

FCC REPORT

Applicant: LigoWave Inc. Limited

Address of Applicant: Unit D, 16/F., MG Tower, 133 Hoi Bun Road, Kwun Tong,
Kowloon, Hong Kong, China

Equipment Under Test (EUT)

Product Name: Broadband Digital Transmission System

Model No.: LigoPTP 6-N RapidFire, LigoPTP 6-25 RapidFire

FCC ID: 2AR4D-27016G

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 101 Subpart C
FCC CFR Title 47 Part 101 Subpart H

Date of sample receipt: 19 Nov., 2018

Date of Test: 20 Nov., to 06 Dec., 2018

Date of report issued: 07 Dec., 2018

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2. Version

Version No.	Date	Description
00	07 Dec., 2018	Original

Tested by:

Mike.ou

Date:

07 Dec., 2018

Test Engineer

Reviewed by:

Wimer Zhang

Date:

07 Dec., 2018

Project Engineer

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4. Test Summary

Test Item	Section in CFR 47	Result
Conducted Output Power	Part 2.1046 Part 101.113 (a)	Pass
99% Occupied Bandwidth	Part 2.1049 Part 101.109(c)	Pass
Emission Mask	Part 101.111 (a)(2)(i)	Pass
Out-band Spurious Emission at Antenna Terminals	Part 2.1051 Part 101.111 (a)(2)(iii)	Pass
Field Strength of Spurious Radiation	Part 2.1051 Part 101.111 (a)(2)(iii)	Pass
Frequency Tolerance	Part 2.1055 Part 101.107 (a)	Pass
<i>Pass: The EUT complies with the essential requirements in the standard.</i>		

5. General Information

5.1 Client Information

Applicant:	LigoWave Inc. Limited
Address:	Unit D, 16/F., MG Tower, 133 Hoi Bun Road, Kwun Tong, Kowloon, Hong Kong, China
Manufacturer/Factory:	LigoWave Inc. Limited
Address:	Unit D, 16/F., MG Tower, 133 Hoi Bun Road, Kwun Tong, Kowloon, Hong Kong, China

5.2 General Description of E.U.T.

Product Name:	Broadband Digital Transmission System
Model No.:	LigoPTP 6-N RapidFire, LigoPTP 6-25 RapidFire
Operation Frequency range:	5935MHz ~ 6390MHz(for 20MHz bandwidth) 5945MHz ~ 6380MHz(for 40MHz bandwidth))
Modulation type:	Orthogonal Frequency Division Multiplexing(OFDM)
Antenna type:	External antenna ("N" type)
Antenna gain:	32 dBi (declare by Applicant)
Power supply:	DC 48V, 0.5A, 802.3at
AC adapter:	Adapter(1) Model: G0957B-480-050 Input: AC100-240V, 50/60Hz, 1.0A Output: DC 48.0V, 0.5A Adapter(2) Model: MKS-4800500C6 Input: AC100-240V, 50/60Hz, 0.6A Output: DC 48.0V, 0.5A
PoE Power:	Model: 1G-4457-AF-24 Input: DC 44-57V Output: DC 44-57V, 24W, 802.3af/at
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Remark:	The Model No.: LigoPTP 6-N RapidFire, LigoPTP 6-25 RapidFire were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.

Operation Frequency each of channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	5935MHz	46	6160MHz	90	6380MHz
2	5940MHz	47	6165MHz	91	6385MHz
3	5945MHz	48	6170MHz	92	6390MHz
....		...			
....	...		...		
Note:					
1. For 40MHz bandwidth mode, the channel number is from 3 to 90.					
2. Channel 1, 47 & 92 selected for 20MHz bandwidth mode as Lowest, Middle and Highest channel, Channel; 3, 47 & 90 selected for 40MHz bandwidth mode as Lowest, Middle and Highest channel.					

5.3 Test modes

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation.
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate, and found the follow list were the worst case.	
Mode	Data rate
20MHz Bandwidth	12 Mbps(note: the max data rate up 108Mbps)
	13 Mbps(note: the max data rate up 144.4Mbps)
40MHz Bandwidth	27 Mbps(note: the max data rate up 300Mbps)

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
LENOVO	Laptop	SL510	2847A65	DoC
ANDLY	Antenna	ATB09-59S	N/A	N/A

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 dB (k=2)

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.7 Laboratory Location

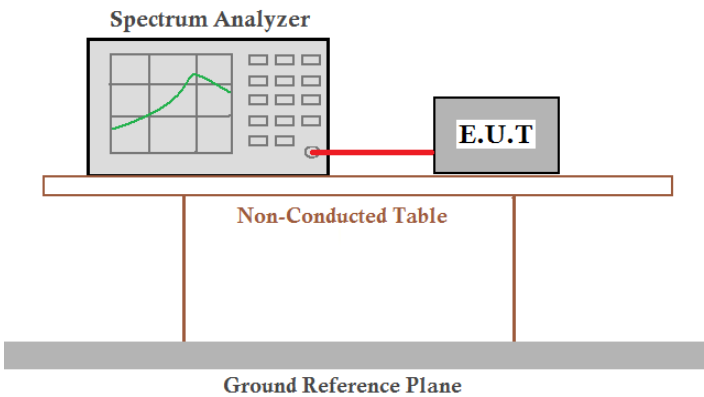
Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-10-2017	11-09- 2018
				11-10-2018	11-09- 2019
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-07-2018	03-06-2019
Signal Generator	R&S	SMR20	1008100050	03-07-2018	03-06-2019
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

