

TEST REPORT

Product : Intelligent Vehicle Network Gateway
Trade mark : TN-IVS-8000
Model/Type reference : TN-IVS-8000
Serial Number : N/A
Report Number : EED32I00216502
FCC ID : 2AJDT-TNIVS8000
Date of Issue : Sep. 23, 2016
Test Standards : 47 CFR Part 15Subpart C (2015)
Test result : PASS

Prepared for:

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Date:

Sep. 23, 2016

Check No.: 2402635644

2 Version

Version No.	Date	Description
00	Sep. 23, 2016	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	N/A*
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013/ KDB 558074 D01v03r05 KDB 662911 D01v02r01	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013/ KDB 558074 D01v03r05 KDB 662911 D01v02r01	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
Radiated Spurious Emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013 KDB 662911 D01v02r01	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013 KDB 662911 D01v02r01	PASS

Remark:

*: The Product is powered by DC 12V.

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested samples and the sample information are provided by the client.

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5 Test Requirement

5.1 Test setup

5.1.1 For Radiated Emissions test setup

Radiated Emissions setup:

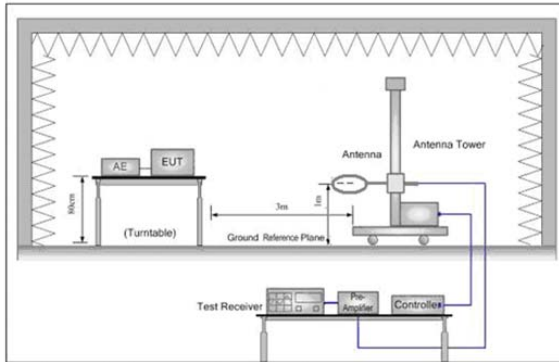


Figure 1. Below 30MHz

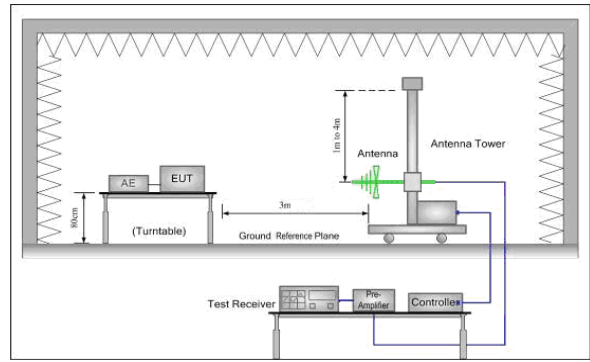


Figure 2. 30MHz to 1GHz

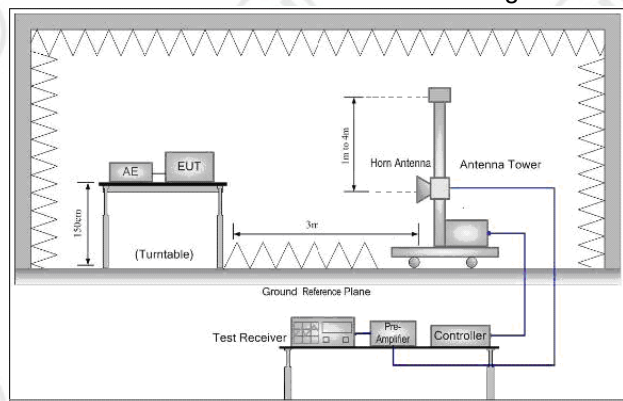
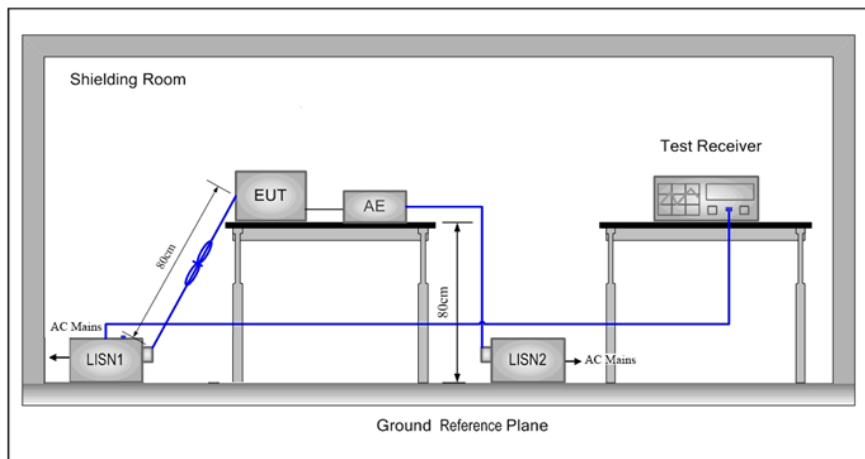


Figure 3. Above 1GHz

5.1.2 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	24°C
Humidity:	46% RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
802.11n(HT40)	2422MHz ~2452 MHz	Channel 1	Channel 4	Channel7
		2422MHz	2437MHz	2452MHz
Transmitting mode:	Keep the EUT at Transmit mode			

Test mode:

Pre-scan under all rate at lowest channel 1 for Antenna 1

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power(dBm)	18.45	18.49	18.52	18.53				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power(dBm)	16.89	16.88	16.85	16.83	16.80	16.75	16.72	16.70
Mode	802.11n (HT20)							
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power(dBm)	19.18	19.15	19.11	19.10	19.08	19.05	19.01	19.00
Mode	802.11n (HT40)							
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps
Power(dBm)	19.00	18.99	18.93	18.91	18.88	18.81	18.80	18.71

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).

6 General Information

6.1 Client Information

Applicant:	ZHEJIANG THIRD NET CO., LTD.
Address of Applicant:	6th FL Building A, The Intelligence e Valley, No. 482 Qianmo Road, Binjiang District, Hangzhou, Zhejiang, china
Manufacturer:	ZHEJIANG THIRD NET CO., LTD.
Address of Manufacturer:	6th FL Building A, The Intelligence e Valley, No. 482 Qianmo Road, Binjiang District, Hangzhou, Zhejiang, china

6.2 General Description of EUT

Product Name:	Intelligent Vehicle Network Gateway
Model No.(EUT):	TN-IVS-8000
Trade Mark:	TN-IVS-8000
EUT Supports Radios application	GPS: 1575.42MHz Wlan 2.4GHz 802.11b/g/n(HT20&HT40) UMTS: Band II(1900MHz), Band IV(1700MHz), Band V(850MHz) WCDMA LTE: Band 2, Band 4, Band 5, Band 17
Power Supply:	DC 9-36V
Sample Received Date:	Aug. 01, 2016
Sample tested Date:	Aug. 01, 2016 to Sep. 19, 2016

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Sample Type:	Fixed production
Test Power Grade:	b:25, g:15, n20:20, n40:23 (manufacturer declare)
Test Software of EUT:	Atheros Radio Test2 V2.3 (manufacturer declare)
Antenna Type and Gain:	Temporary antenna
Antenna Gain:	3dBi
Test Voltage:	DC 12V

Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Operation Frequency each of channel(802.11n HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2422MHz	4	2437MHz	7	2452MHz
2	2427MHz	5	2442MHz		
3	2432MHz	6	2447MHz		

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Certification	Supplied by
laptop	LENOVO	E46L	FCC DOC	CTI
Mouse	LENOVO	LXH-EMS-10ZA	FCC DOC	CTI
DC Source	QIEKESI	10209898	FCC DOC	CTI

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 3368 3668 Fax: +86 (0) 755 3368 3385

No tests were sub-contracted.

6.6 Test Facility

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

CNAS-Lab Code: L1910

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 886427

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 & 10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

6.7 Deviation from Standards

None.

6.8 Abnormalities from Standard Conditions

None.

6.9 Other Information Requested by the Customer

None.

