GHz	CF Step
#Res BW					VBW 3	3.0 MHz			Sweep 42	.67 ms (4	0001 pts)	1.65000000 GHz
MKR MODE TR			×			Y	FUNC	TION	FUNCTION WIDTH	FUNCTIO	ON VALUE	<u>Auto</u> Man
1 N 1 2 N 1	f f			065 2 GH 366 6 GH		-34.29 dBr -35.51 dBr						
3												Freq Offset 0 Hz
5											=	0 Hz
7												
9												
10											~	
<						ш			1	.i	>	
MSG	С <mark>о</mark> status											

Dt&C

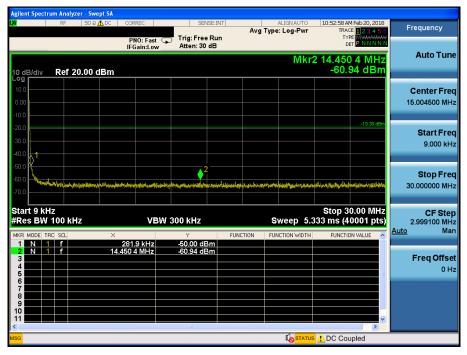
TM 2 & Highest



Reference

High Band-edge



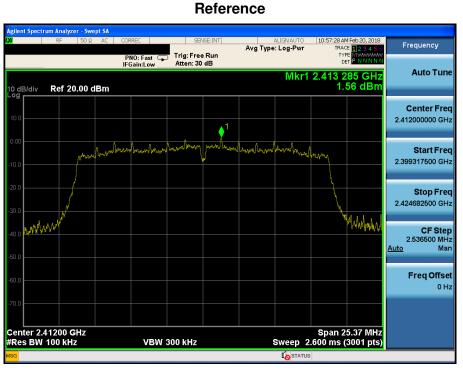


Agilent Spectrum Analyzer - Swe LXI RF 50 Ω	pt SA AC CORREC	SENSE:INT	ALIGNAUT	0 10:54:43 AM Feb 20, 2018		
10 00 30	PNO: Fast (IFGain:Low		Avg Type: Log-Pw		Frequency	
10 dB/div Ref 20.00 d			M	kr3 6.948 43 GHz -44.62 dBm	Auto Tune	
10.0 0.00 -10.0					Center Freq 5.015000000 GHz	
-20.0 -30.0 -40.0				-19.30 dBm	Start Freq 30.000000 MHz	
-50.0 -60.0 -70.0					Stop Freq 10.000000000 GHz	
Start 30 MHz #Res BW 1.0 MHz						
MKR MODE TRC SCL	× 2.460 94 GHz 3.200 21 GHz	9.11 dBm -43.81 dBm	FUNCTION FUNCTION WID	TH FUNCTION VALUE	<u>Auto</u> Man	
3 N 1 F 4 5 5	6.948 43 GHz	-43.81 dBm -44.62 dBm			Freq Offset 0 Hz	
6 7 8 9 9						
10 11 <				×		
MSG			I ∕ <mark>o</mark> sta	TUS		

RF 50 Ω	AC CORREC	SENSE:INT	ALIGNAUTO	10:55:46 AM Feb 20, 2018	
	PNO: Fas IFGain:Lo	t 🕟 Trig: Free Run	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PNNNNN	Frequency
0 dB/div Ref 20.00	dBm		Mkr	2 21.689 8 GHz -37.41 dBm	Auto Tune
og 10.0 1.00					Center Fre 18.250000000 GH
20.0			2-	-19.30 dBm	Start Fre 10.000000000 GH
50.0 50.0 70.0					Stop Fre 26.500000000 G⊦
itart 10.000 GHz Res BW 1.0 MHz		3W 3.0 MHz		Stop 26.500 GHz .67 ms (40001 pts)	CF Ste 1.65000000 GH Auto Ma
N 1 f 2 N 1 f 3 4 4 4 5 5 5 5	× 25.545 9 GHz 21.689 8 GHz	-33.74 dBm -37.41 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offso 0 ⊦
6 7 8 9 0 0					
				×	

Dt&C

TM 3 & Lowest



Low Band-edge