6. Test results

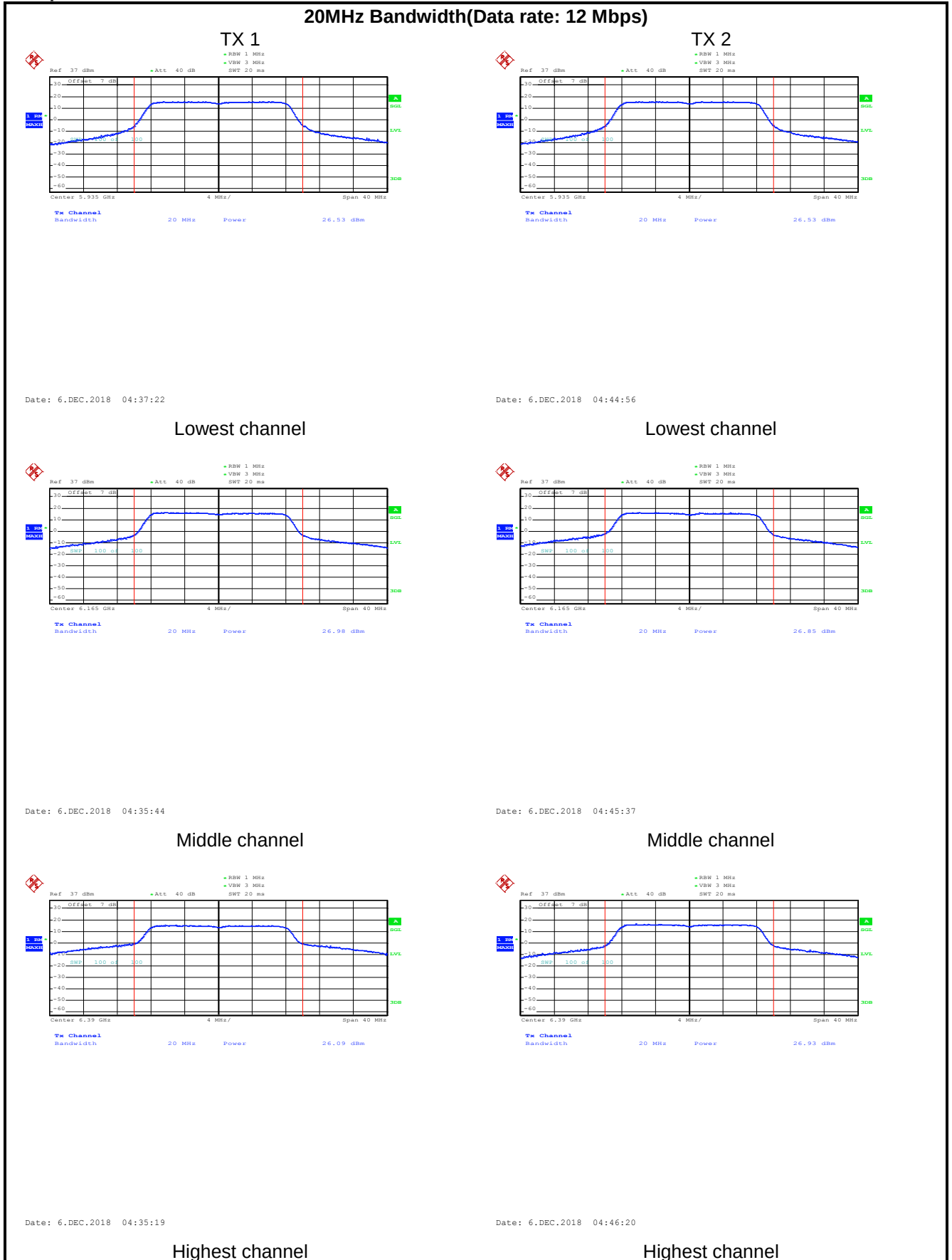
6.1 Conducted Output Power

Test Requirement:	FCC part 101.113(a)
Test Method:	ANSI/TIA-603-D 2010
Limit:	55 dBW(85dBm) EIRP
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

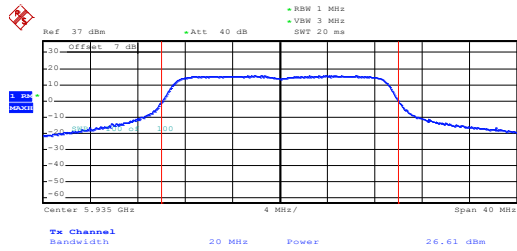
MIMO mode								
Test Mode	Test CH	ANT. Port	Measured Power (dBm)	Total Power (dBm)	Antenna Gain (dBi)	EIPR (dBm)	EIRP Limit (dBm)	Result
20MHz Bandwidth (Data rate: 12 Mbps)	Lowest	TX1	26.53	29.54	32	61.54	85	Pass
		TX2	26.53					
	Middle	TX1	26.98	29.93	32	61.93		
		TX2	26.85					
	Highest	TX1	26.09	29.54	32	61.54		
		TX2	26.93					
20MHz Bandwidth (Data rate: 13 Mbps)	Lowest	TX1	26.61	29.64	32	61.64	85	Pass
		TX2	26.65					
	Middle	TX1	26.68	29.58	32	61.58		
		TX2	26.46					
	Highest	TX1	25.98	29.38	32	61.38		
		TX2	26.72					
40MHz Bandwidth (Data rate: 27 Mbps)	Lowest	TX1	26.42	29.37	32	61.37	85	Pass
		TX2	26.30					
	Middle	TX1	26.25	29.30	32	61.30		
		TX2	26.33					
	Highest	TX1	25.59	29.00	32	61.00		
		TX2	26.36					

Test plot as follows:

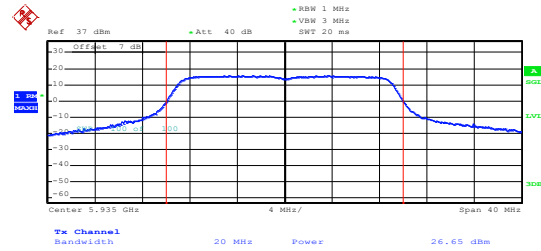


20MHz Bandwidth(Data rate: 13 Mbps)

TX 1



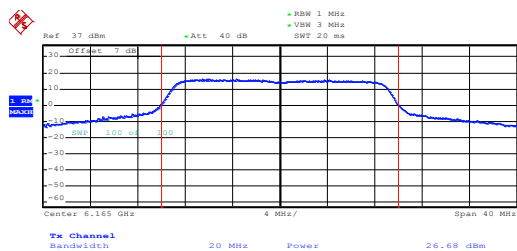
TX 2



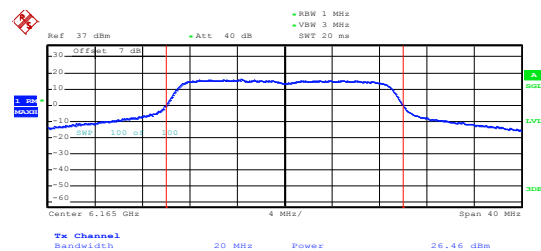
Date: 6,DEC,2018 04:37:49

Date: 6,DEC,2018 04:48:39

Lowest channel



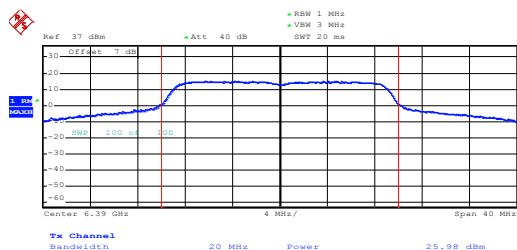
Lowest channel



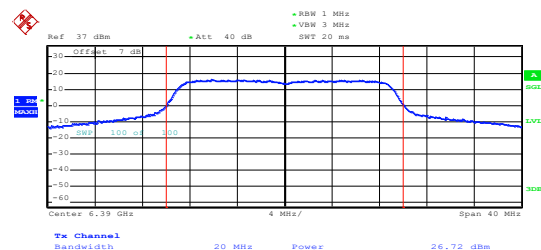
Date: 6,DEC,2018 04:38:55

Date: 6,DEC,2018 04:47:45

Middle channel



Middle channel



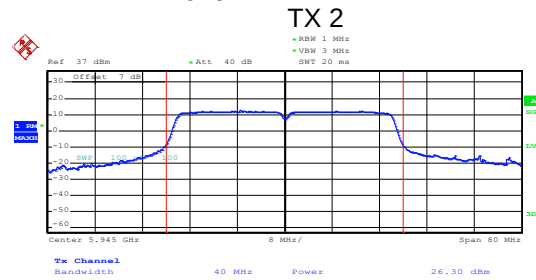
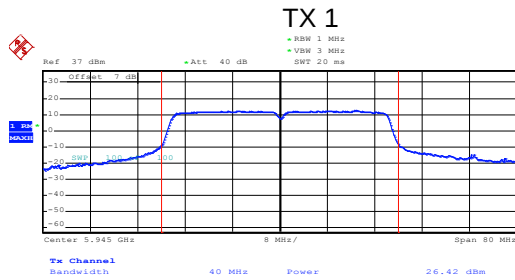
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Date: 6,DEC,2018 04:47:13

Highest channel

Highest channel

40MHz Bandwidth(Data rate: 27 Mbps)

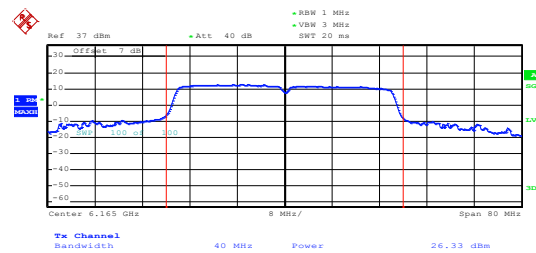
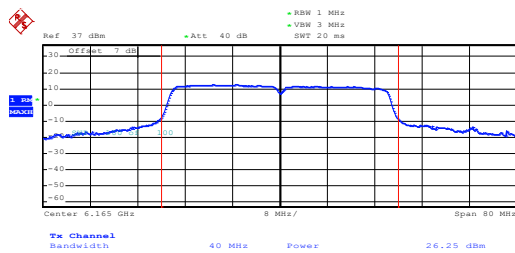


