FCC MEASUREMENT REPORT

CERTIFICATION OF COMPLIANCE

PRODUCT	:	**WiMAX RF Repeater**
MODEL/TYPE NO	:	**JR-24W2.5G**
FCC ID	:	**WLCJR24W25GW**
TRADE NAME	:	**Hutech21. Co., Ltd.**
APPLICANT	:	#201, Daerungtechnotown III, 448, Gasan-Dong, Geumcheon-Gu, Seoul, Korea **Seung-Han, Lee / Team Manager**
CLASSIFICATION	:	**TNB Licensed Non-Broadcast Station Transmitter**
RULE PART(S)	:	**FCC Part 27**
FCC PROCEDURE	:	**Certification**
DATES OF TEST	:	**January 2 to 12, 2009**
DATES OF ISSUE	:	**January 13, 2009**
TEST REPORT No.	:	**BWS-09-RF-001**
TEST LAB.	:	**BWS TECH Inc. (Registration No. : 553281)**

This **WiMAX RF Repeater JR-24W2.5G** has been tested in accordance with the measurement procedures specified in ANSI C63.4-2003 and ANSI/TIA-603-C-2004 at the BWS TECH/EMC Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part 27.

I attest to the accuracy of data. All measurement herein was performed by me or were made under my supervision. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. The results of testing in this report apply to the product/system, which was tested only. Other similar equipment may not necessarily produce the same results due to production tolerance and measurement uncertainties.

January 13, 2009
(Date)

Reviewed by **HyunSup, Jin**

January 13, 2009
(Date)

Reviewed by **TaeHyun, Nam**

BWS TECH Inc.
www.bws.co.kr
#611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea
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TABLE OF CONTENTS

FCC TEST REPORT

Scope – *Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)*

1. General Information

Applicant

Company Name	Hutech21. Co., Ltd.
Company Address	#201, Daerungtechnotown Ⅲ, 448, Gasan-Dong, Geumcheon-Gu, Seoul, Korea
Phone/Fax	Phone : 82-2-2107-3945 Fax :82-2-2107-3940

Manufacturer

Company Name	Hutech21. Co., Ltd.
Company Address	#201, Daerungtechnotown Ⅲ, 448, Gasan-Dong, Geumcheon-Gu, Seoul, Korea
Phone/Fax	Phone : 82-2-2107-3945 Fax :82-2-2107-3940

- **EUT Type** WiMAX RF Repeater
- **Model Number** JR-24W2.5G
- **FCC Identifier** WLCJR24W25GW
- **S/N** Prototype
- **FCC Rule Part(s)** FCC Part 27
- **FCC Classification** TNB / Licensed Non-Broadcast Station Transmitter
- **Service Block**
  A-B : 2502 MHz ~ 2535 MHz
  C-D : 2535 MHz ~ 2568 MHz
  E-F : 2624 MHz ~ 2657 MHz
  H-G : 2657 MHz ~ 2690 MHz
- **Modulation Method** OFDMA (QPSK, 16QAM, 64QAM)
- **Emission Designator** 10M0W7D
- **RF Power Output** 24 dBm / 0.25 W
- **Test Procedure** ANSI C63.4-2003 and ANSI/TIA-603-C-2004
- **Dates of Tests** January 2 to 11, 2009
- **Place of Tests** BWS TECH Inc.(FCC Registration Number : 553281)
  #611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea
  TEL: +82 31 333 5997 FAX: +82 31 333 0017
- **Test Report No.** BWS-09-RF-001

2. Description of Test Facility

The measurement for radiated and conducted emission test were conducted at the open area test site of BWS TECH Inc. facility located at #611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea. The site is constructed in conformance with the requirements of the ANSI C63.4-2003 and CISPR Publication 16. The BWS TECH measurement facility has been filed to the Commission with the FCC for 3 and 10-meter site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-2003 and registered to the Federal Communications Commission (Registration Number : 553281).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C.63.4-2003) was used in determining radiated and conducted emissions from the Hutech21. Co., Ltd. WiMAX RF Repeater Model : **JR-24W2.5G**.