6.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

7 Equipment List

RF test system					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Spectrum Analyzer	Keysight	N9010A	MY54510339	04-01-2016	03-31-2017
Signal Generator	Keysight	N5182B	MY53051549	04-01-2016	03-31-2017
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
DC Power	Keysight	E3642A	MY54436035	04-01-2016	03-31-2017
PC-1	Lenovo	R4960d	---	04-01-2016	03-31-2017
power meter & power sensor	R&S	OSP120	101374	04-01-2016	03-31-2017
RF control unit	JS Tonscend	JS0806-2	158060006	04-01-2016	03-31-2017
BT&Wi-Fi Automatic test software	JS Tonscend	JS1120-2	---	04-01-2016	03-31-2017

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	05-23-2016	05-22-2017
Microwave Preamplifier	Agilent	8449B	3008A02425	02-04-2016	02-03-2017
Horn Antenna	ETS-LINDGREN	3117	00057410	06-30-2015	06-28-2018
Horn Antenna	A.H.SYSTEMS	SAS-574	374	06-30-2015	06-28-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-16-2016	06-15-2017
Receiver	R&S	ESCI	100435	06-16-2016	06-15-2017
Multi device Controller	maturo	NCD/070/1071 1112	---	01-12-2016	01-11-2017
LISN	schwarzbeck	NNBM8125	81251547	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251548	06-16-2016	06-15-2017
Signal Generator	Agilent	E4438C	MY45095744	04-01-2016	03-31-2017
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-11-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
High-pass filter	Sinoscite	FL3CX03WG1 8NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	---	01-12-2016	01-11-2017

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C (2015)	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
3	KDB 662911 D01 Multiple Transmitter Output v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10/ KDB 558074	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10/ KDB 558074	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10/ KDB 558074	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10/ KDB 558074	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10/ KDB 558074	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	N/A
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix H)

Appendix A): Conducted Peak Output Power

Test Procedure

1. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

Directional Antenna Gain

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

Antenna 1 Gain (dBi)	Antenna 2 Gain (dBi)	Correlated Chains Directional Gain (dBi)
3	3	6.01

Result Table

Mode	Antenna	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	Ant1	LCH	18.53	PASS
11B	Ant2	LCH	19.48	PASS
11B	Ant1	MCH	18.29	PASS
11B	Ant2	MCH	18.91	PASS
11B	Ant1	HCH	18.44	PASS
11B	Ant2	HCH	19	PASS
11G	Ant1	LCH	16.89	PASS
11G	Ant2	LCH	15.78	PASS
11G	Ant1	MCH	16.19	PASS
11G	Ant2	MCH	15.92	PASS
11G	Ant1	HCH	16.55	PASS
11G	Ant2	HCH	16.17	PASS
11N20SISO	Ant1	LCH	19.18	PASS
11N20SISO	Ant2	LCH	19.36	PASS
11N20SISO	Ant1	MCH	16.54	PASS
11N20SISO	Ant2	MCH	18.78	PASS
11N20SISO	Ant1	HCH	16.35	PASS
11N20SISO	Ant2	HCH	18.98	PASS
11N20MIMO	Ant1	LCH	19	PASS
11N20MIMO	Ant2	LCH	19.09	PASS
11N20MIMO	Ant1+2	LCH	22.06	PASS
11N20MIMO	Ant1	MCH	19.09	PASS
11N20MIMO	Ant2	MCH	19.64	PASS
11N20MIMO	Ant1+2	MCH	22.38	PASS
11N20MIMO	Ant1	HCH	19.14	PASS
11N20MIMO	Ant2	HCH	19.74	PASS
11N20MIMO	Ant1+2	HCH	22.46	PASS
11N40SISO	Ant1	LCH	18.88	PASS
11N40SISO	Ant2	LCH	19.1	PASS
11N40SISO	Ant1	MCH	19.58	PASS
11N40SISO	Ant2	MCH	19.43	PASS
11N40SISO	Ant1	HCH	18.47	PASS
11N40SISO	Ant2	HCH	19.04	PASS
11N40MIMO	Ant1	LCH	19	PASS
11N40MIMO	Ant2	LCH	19.38	PASS

11N40MIMO	Ant1+2	LCH	22.20	PASS
11N40MIMO	Ant1	MCH	18.76	PASS
11N40MIMO	Ant2	MCH	19.17	PASS
11N40MIMO	Ant1+2	MCH	21.98	PASS
11N40MIMO	Ant1	HCH	18.32	PASS
11N40MIMO	Ant2	HCH	18.9	PASS
11N40MIMO	Ant1+2	HCH	21.63	PASS

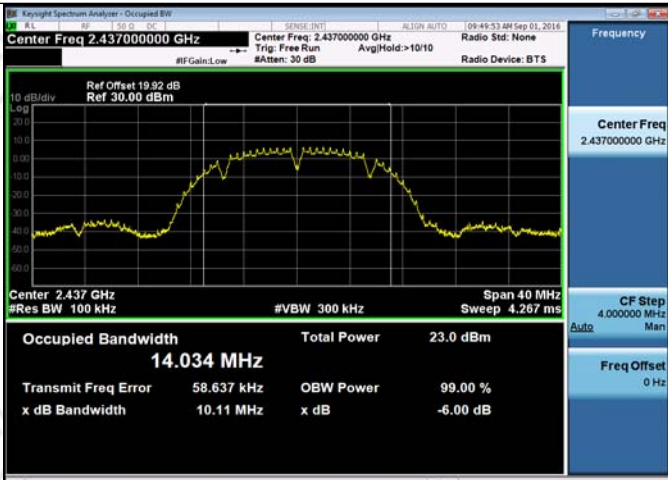
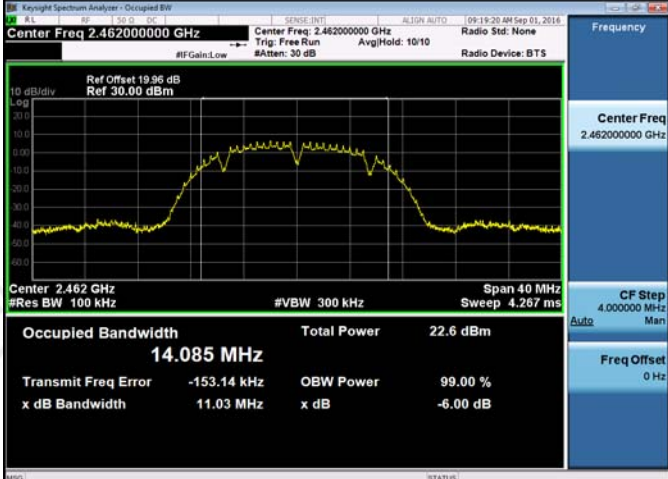
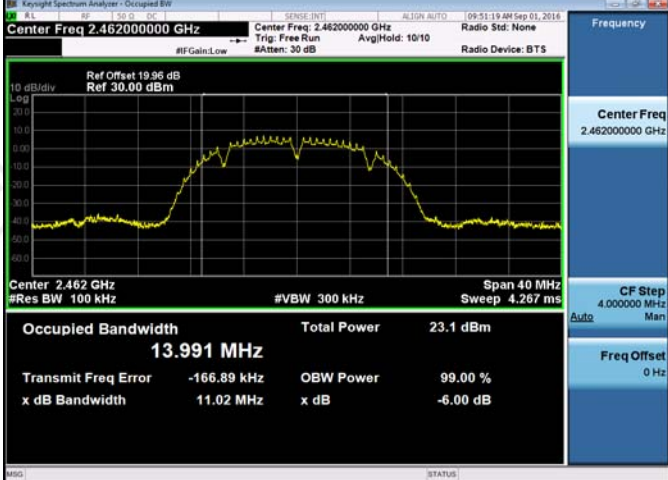
Appendix B): 6dB Occupied Bandwidth

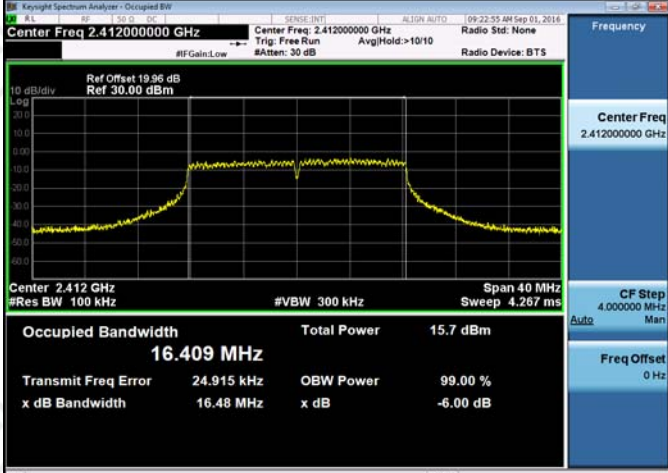
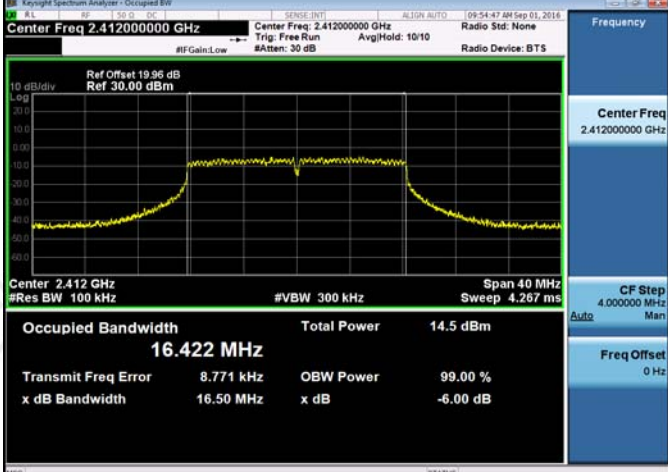
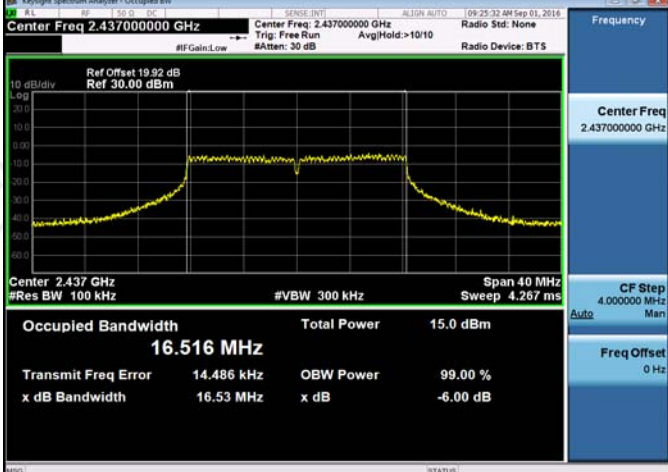
Result Table