Date: 6.DEC.2018 04:40:48

Date: 6.DEC.2018 04:44:20

Lowest channel

Lowest channel

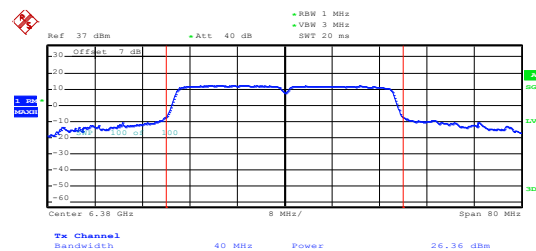
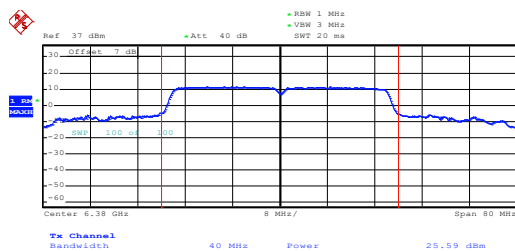


Date: 6.DEC.2018 04:41:13

Date: 6.DEC.2018 04:43:31

Middle channel

Middle channel



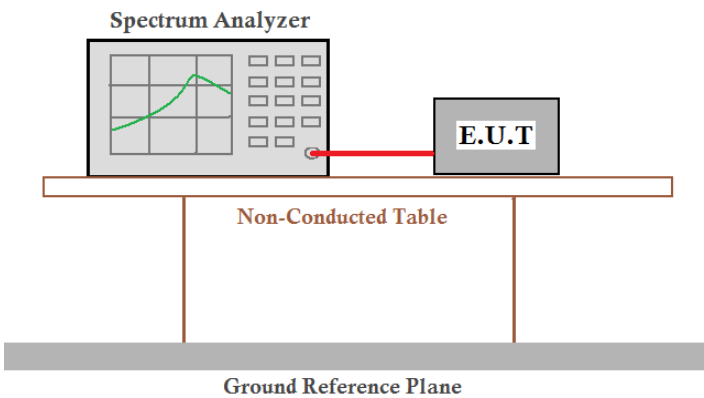
Date: 6.DEC.2018 04:42:04

Date: 6.DEC.2018 04:43:08

Highest channel

Highest channel

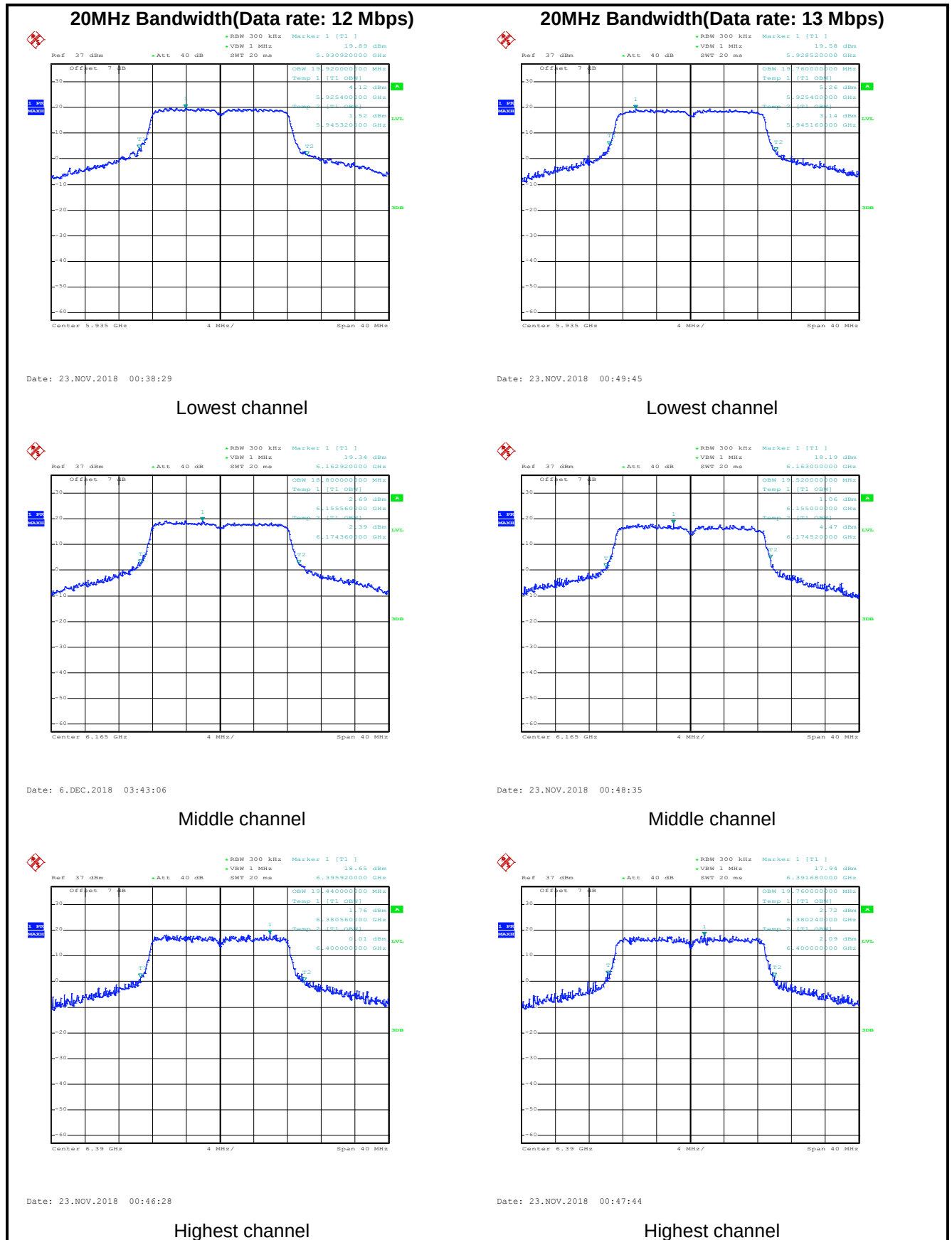
6.2 Occupied Bandwidth

Test Requirement:	FCC part 101.109(c)
Test Method	ANSI/TIA-603-D 2010
Limit:	$\leq 60\text{MHz}$
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

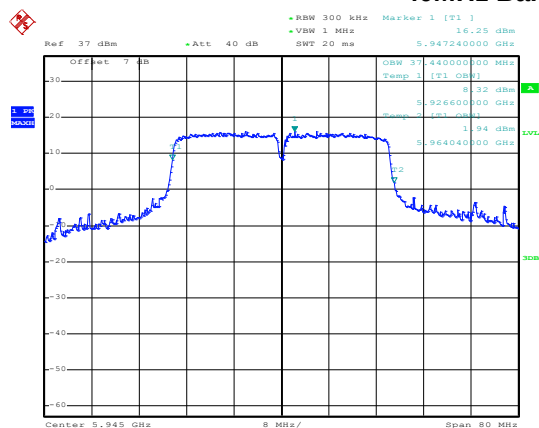
Measurement Data:

Test CH	99% Occupy Bandwidth (MHz)			Limit(kHz)	Result
	20MHz Bandwidth(Data rate: 12 Mbps)	20MHz Bandwidth(Data rate: 13 Mbps)	40MHz Bandwidth(Data rate: 27 Mbps)		
Lowest	19.92	19.76	37.44	$\leq 60\text{MHz}$	Pass
Middle	18.80	19.52	39.52		
Highest	19.44	19.76	38.72		

Test plots as below:

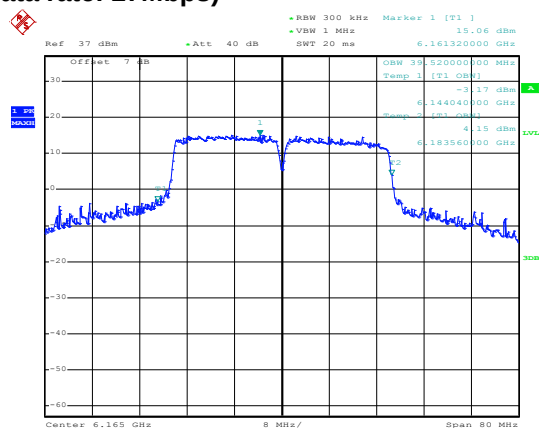


40MHz Bandwidth(Data rate: 27Mbps)