3. Product Information

3.1 General Specification

Item		Specifications		Note
Frequency		2496MHz ~ 2690MHz		BW 194MHz
Service Block		2503.5MHz ~ 2533.5MHz		BW30MHz
		2536.5MHz ~ 2566.5MHz		BW30MHz
		2625.5MHz ~ 2655.5MHz		BW30MHz
		2658.5MHz ~ 2688.5MHz		BW30MHz
Output Power	Down Link	+24dBm/Total		3FA
	Up Link	+24dBm/Total		3FA
System Gain	Down Link	80dB		Max
	Up Link	80dB		Max
Input range	Down Link	-26dBm ~ -56dBm/Total		3FA
	Up Link	-26dBm ~ -56dBm/Total		3FA
System delay		5.0usec		
Frequency stability		±0.02ppm		
Passband Ripple		Less then ± 1.5 dB		
Gain Control Step Size		0.5dB		
Gain Control accuracy		Less then 0.7dB		
Input VSWR		Less then 1.5		
EVM		5%		at Source
Antenna Gain		19dBi (PA-2500-18-19HFB)		Max
Noise Figure		5dB		Max
		12dB		Min
OOBE		edge±1.5 ~ 2.5MHz	-37dBm/100kHz	
		edge±2.5 ~ 4.5MHz	-37dBm/1MHz	
		More then edge±4.5MHz	-37dBm/1MHz	
ALC		30dB		
Occupied Bandwidth		30MHz		3FA
Spurious Emission		30MHz~1GHz	Less Then -13dBm	100KHz
		1GHz~12GHz	Less Then -13dBm	1MHz
Operating Temperature		-10℃~50℃		

3.2 EUT operating conditions & test configuration

3.2.1 Client Condition

Temperature : -10 ℃ ~ +50 ℃
Humidity : 95 %

3.2.2 EUT Operating Condition

Using external signal source
QPSK
16QAM
64QAM

3.2.3 Test Frequency

Block	Channel	Down Link	Up Link	Modulation Method
A-D Block	Low FA	2507 MHz	2507 MHz	QPSK, 16QAM, 64QAM
	Middle FA	2535 MHz	2535 MHz	QPSK, 16QAM, 64QAM
	High FA	2563 MHz	2563 MHz	QPSK, 16QAM, 64QAM
E-G Block	Low FA	2629 MHz	2629 MHz	QPSK, 16QAM, 64QAM
	Middle FA	2655 MHz	2655 MHz	QPSK, 16QAM, 64QAM
	High FA	2685 MHz	2685 MHz	QPSK, 16QAM, 64QAM

4. Applied Standards

4.1. FCC Rules and Regulations

- 47 CFR Part 2(10-1-05 Edition)
  Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
- 47 CFT Part 27(10-1-06 Edition)
  Miscellaneous Wireless Communications Services

4.2. Supporting Standards

- EIA/TIA-603-C:2004
  Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
- ITU-R Recommendation SM.329-10(2003)
- ANSI C63.4:2003
  Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in Range of 9 kHz to 40 GHz

4.3. Test Items

The following requirements and test specifications within Table 1 are relevant to the conformity to FCC rules and regulations.

Table 1 Summary of test items

FCC Measurement Specification	FCC Limit	Description	Test Result
§ 15.107	§ 15.107	Power Line Conducted Emission	Pass
§2.1046	§27.50(h)(1)	Maximum Channel Power	Pass
§2.1049	-	Occupied Bandwidth	Pass
§2.1051 §27.53(1)(6)	§27.53(h)(2)	Spurious Emissions at Antenna Terminals	Pass
§2.1051 §27.53(1)(6)	§27.53(h)(2)	Band Edge Compliance with InterModulation	Pass
§2.1053 §27.53(1)(6)	§27.53(h)(2)	Radiated Spurious Emission	Pass
§2.1055	§27.54	Frequency Stability	Pass

5. TEST DATA

5.1 Power Line Conducted Emission

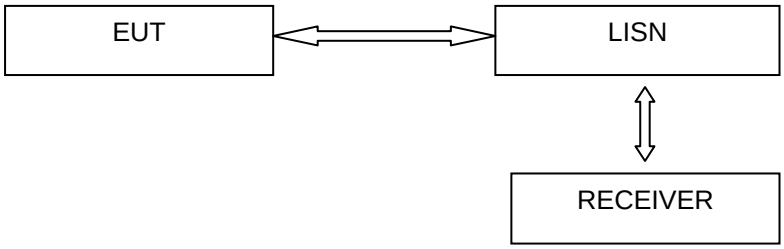
5.1.1 Specification

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz on the 230V AC power and return leads of the EUT according to the methods defined in FCC Part 15.107. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 3.1.5. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producing maximum conducted emissions.

5.1.2 Method of Measurement

The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 3.1.5. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producing maximum conducted emissions

5.1.3 Measurement Set-Up



5.1.4 Limit

Frequency Range (MHz)	Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

5.1.6 Test Result

Frequency Range of Test : 150 kHz to 30 MHz
Test Standard : FCC Part 15.107
Test Date : January 11, 2009
Temperature/Humidity : 20 °C/ 52 %