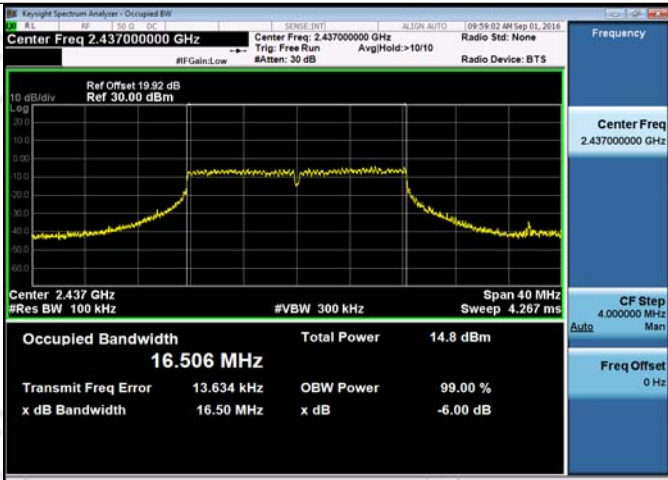
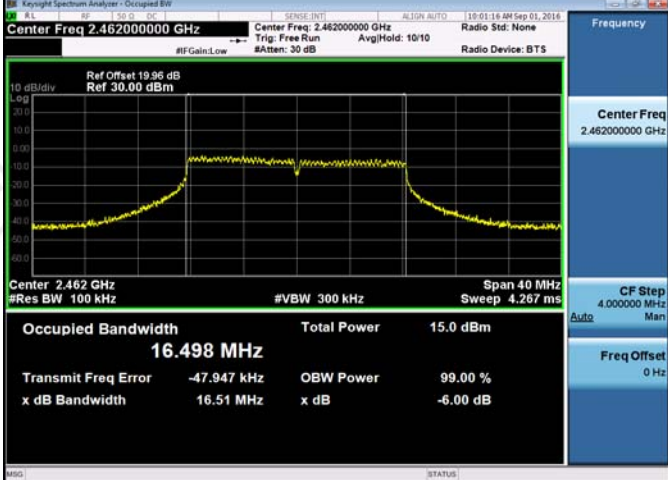
Mode	Antenna	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	Ant1	LCH	10.04	13.653	PASS	Peak detector
11B	Ant2	LCH	10.06	13.630	PASS	
11B	Ant1	MCH	10.11	14.097	PASS	
11B	Ant2	MCH	10.11	14.034	PASS	
11B	Ant1	HCH	11.03	14.085	PASS	
11B	Ant2	HCH	11.02	13.991	PASS	
11G	Ant1	LCH	16.48	16.409	PASS	
11G	Ant2	LCH	16.50	16.422	PASS	
11G	Ant1	MCH	16.53	16.516	PASS	
11G	Ant2	MCH	16.50	16.506	PASS	
11G	Ant1	HCH	16.48	16.510	PASS	
11G	Ant2	HCH	16.51	16.498	PASS	
11N20SISO	Ant1	LCH	17.64	17.627	PASS	
11N20SISO	Ant2	LCH	17.70	17.638	PASS	
11N20SISO	Ant1	MCH	17.81	17.801	PASS	
11N20SISO	Ant2	MCH	17.81	17.779	PASS	
11N20SISO	Ant1	HCH	17.74	17.783	PASS	
11N20SISO	Ant2	HCH	17.69	17.762	PASS	
11N20MIMO	Ant1	LCH	17.72	17.666	PASS	
11N20MIMO	Ant2	LCH	17.64	17.604	PASS	
11N20MIMO	Ant1	MCH	17.77	17.786	PASS	
11N20MIMO	Ant2	MCH	17.76	17.755	PASS	
11N20MIMO	Ant1	HCH	17.69	17.813	PASS	
11N20MIMO	Ant2	HCH	17.71	17.745	PASS	
11N40SISO	Ant1	LCH	36.43	36.236	PASS	
11N40SISO	Ant2	LCH	36.48	36.291	PASS	
11N40SISO	Ant1	MCH	36.55	36.436	PASS	
11N40SISO	Ant2	MCH	36.59	36.415	PASS	
11N40SISO	Ant1	HCH	36.44	36.244	PASS	
11N40SISO	Ant2	HCH	36.52	36.249	PASS	
11N40MIMO	Ant1	LCH	36.46	36.278	PASS	
11N40MIMO	Ant2	LCH	36.46	36.260	PASS	
11N40MIMO	Ant1	MCH	36.57	36.440	PASS	
11N40MIMO	Ant2	MCH	36.57	36.365	PASS	
11N40MIMO	Ant1	HCH	36.46	36.264	PASS	
11N40MIMO	Ant2	HCH	36.46	36.220	PASS	

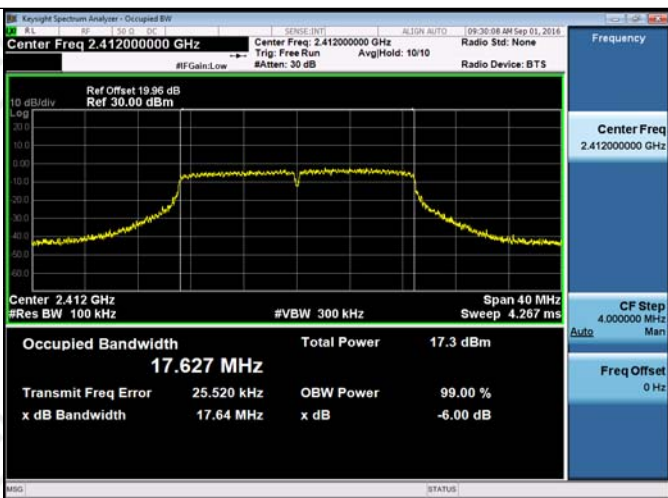
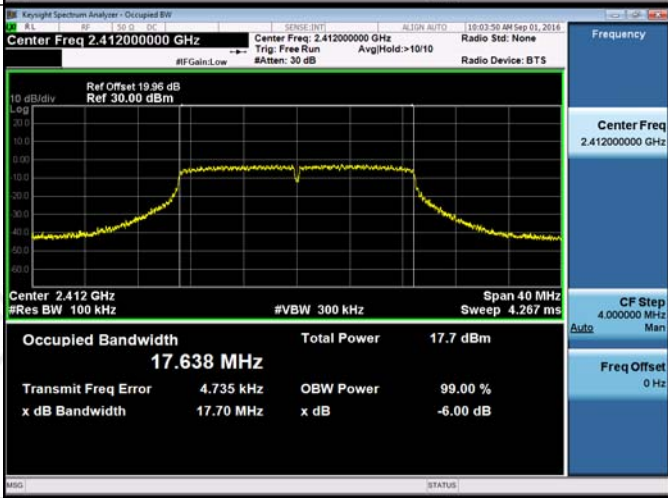
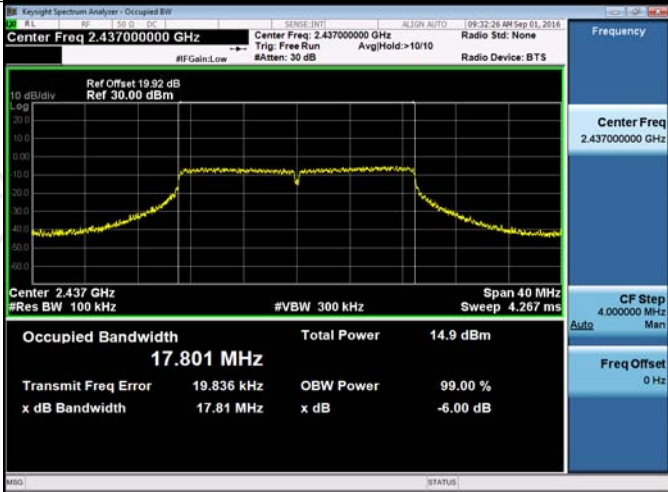
Test Graph