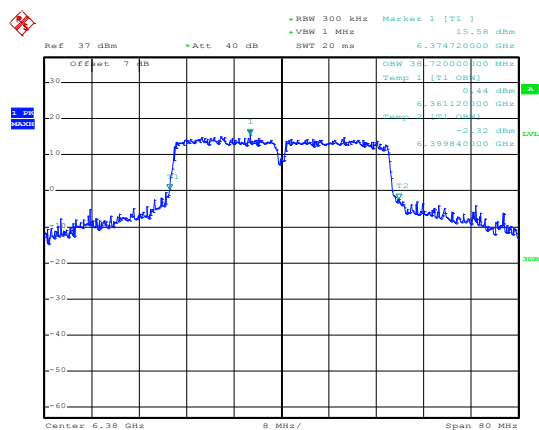
Date: 23.NOV.2018 00:51:04

Lowest channel



Date: 23.NOV.2018 00:52:45

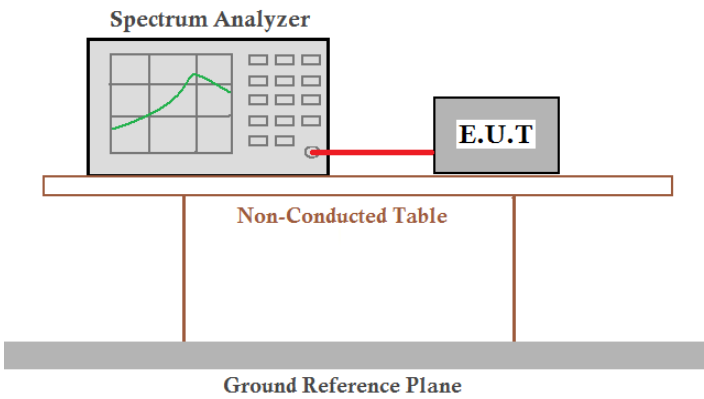
Middle channel



Date: 23.NOV.2018 00:54:09

Highest channel

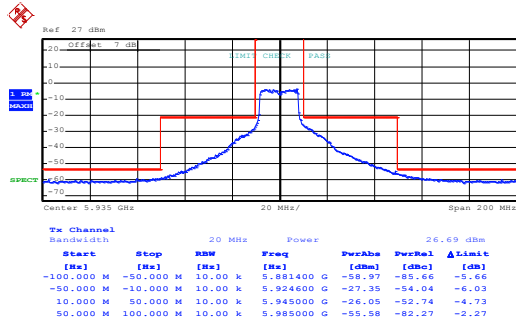
6.3 Emission Mask

Test Requirement:	FCC part 101.111(a)(2)(i)
Test Method:	ANSI/TIA-603-D 2010
Test setup:	 The diagram illustrates the test setup for Emission Mask testing. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

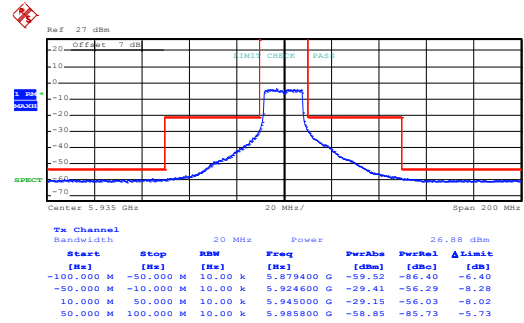
20MHz Bandwidth(Data rate: 12 Mbps)

TX 1



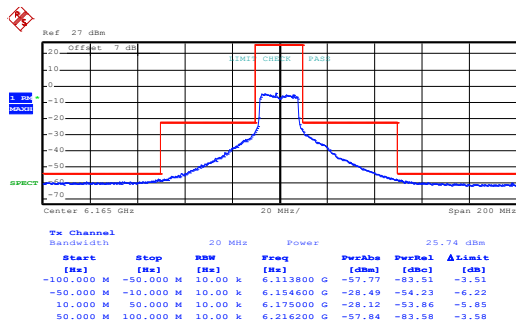
Date: 28.NOV.2018 07:27:43

TX 2



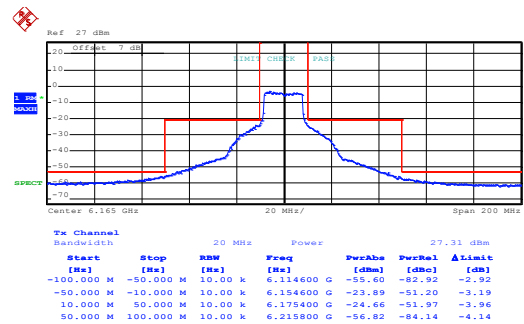
Date: 28.NOV.2018 07:34:53

Lowest channel



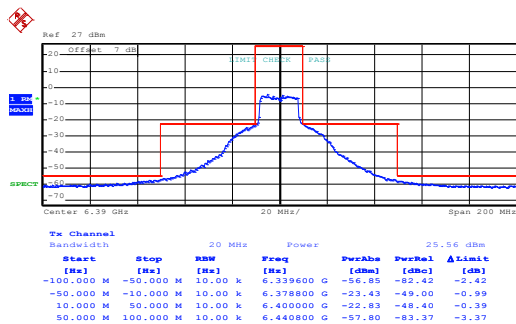
Date: 28.NOV.2018 07:27:07

Lowest channel



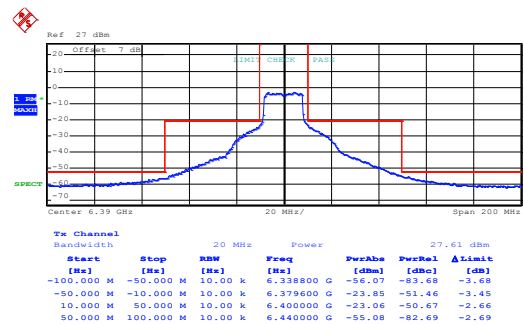
Date: 28.NOV.2018 07:35:29

Middle channel



Date: 28.NOV.2018 07:26:22

Middle channel



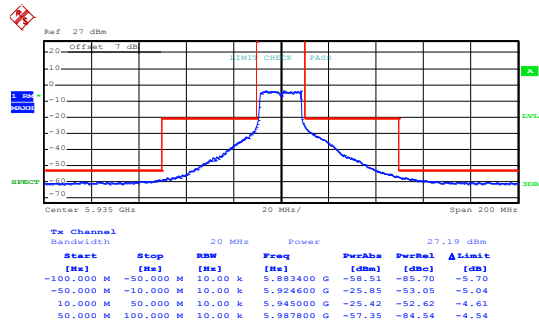
Date: 28.NOV.2018 07:36:14

Highest channel

Highest channel

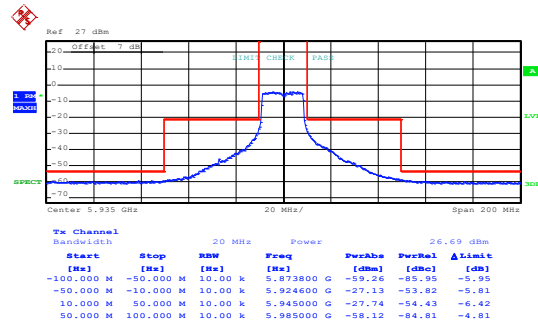
20MHz Bandwidth(Data rate: 13 Mbps)

TX 1



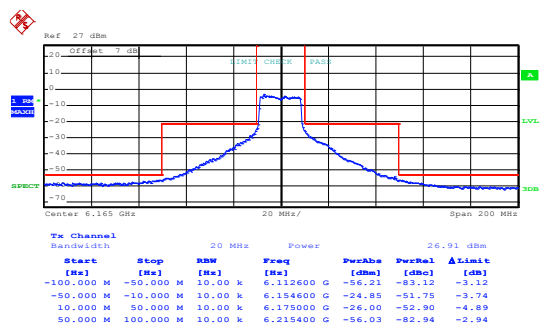
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TX 2