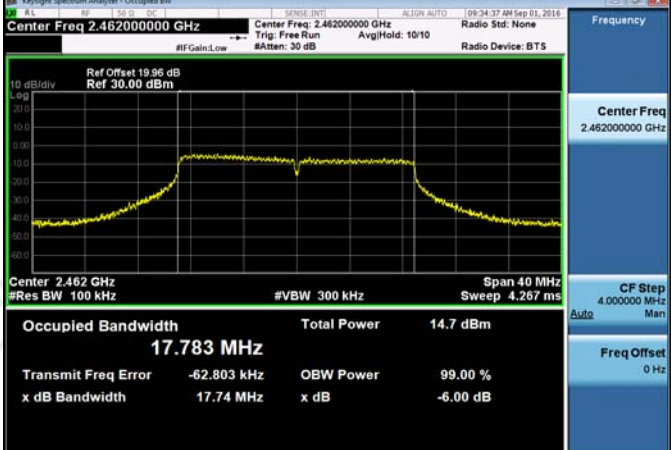


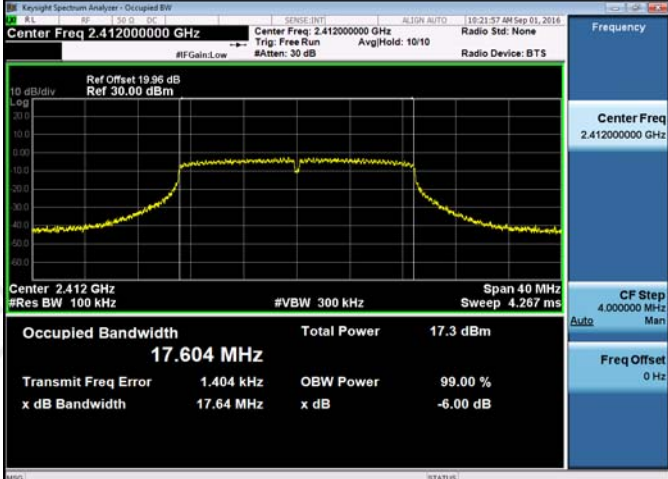
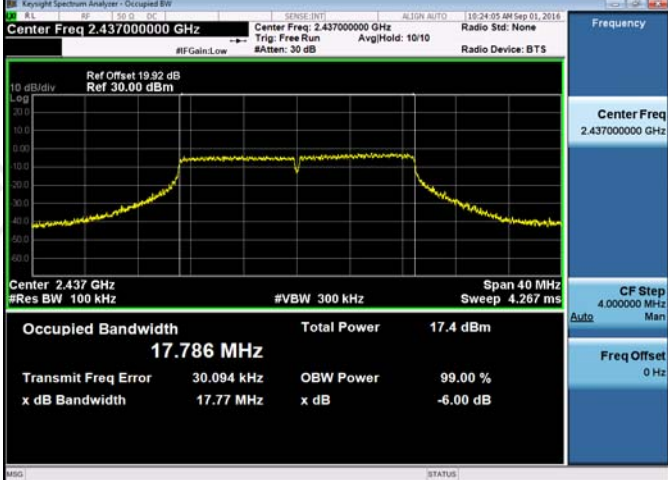
11B/MCH_Ant2	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.32 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 14.034 MHz Total Power 23.0 dBm Transmit Freq Error 58.637 kHz OBW Power 99.00 % x dB Bandwidth 10.11 MHz x dB -6.00 dB
11B/HCH_Ant1	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 14.085 MHz Total Power 22.6 dBm Transmit Freq Error -153.14 kHz OBW Power 99.00 % x dB Bandwidth 11.03 MHz x dB -6.00 dB
11B/HCH_Ant2	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 13.991 MHz Total Power 23.1 dBm Transmit Freq Error -166.89 kHz OBW Power 99.00 % x dB Bandwidth 11.02 MHz x dB -6.00 dB

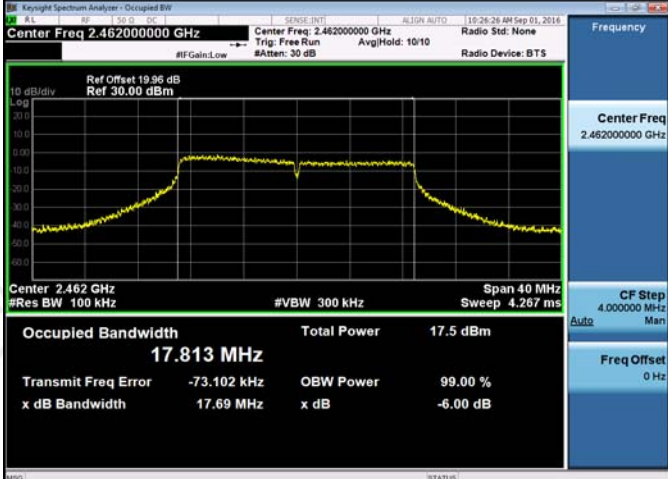
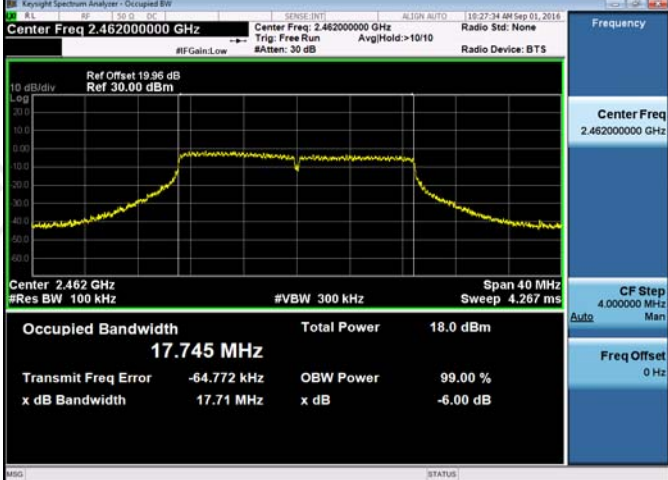
11G/LCH_Ant1	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.409 MHz Total Power 15.7 dBm Transmit Freq Error 24.915 kHz OBW Power 99.00 % x dB Bandwidth 16.48 MHz x dB -6.00 dB
11G/LCH_Ant2	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.422 MHz Total Power 14.5 dBm Transmit Freq Error 8.771 kHz OBW Power 99.00 % x dB Bandwidth 16.50 MHz x dB -6.00 dB
11G/MCH_Ant1	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.92 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.516 MHz Total Power 15.0 dBm Transmit Freq Error 14.486 kHz OBW Power 99.00 % x dB Bandwidth 16.53 MHz x dB -6.00 dB

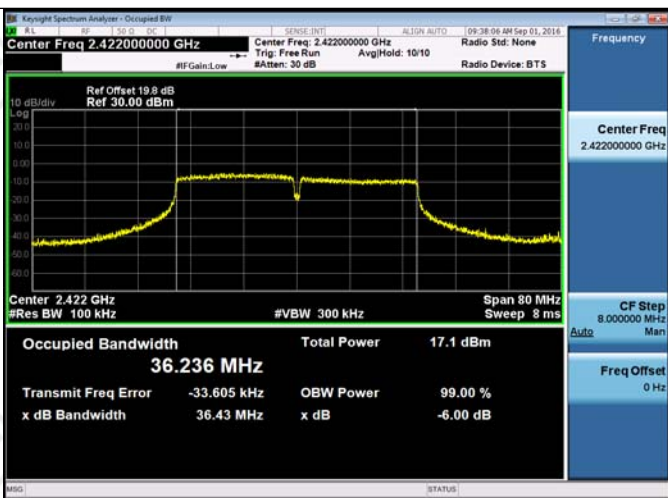
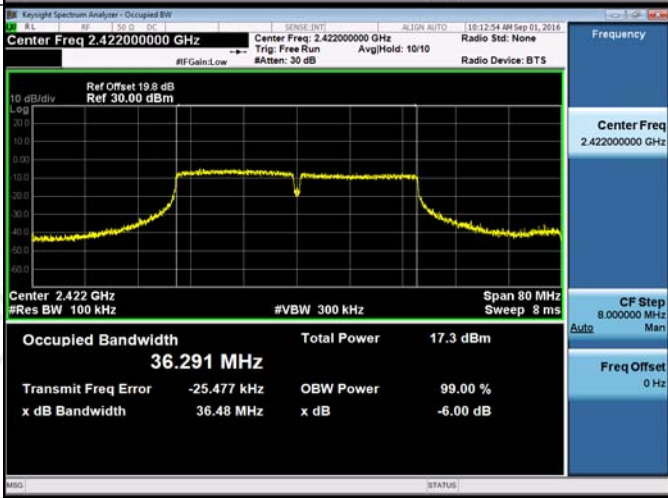
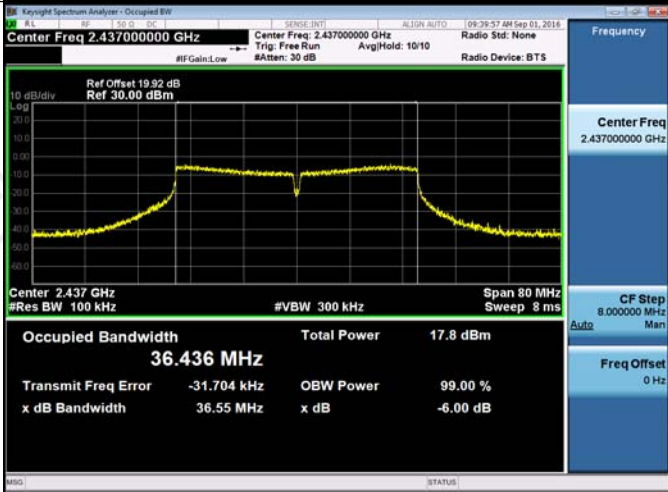
11G/MCH_Ant2	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.35 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.506 MHz Total Power 14.8 dBm Transmit Freq Error 13.634 kHz OBW Power 99.00 % x dB Bandwidth 16.50 MHz x dB -6.00 dB
11G/HCH_Ant1	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.510 MHz Total Power 15.3 dBm Transmit Freq Error -43.447 kHz OBW Power 99.00 % x dB Bandwidth 16.48 MHz x dB -6.00 dB
11G/HCH_Ant2	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.498 MHz Total Power 15.0 dBm Transmit Freq Error -47.947 kHz OBW Power 99.00 % x dB Bandwidth 16.51 MHz x dB -6.00 dB

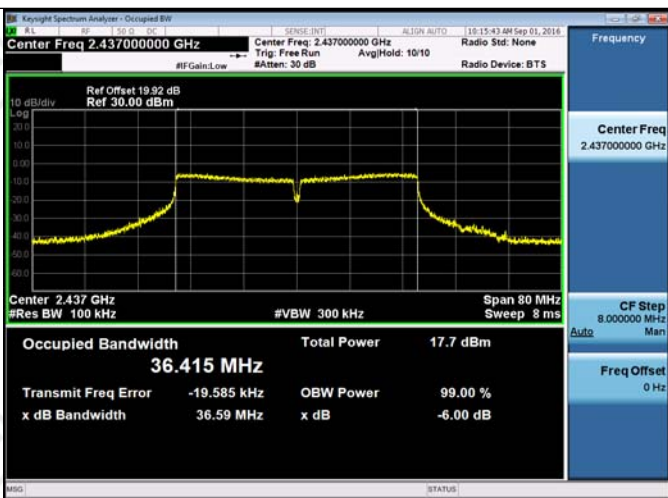
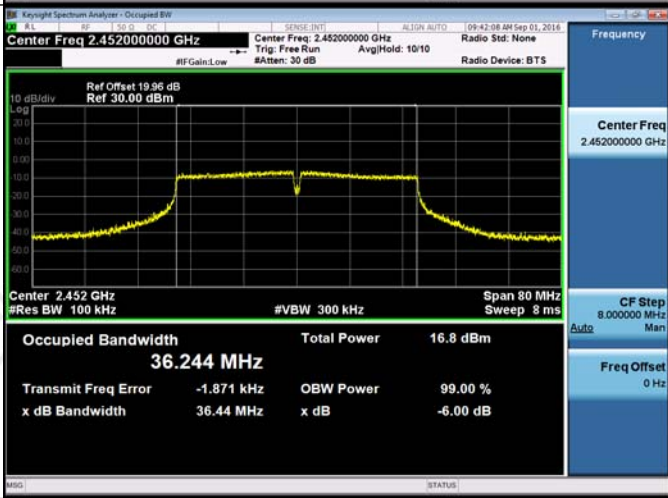
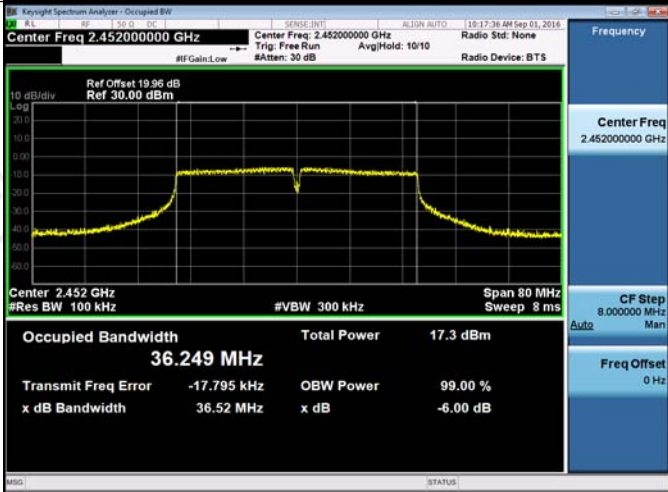
11N20SISO/LCH_Ant1	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.627 MHz Total Power 17.3 dBm Transmit Freq Error 25.520 kHz OBW Power 99.00 % x dB Bandwidth 17.64 MHz x dB -6.00 dB Radio Device: BTS
11N20SISO/LCH_Ant2	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.638 MHz Total Power 17.7 dBm Transmit Freq Error 4.735 kHz OBW Power 99.00 % x dB Bandwidth 17.70 MHz x dB -6.00 dB Radio Device: BTS
11N20SISO/MCH_Ant1	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.92 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.801 MHz Total Power 14.9 dBm Transmit Freq Error 19.836 kHz OBW Power 99.00 % x dB Bandwidth 17.81 MHz x dB -6.00 dB Radio Device: BTS

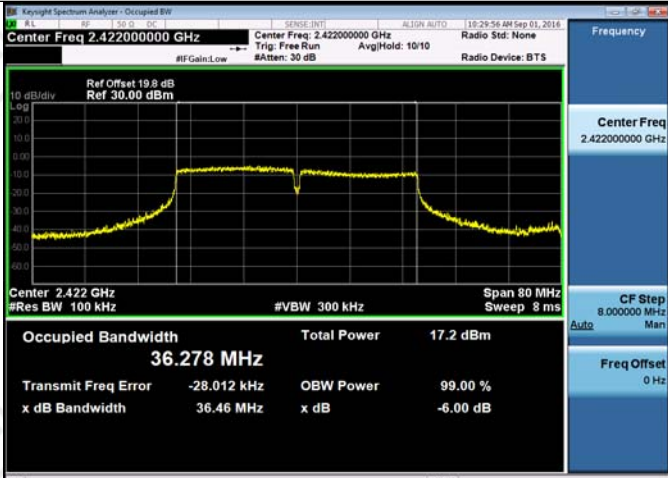
11N20SISO/MCH_Ant2	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.35 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.779 MHz Total Power 17.1 dBm Transmit Freq Error 18.028 kHz OBW Power 99.00 % x dB Bandwidth 17.81 MHz x dB -6.00 dB CF Step 4.000000 MHz Freq Offset 0 Hz
11N20SISO/HCH_Ant1	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.783 MHz Total Power 14.7 dBm Transmit Freq Error -62.803 kHz OBW Power 99.00 % x dB Bandwidth 17.74 MHz x dB -6.00 dB CF Step 4.000000 MHz Freq Offset 0 Hz
11N20SISO/HCH_Ant2	 Key: Knight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.762 MHz Total Power 17.3 dBm Transmit Freq Error -63.713 kHz OBW Power 99.00 % x dB Bandwidth 17.69 MHz x dB -6.00 dB CF Step 4.000000 MHz Freq Offset 0 Hz

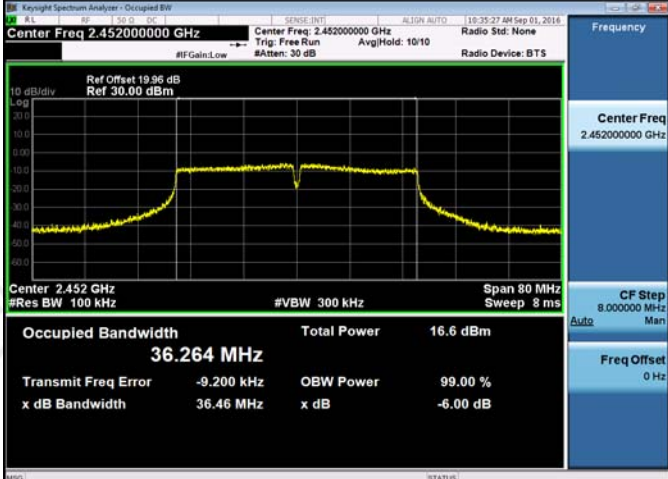
11N20MIMO/LCH_Ant1	 Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.666 MHz Total Power 17.3 dBm Transmit Freq Error 17.776 kHz OBW Power 99.00 % x dB Bandwidth 17.72 MHz x dB -6.00 dB
11N20MIMO/LCH_Ant2	 Center Freq 2.412000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.604 MHz Total Power 17.3 dBm Transmit Freq Error 1.404 kHz OBW Power 99.00 % x dB Bandwidth 17.64 MHz x dB -6.00 dB
11N20MIMO/MCH_Ant1	 Center Freq 2.437000000 GHz Ref Offset 19.92 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.786 MHz Total Power 17.4 dBm Transmit Freq Error 30.094 kHz OBW Power 99.00 % x dB Bandwidth 17.77 MHz x dB -6.00 dB