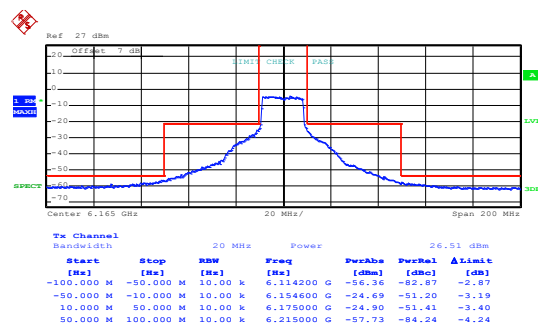
Date: 28.NOV.2018 07:33:41

Lowest channel



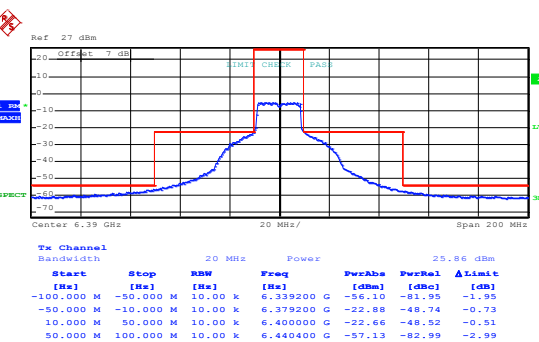
Date: 28.NOV.2018 07:37:44

Lowest channel



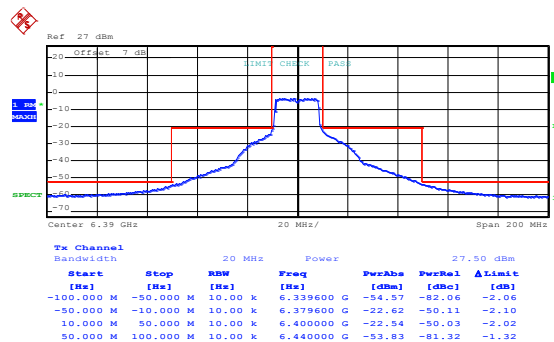
Date: 28.NOV.2018 07:32:30

Middle channel



Date: 28.NOV.2018 07:37:16

Middle channel



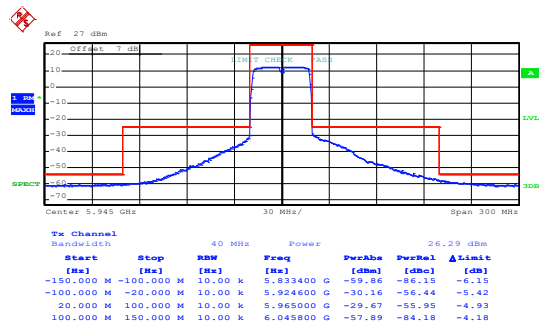
Date: 28.NOV.2018 07:31:55

Highest channel

Highest channel

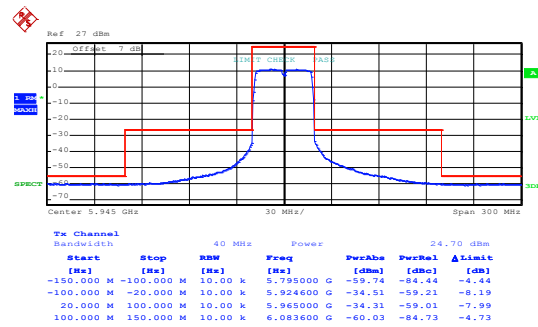
40MHz Bandwidth(Data rate: 27 Mbps)