11N20MIMO/MCH_Ant2	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.35 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.755 MHz Total Power 17.9 dBm Transmit Freq Error 25.344 kHz OBW Power 99.00 % x dB Bandwidth 17.76 MHz x dB -6.00 dB
11N20MIMO/HCH_Ant1	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.813 MHz Total Power 17.5 dBm Transmit Freq Error -73.102 kHz OBW Power 99.00 % x dB Bandwidth 17.69 MHz x dB -6.00 dB
11N20MIMO/HCH_Ant2	 Key: Keysight Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 17.745 MHz Total Power 18.0 dBm Transmit Freq Error -64.772 kHz OBW Power 99.00 % x dB Bandwidth 17.71 MHz x dB -6.00 dB

11N40SISO/LCH_Ant1	
11N40SISO/LCH_Ant2	
11N40SISO/MCH_Ant1	

11N40SISO/MCH_Ant2	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.35 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.415 MHz Total Power 17.7 dBm Transmit Freq Error -19.585 kHz OBW Power 99.00 % x dB Bandwidth 36.59 MHz x dB -6.00 dB
11N40SISO/HCH_Ant1	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.452000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.244 MHz Total Power 16.8 dBm Transmit Freq Error -1.871 kHz OBW Power 99.00 % x dB Bandwidth 36.44 MHz x dB -6.00 dB
11N40SISO/HCH_Ant2	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.452000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.249 MHz Total Power 17.3 dBm Transmit Freq Error -17.795 kHz OBW Power 99.00 % x dB Bandwidth 36.52 MHz x dB -6.00 dB

11N40MIMO/LCH_Ant1	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.422000000 GHz Ref Offset 19.8 dB Ref 30.00 dBm Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.278 MHz Total Power 17.2 dBm Transmit Freq Error -28.012 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB
11N40MIMO/LCH_Ant2	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.422000000 GHz Ref Offset 19.8 dB Ref 30.00 dBm Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.260 MHz Total Power 17.5 dBm Transmit Freq Error -20.952 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB
11N40MIMO/MCH_Ant1	 Key: Keyight Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.92 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.440 MHz Total Power 17.0 dBm Transmit Freq Error -45.876 kHz OBW Power 99.00 % x dB Bandwidth 36.57 MHz x dB -6.00 dB

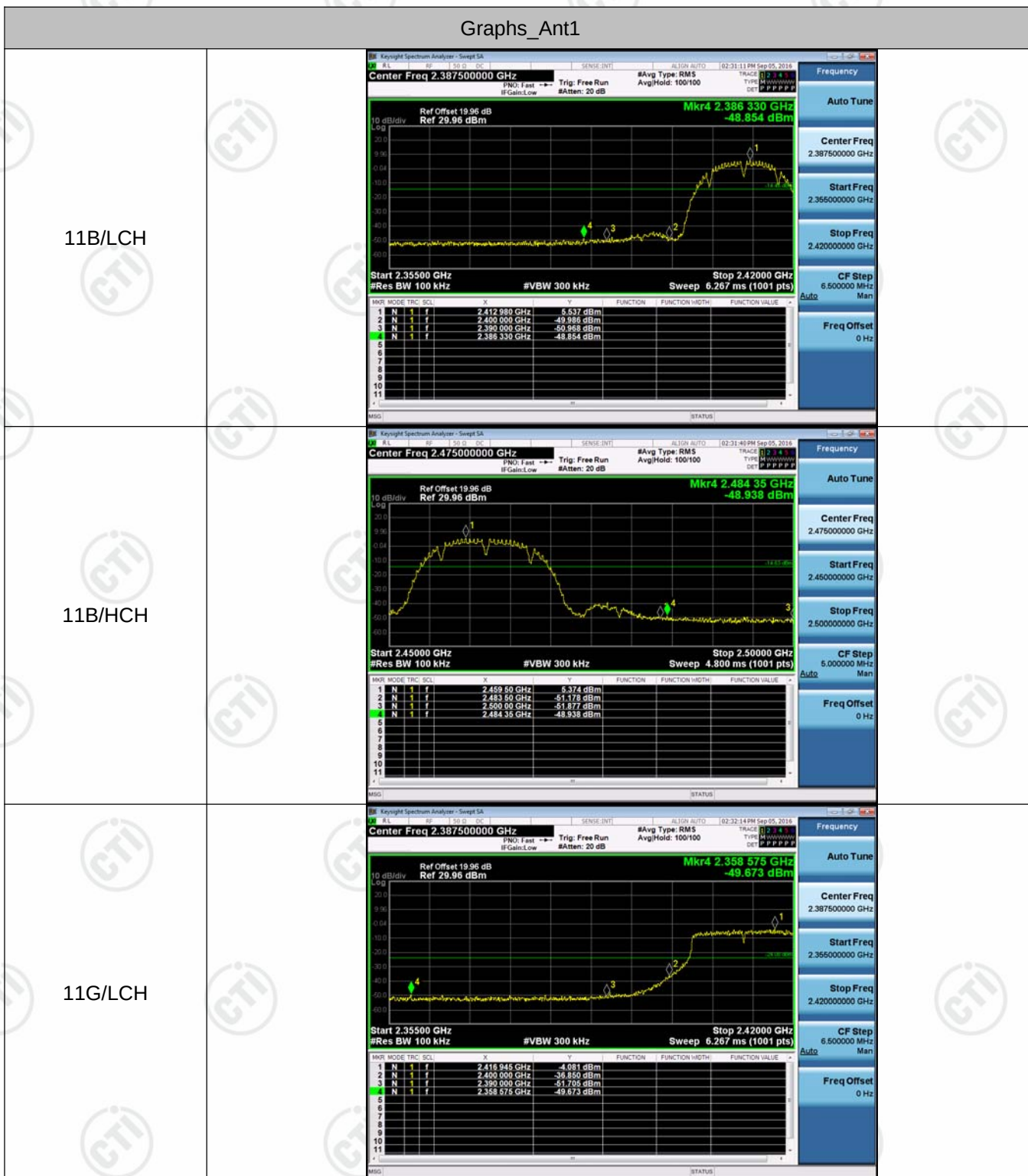
11N40MIMO/MCH_Ant2	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.35 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.365 MHz Total Power 17.4 dBm Transmit Freq Error -18.503 kHz OBW Power 99.00 % x dB Bandwidth 36.57 MHz x dB -6.00 dB
11N40MIMO/HCH_Ant1	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.452000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.264 MHz Total Power 16.6 dBm Transmit Freq Error -9.200 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB
11N40MIMO/HCH_Ant2	 Key: Spectrum Analyzer - Occupied BW Center Freq 2.452000000 GHz Ref Offset 19.96 dB Ref 30.00 dBm Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms Occupied Bandwidth 36.220 MHz Total Power 17.1 dBm Transmit Freq Error -13.884 kHz OBW Power 99.00 % x dB Bandwidth 36.46 MHz x dB -6.00 dB

Appendix C): Band-edge for RF Conducted Emissions

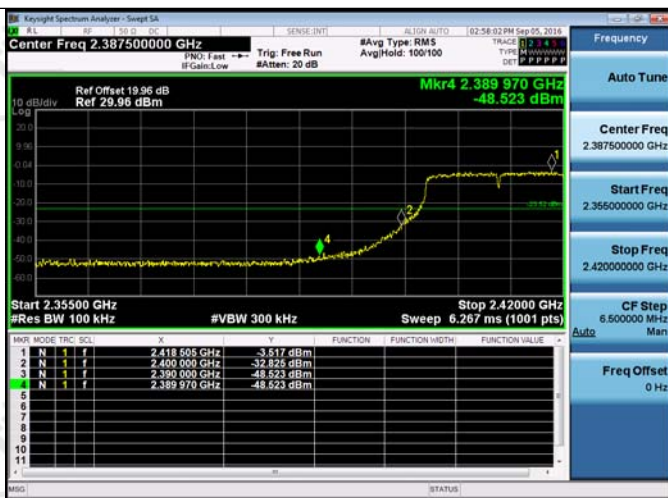
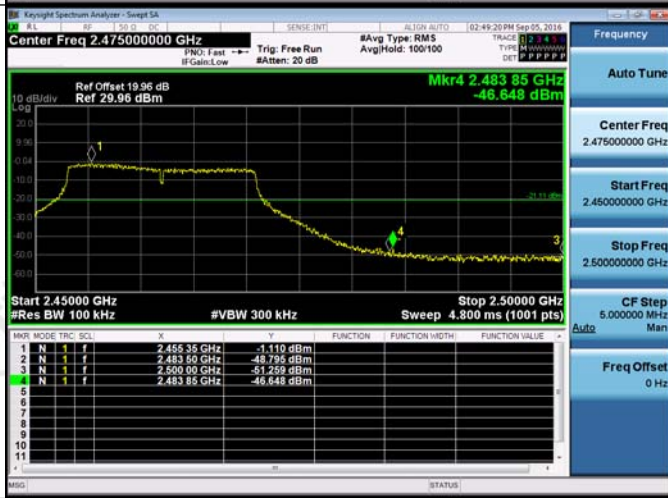
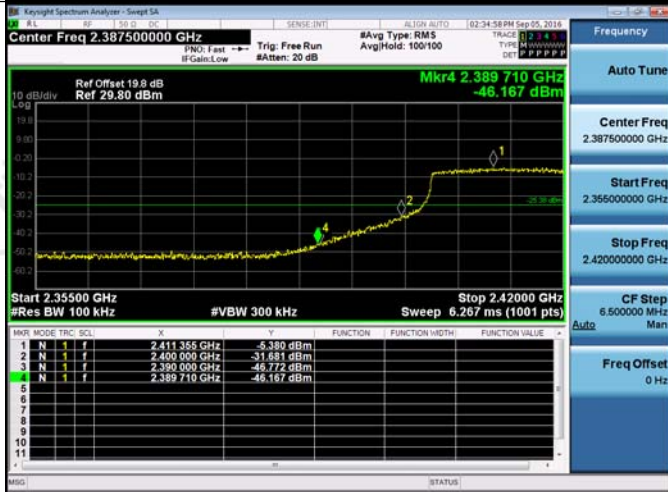
Result Table

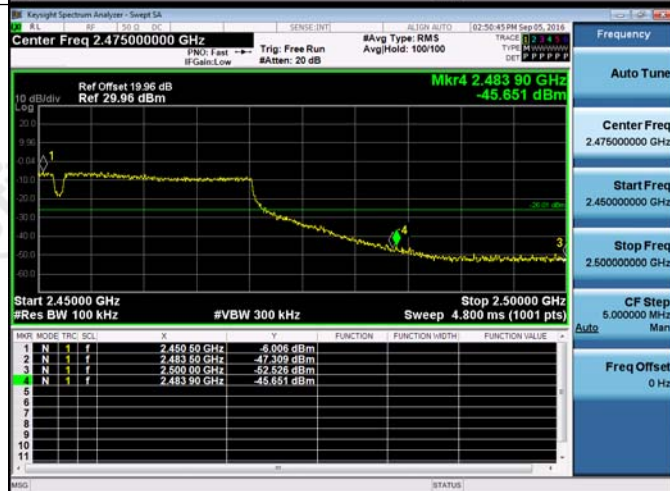
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11B	Ant1	LCH	5.537	-48.854	-14.46	PASS
11B	Ant2	LCH	6.995	-49.225	-13.01	PASS
11B	Ant1	HCH	5.374	-48.938	-14.63	PASS
11B	Ant2	HCH	6.287	-48.656	-13.71	PASS
11G	Ant1	LCH	-4.081	-49.673	-24.08	PASS
11G	Ant2	LCH	2.938	-44.180	-17.06	PASS
11G	Ant1	HCH	-3.603	-49.247	-23.6	PASS
11G	Ant2	HCH	-2.699	-48.280	-22.7	PASS
11N20SISO	Ant1	LCH	-2.669	-49.564	-22.67	PASS
11N20SISO	Ant2	LCH	-2.397	-48.080	-22.4	PASS
11N20SISO	Ant1	HCH	-5.069	-48.924	-25.07	PASS
11N20SISO	Ant2	HCH	-2.522	-48.993	-22.52	PASS
11N20MIMO	Ant1	LCH	-3.517	-48.523	-23.52	PASS
11N20MIMO	Ant2	LCH	-1.496	-48.306	-21.5	PASS
11N20MIMO	Ant1	HCH	-1.110	-46.648	-21.11	PASS
11N20MIMO	Ant2	HCH	-0.433	-48.727	-20.43	PASS
11N40SISO	Ant1	LCH	-5.380	-46.167	-25.38	PASS
11N40SISO	Ant2	LCH	-5.241	-45.237	-25.24	PASS
11N40SISO	Ant1	HCH	-6.291	-46.237	-26.29	PASS
11N40SISO	Ant2	HCH	-3.801	-44.921	-23.8	PASS
11N40MIMO	Ant1	LCH	-4.886	-45.208	-24.89	PASS
11N40MIMO	Ant2	LCH	-4.076	-45.326	-24.08	PASS
11N40MIMO	Ant1	HCH	-6.006	-45.651	-26.01	PASS
11N40MIMO	Ant2	HCH	-5.454	-46.659	-25.45	PASS