TX 1



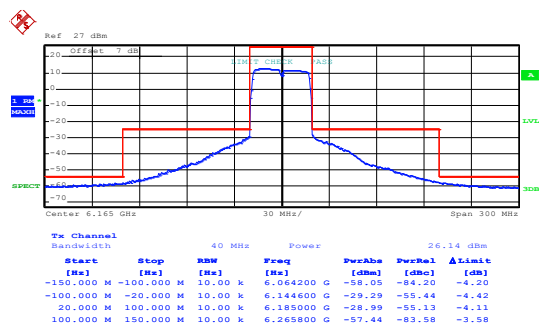
Date: 28.NOV.2018 09:03:00

TX 2



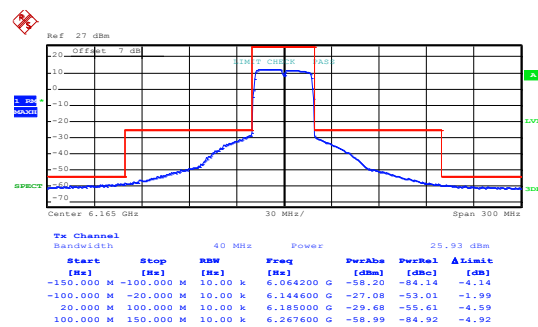
Date: 28.NOV.2018 08:56:33

Lowest channel



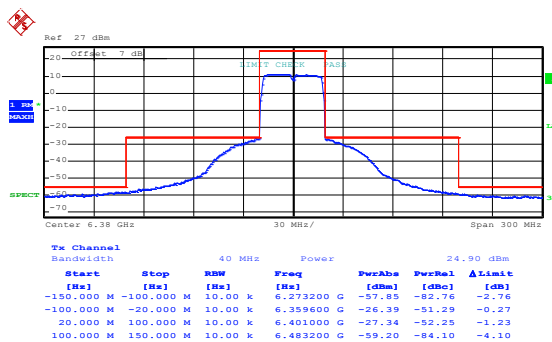
Date: 28.NOV.2018 09:01:58

Lowest channel



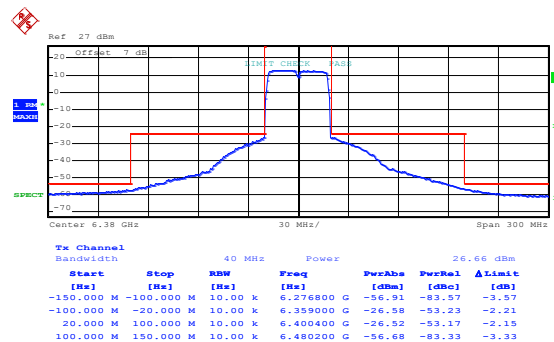
Date: 28.NOV.2018 08:58:12

Middle channel



Date: 28.NOV.2018 09:00:34

Middle channel

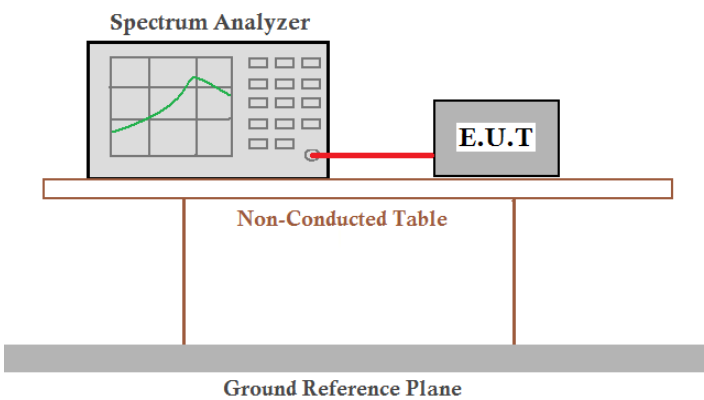


Date: 28.NOV.2018 08:59:22

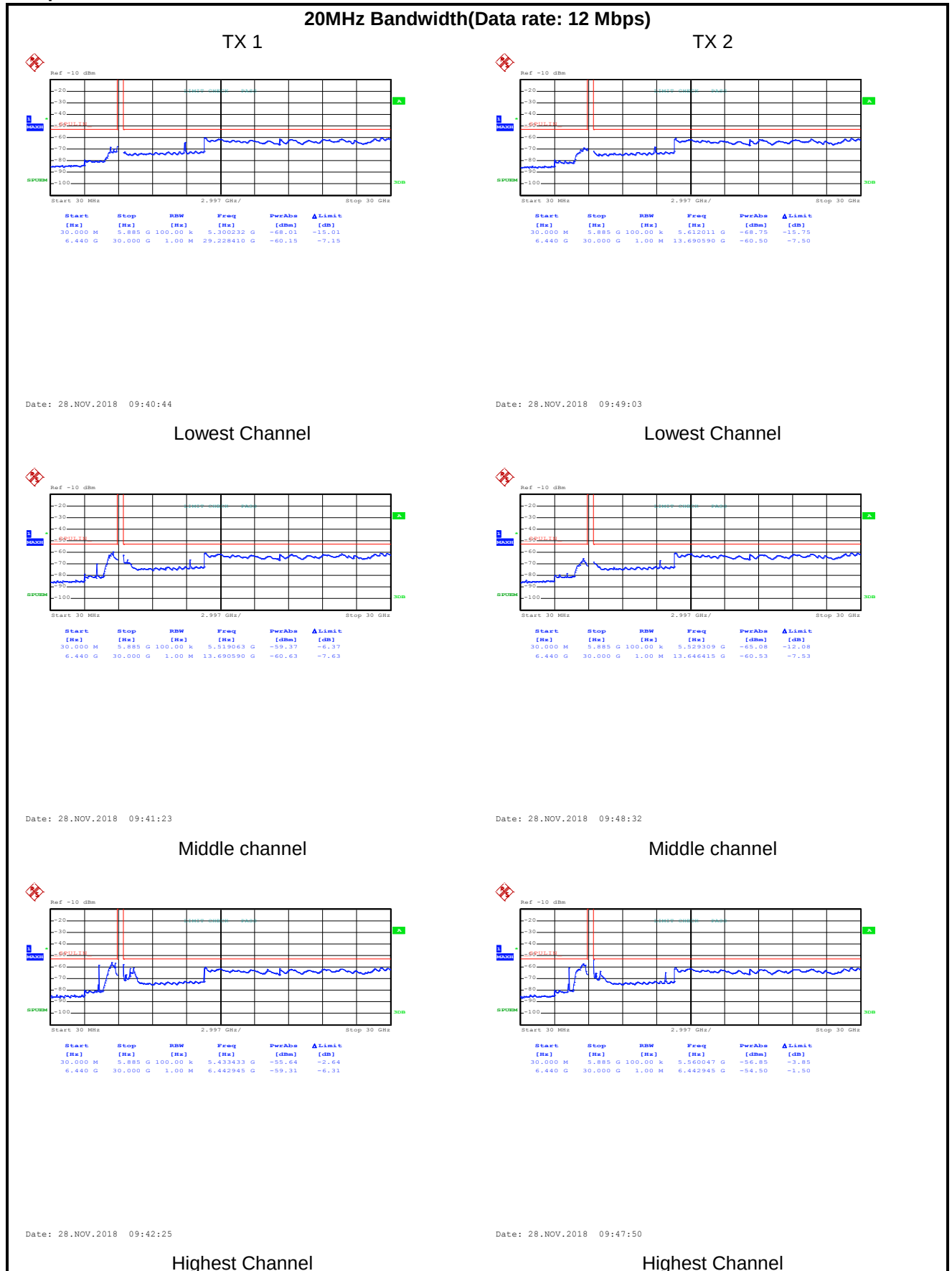
Highest channel

Highest channel

6.4 Out-band Spurious Emission at Antenna Terminals

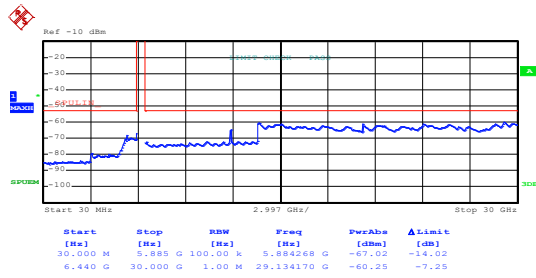
Test Requirement:	FCC part 101.111(a)(2)(iii)
Test Method:	ANSI/TIA-603-D 2010
Limit:	In any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log_{10}$ (the mean output power in watts) decibels, or 80 decibels, whichever is the lesser attenuation.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. The emission levels of 30 GHz to 40 GHz are very lower than the limit and not show in test report. 2. The conducted output power is 30dBm of declare by applicant.

Test plots as follows:



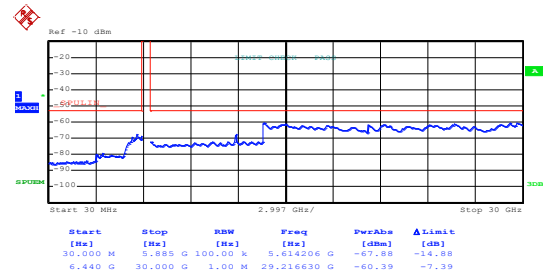
20MHz Bandwidth(Data rate: 13 Mbps)

TX 1



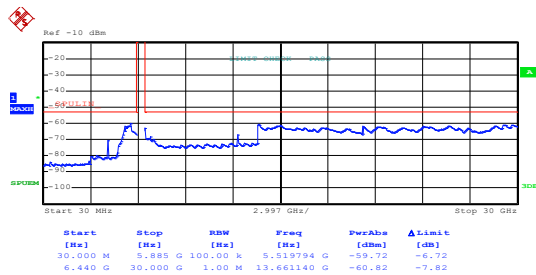
Date: 28.NOV.2018 09:44:25

TX 2



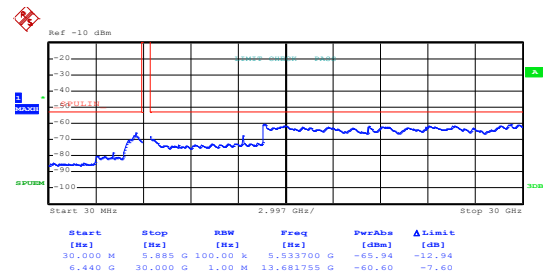
Date: 28.NOV.2018 09:45:48

Lowest Channel



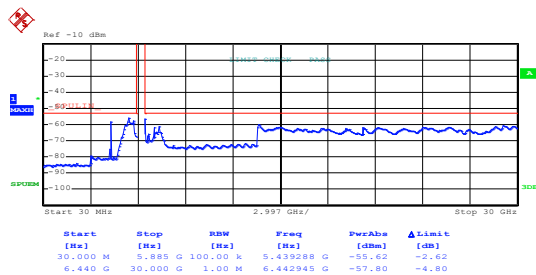
Date: 28.NOV.2018 09:43:35

Lowest Channel



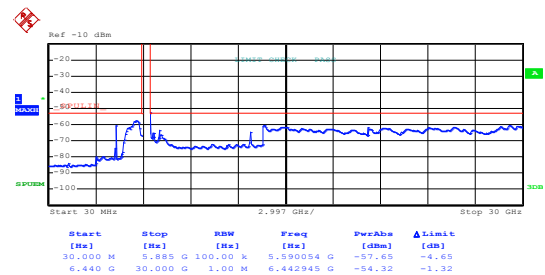
Date: 28.NOV.2018 09:46:13

Middle channel



Date: 28.NOV.2018 09:43:06

Middle channel



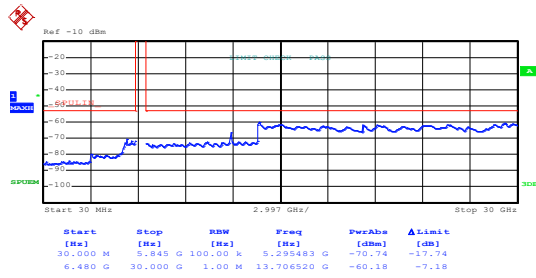
Date: 28.NOV.2018 09:47:21

Highest Channel

Highest Channel

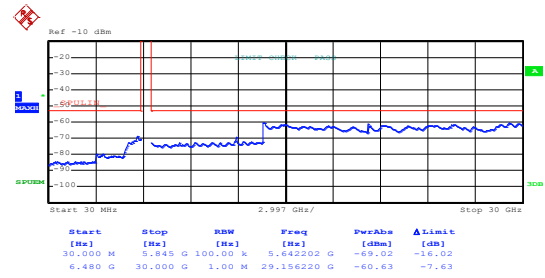
40MHz Bandwidth(Data rate: 27 Mbps)