Test Graph

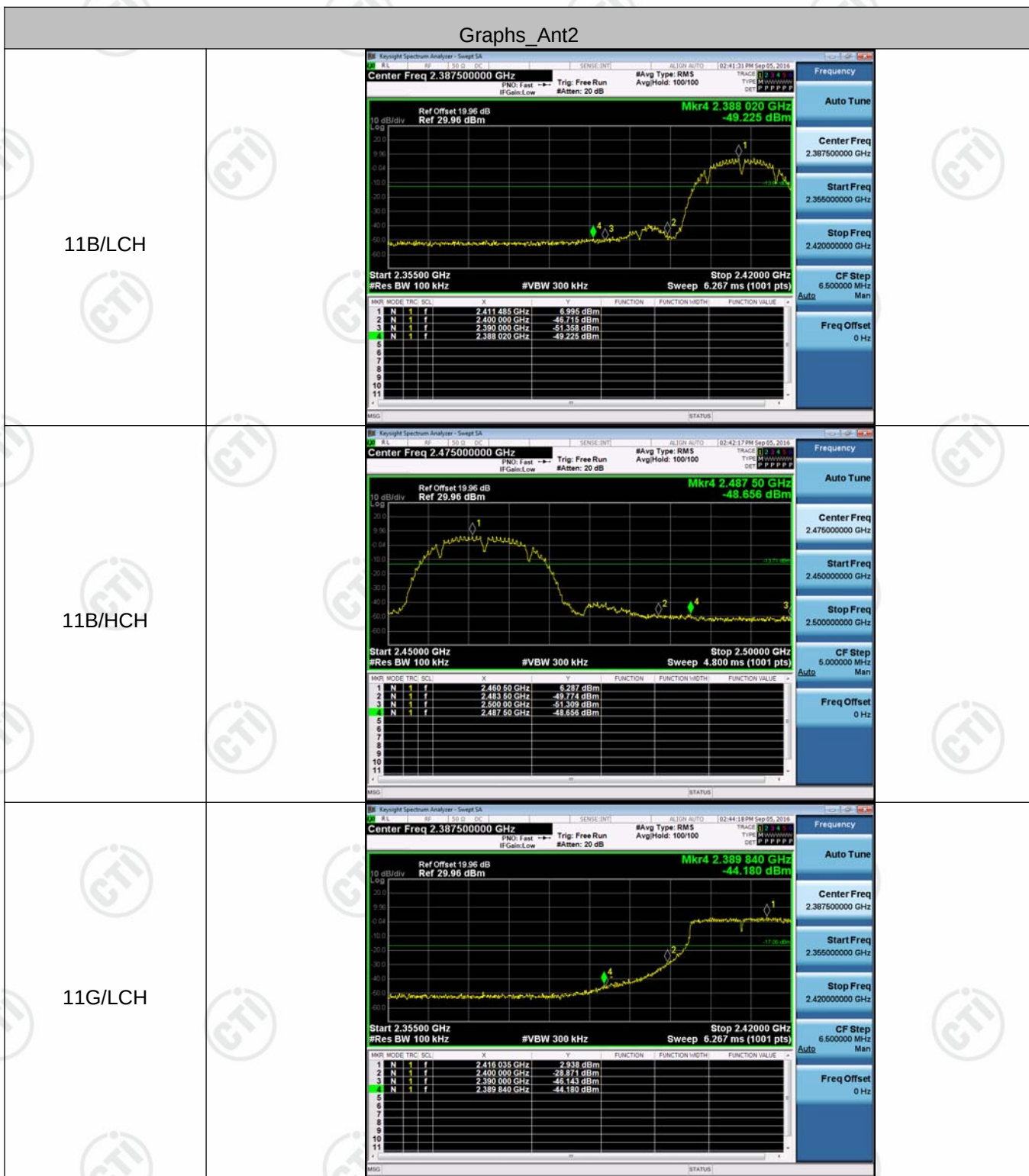


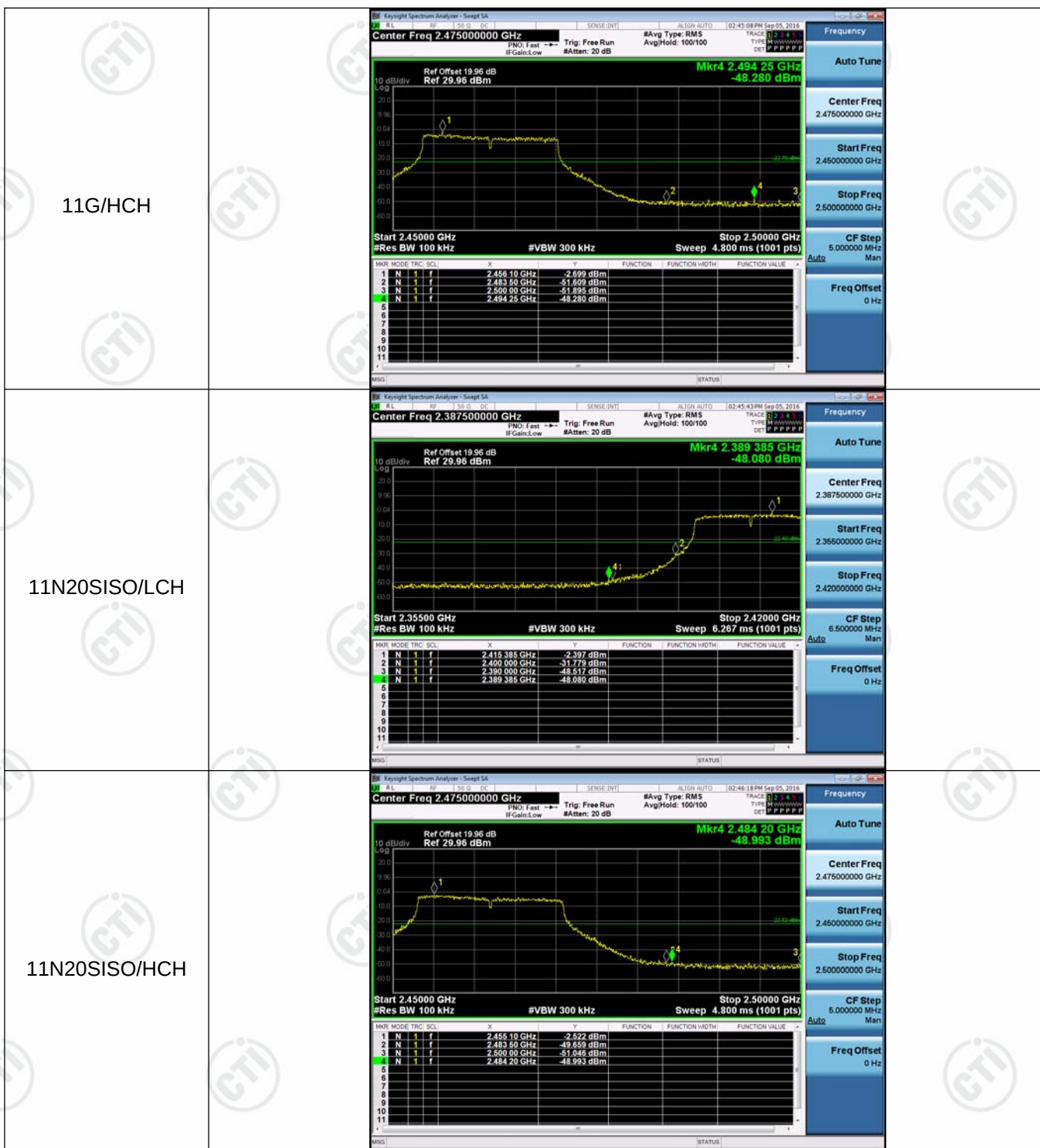
11G/HCH	 <table><tr><th>MARK</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.45605 GHz</td><td>-3.603 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.48350 GHz</td><td>-51.838 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.50090 GHz</td><td>-52.907 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.49680 GHz</td><td>-49.247 dBm</td><td></td><td></td><td></td></tr></table>	MARK	MODE	TRIG	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.45605 GHz	-3.603 dBm				2	N	1	f	2.48350 GHz	-51.838 dBm				3	N	1	f	2.50090 GHz	-52.907 dBm				4	N	1	f	2.49680 GHz	-49.247 dBm			
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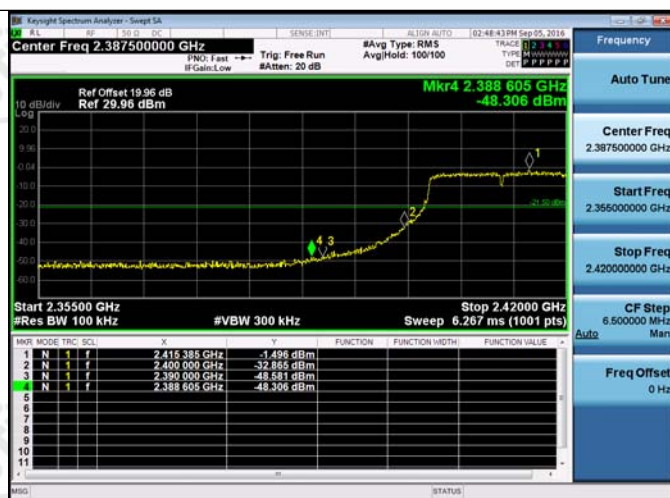
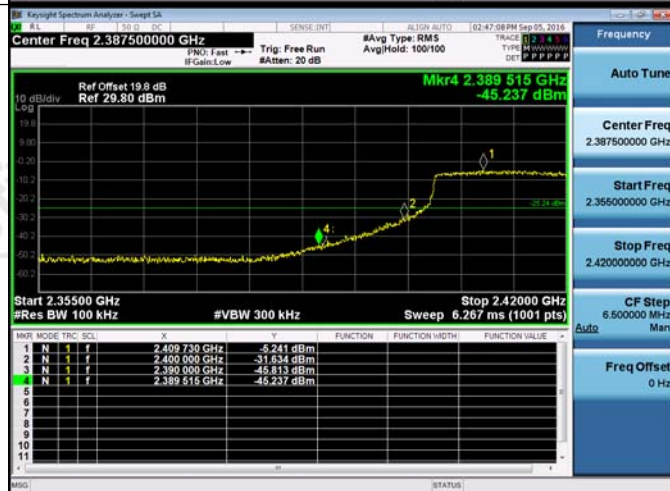
11N20MIMO/LCH	 Key parameters from the screenshot: - Center Freq: 2.387500000 GHz - Start Freq: 2.356000000 GHz - Stop Freq: 2.420000000 GHz - CF Step: 6.500000 MHz - Freq Offset: 0 Hz - Mkr4: 2.389 970 GHz, -48.523 dBm
11N20MIMO/HCH	 Key parameters from the screenshot: - Center Freq: 2.475000000 GHz - Start Freq: 2.450000000 GHz - Stop Freq: 2.500000000 GHz - CF Step: 5.000000 MHz - Freq Offset: 0 Hz - Mkr4: 2.483 85 GHz, -46.648 dBm
11N40SISO/LCH	 Key parameters from the screenshot: - Center Freq: 2.387500000 GHz - Start Freq: 2.356000000 GHz - Stop Freq: 2.420000000 GHz - CF Step: 6.500000 MHz - Freq Offset: 0 Hz - Mkr4: 2.389 710 GHz, -46.167 dBm

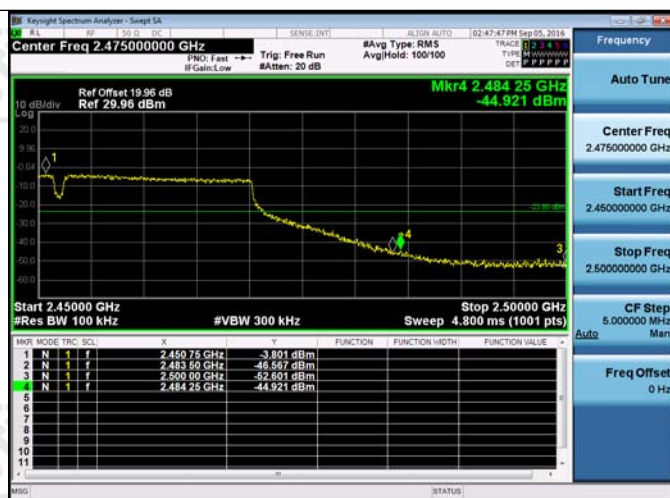
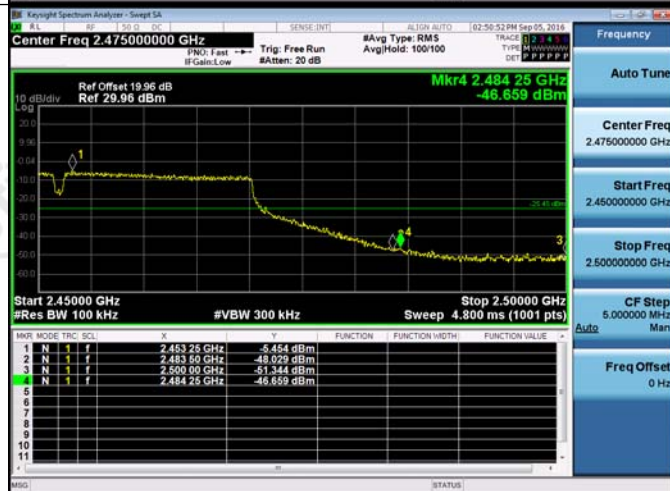
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Graphs_Ant2





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