TX 1



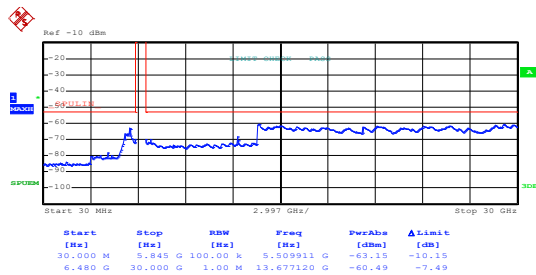
Date: 28.NOV.2018 09:57:39

TX 2



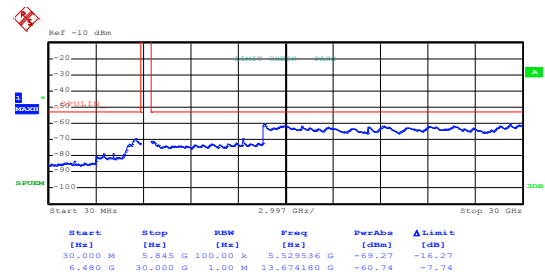
Date: 28.NOV.2018 09:50:30

Lowest Channel



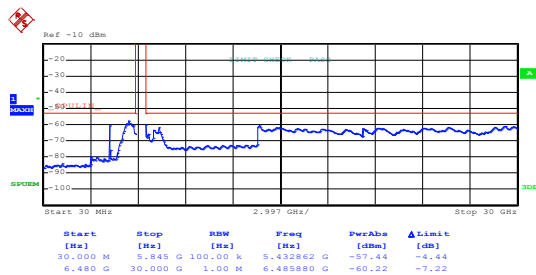
Date: 28.NOV.2018 09:57:08

Lowest Channel



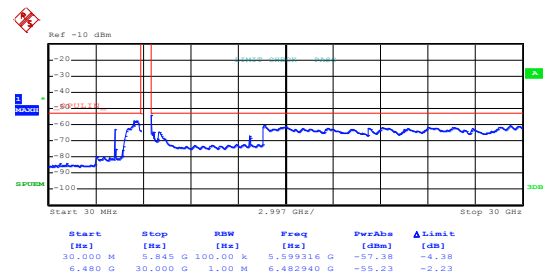
Date: 28.NOV.2018 09:50:55

Middle channel



Date: 28.NOV.2018 09:52:24

Middle channel

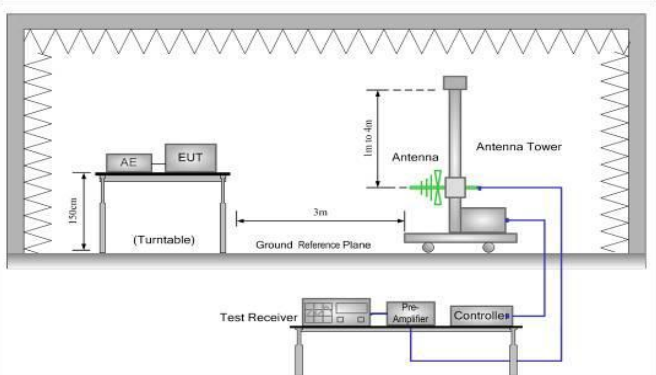
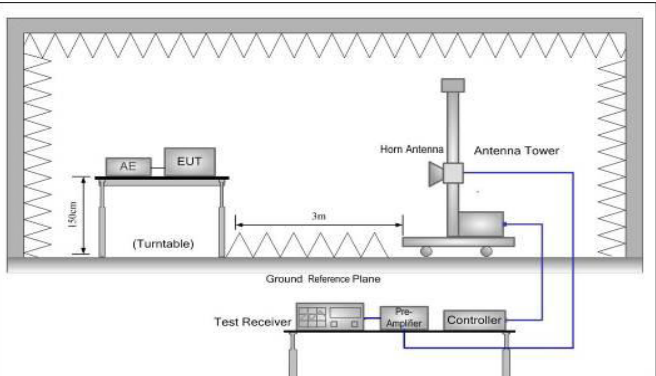


Date: 28.NOV.2018 09:51:41

Highest Channel

Highest Channel

6.5 Field strength of spurious radiation measurement

Test Requirement:	FCC part 101.111(a)(2)(iii)
Test Method:	ANSI/TIA-603-D 2010
Limit:	In any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log_{10}$ (the mean output power in watts) decibels, or 80 decibels, whichever is the lesser attenuation.
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $ERP / EIRP = S.G. \text{ output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

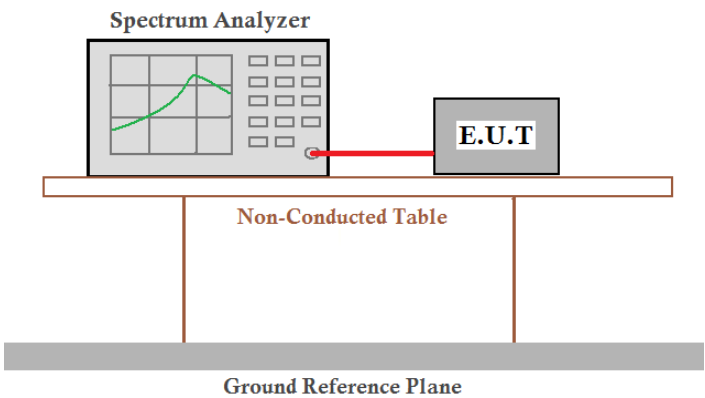
Measurement Data (worst case):

20MHz Bandwidth(Data rate: 12 Mbps)				
Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.68	-50.00	Pass
250.30	V	-63.34		
11870.00	V	-58.64		
222.95	Horizontal	-57.33	-50.00	Pass
249.43	H	-56.49		
11870.00	H	-59.62		
Middle channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.63	-50.00	Pass
250.30	V	-63.36		
12330.00	V	-58.66		
222.95	Horizontal	-57.39	-50.00	Pass
249.43	H	-56.91		
12330.00	H	-59.83		
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.56	-50.00	Pass
250.30	V	-63.34		
12780.00	V	-57.64		
222.95	Horizontal	-57.36	-50.00	Pass
249.43	H	-56.09		
12780.00	H	-59.42		
Remark:				
1. The conducted output power is 30dBm of declare by applicant, so Limit is -50dBm.				

20MHz Bandwidth(Data rate: 13 Mbps)				
Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.63	-50.00	Pass
250.30	V	-63.37		
11870.00	V	-58.74		
222.95	Horizontal	-57.36	-50.00	Pass
249.43	H	-56.42		
11870.00	H	-59.31		
Middle channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.39	-50.00	Pass
250.30	V	-63.42		
12330.00	V	-58.96		
222.95	Horizontal	-57.26	-50.00	Pass
249.43	H	-56.86		
12330.00	H	-59.72		
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.37	-50.00	Pass
250.30	V	-63.19		
12780.00	V	-58.13		
222.95	Horizontal	-57.37	-50.00	Pass
249.43	H	-56.03		
12780.00	H	-59.37		
Remark:				
1. The conducted output power is 30dBm of declare by applicant, so Limit is -50dBm.				

40MHz Bandwidth(Data rate: 27 Mbps)				
Lowest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.47	-50.00	Pass
250.30	V	-63.39		
11890.00	V	-58.34		
222.95	Horizontal	-57.52	-50.00	Pass
249.43	H	-59.04		
11890.00	H	-59.49		
Middle channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.38	-50.00	Pass
250.30	V	-63.42		
12330.00	V	-58.79		
222.95	Horizontal	-57.59	-50.00	Pass
249.43	H	-59.37		
12330.00	H	-59.81		
Highest channel				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
160.35	Vertical	-65.39	-50.00	Pass
250.30	V	-63.47		
12760.00	V	-58.72		
222.95	Horizontal	-57.53	-50.00	Pass
249.43	H	-59.73		
12760.00	H	-59.31		
Remark:				
1. The conducted output power is 30dBm of declare by applicant, so Limit is -50dBm.				

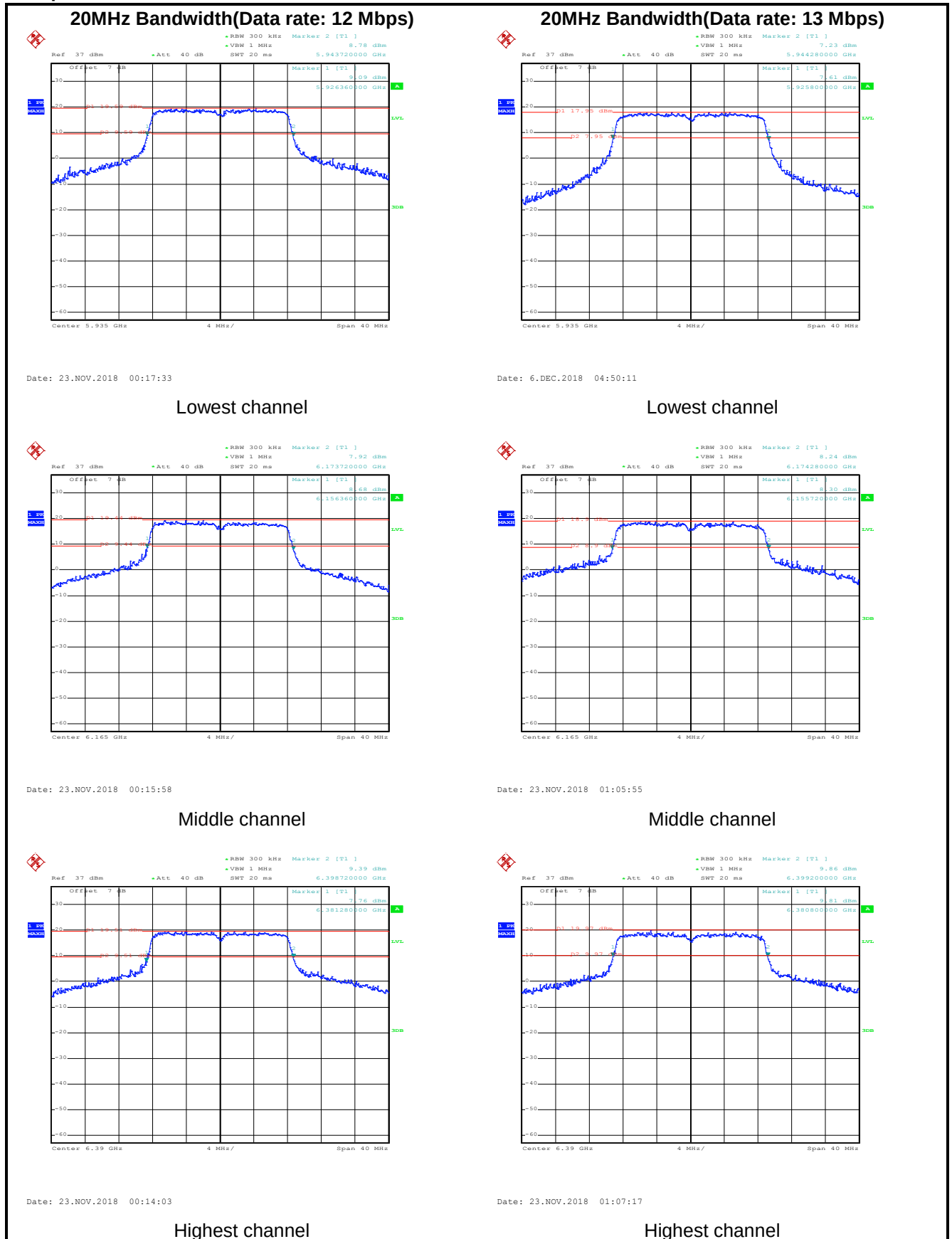
6.6 Frequency Tolerance

Test Requirement:	FCC Part 101.107(a)
Test Method:	ANSI/TIA-6-3-D 2010
Limit:	$\pm 0.005\%$
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane, represented by a thick grey bar.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

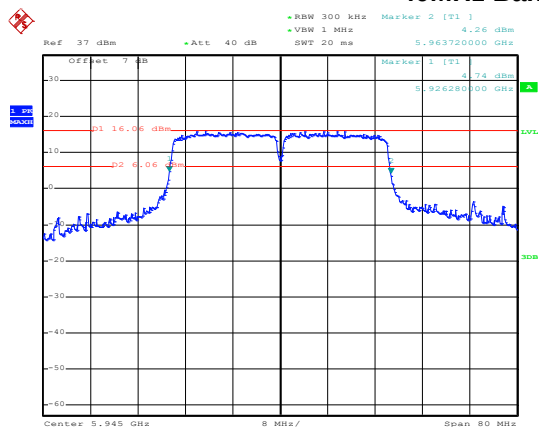
Measurement Data (the worst channel):

Test Mode	Nominal Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)	Limit (%)
20MHz Bandwidth (Data rate: 12 Mbps)	5935.00	5935.04	0.000674	± 0.005%
	6165.00	6165.04	0.000649	± 0.005%
	6390.00	6390.00	0.000000	± 0.005%
20MHz Bandwidth (Data rate: 13 Mbps)	5935.00	5935.04	0.000674	± 0.005%
	6165.00	6165.00	0.000000	± 0.005%
	6390.00	6390.00	0.000000	± 0.005%
40MHz Bandwidth (Data rate: 27 Mbps)	5945.00	5945.00	0.000000	± 0.005%
	6165.00	6164.92	-0.001300	± 0.005%
	6380.00	6380.00	0.000000	± 0.005%
Remark: Measured Frequency = (Marker 1 + Marker 2)/2.				

Test plot as follows:

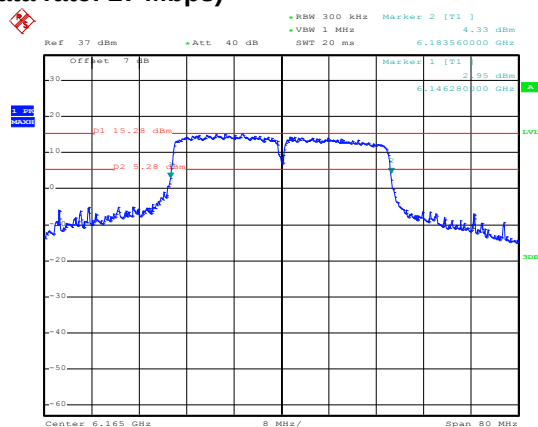


40MHz Bandwidth(Data rate: 27 Mbps)



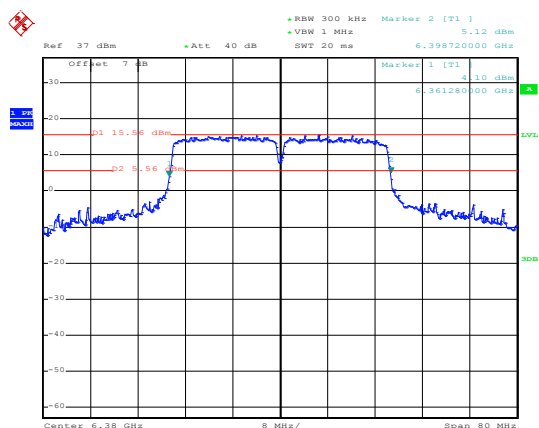
Date: 23.NOV.2018 00:28:52

Lowest channel



Date: 23.NOV.2018 00:59:45

Middle channel



Date: 23.NOV.2018 01:00:52

Highest channel

-----End of report-----