5.1.6.1 Down link

Freq [MHz]	Correcton		Phase [H/N]	Quasi-Peak Mode				Average Mode			
	AMN	C.L		Limit	Reading	Emission Level	Margin	Limit	Reading	Emission Level	Margin
				[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.150	0.06	0.03	H	79.00	47.25	47.34	-31.66	66.00			
0.204	0.07	0.10	N		41.52	41.69	-37.31				
0.252	0.07	0.16	H		40.41	40.64	-38.36				
0.342	0.08	0.22	H		36.88	37.18	-41.82				
0.442	0.08	0.26	N		42.24	42.58	-36.42				
0.542	0.07	0.30	N	73.00	44.22	44.59	-28.41	60.00			
1.226	0.04	0.43	N		45.72	46.19	-26.81				
3.382	0.03	0.66	N		46.28	46.97	-26.03				
9.266	0.06	1.01	N		50.71	51.78	-21.22				
15.402	0.06	1.22	H		42.54	43.82	-29.18				

5.1.6.2 Up link

Freq [MHz]	Correcton		Phase [H/N]	Quasi-Peak Mode				Average Mode			
	AMN	C.L		Limit	Reading	Emission Level	Margin	Limit	Reading	Emission Level	Margin
				[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.150	0.06	0.03	H	79.00	54.52	54.61	-24.39	66.00			
0.214	0.07	0.10	H		45.35	45.52	-33.48				
0.250	0.07	0.16	H		40.27	40.50	-38.50				
0.350	0.08	0.24	N		36.82	37.14	-41.86				
0.446	0.08	0.26	N		42.72	43.06	-35.94				
0.546	0.07	0.30	H	73.00	45.40	45.77	-27.23	60.00			
1.238	0.04	0.43	N		41.54	42.01	-30.99				
3.426	0.03	0.67	N		46.37	47.07	-25.93				
9.782	0.07	1.02	N		51.88	52.97	-20.03				
18.430	0.07	1.30	H		37.02	38.39	-34.61				

Notes:
1. All modes of operation were investigated and the worst-case emissions are reported.
See the plots in next 2 pages.
2. Line N = (Neutral), Line H = (Hot)
3. Measurement uncertainty estimated at ±1.38 dB.
The measurement uncertainty is given with a confidence of 95.45 % with the coverage factor, k=2
4.The detail plot data is refer to 6.1.

5.2 Maximum Channel Power

5.2.1 Specification

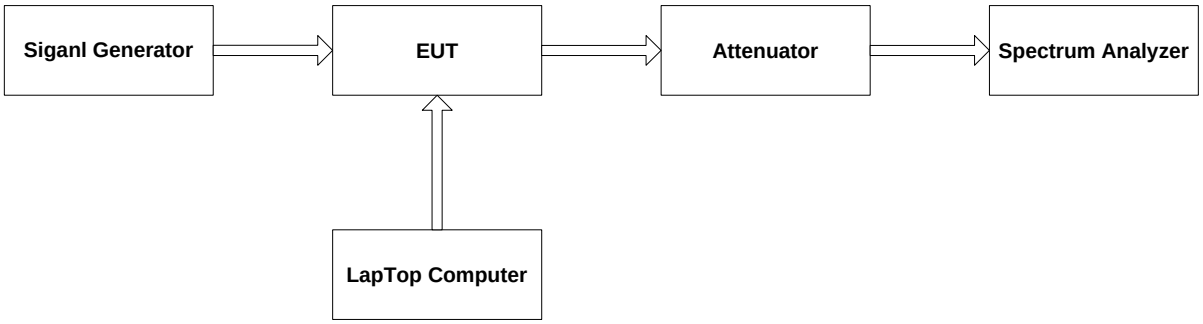
According to 47 CFR Part 2 section § 2.1046 and Part 27 section § 27.50(h)(1), the maximum EIRP of a base station shall not exceed 33 dBW + 10 lg (X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition.

5.2.2 Method of Measurement

ANSI/TIA-603-C-2004 Section 2.2.1

-. The EUT was connected to a Signal Analyzer via the main RF connector, and through an appropriate Attenuator.
-. Diversity RF connectors were connected to 50 Ohm match load.
-. The EUT was controlled to power amplifier of each block by a LapTop Computer.
-. Measure and record the maximum channel power of the EUT by the Spectrum Analyzer.
-. The transmitter was tested while in a continuous transmit mode.
-. The EUT was tuned to a low, middle, and high channel in both the downlink and uplink directions.
-. The maximum channel power measurements done only per carrier.

5.2.3 Measurement Set-Up



5.2.4 Limit

As to the limit, the X is 10 MHz and Y is 6 MHz for the EUT, so the limit is calculated to be 33 dBW + 10 log (10 MHz/6 MHz) = 65 dBm.

5.2.5 Test Result

[Down Link]

TX output Power – A-D Block

Test mode	Measured Maximum Channel Power (dBm)			Limit (dBm)
	Low Channel 2507MHz	Middle Channel 2535MHz	High Channel 2563MHz	
QPSK	24.40	24.67	24.58	< 65
16QAM	24.34	24.44	24.52	< 65
64QAM	24.21	24.38	24.46	< 65

TX output Power – E-G Block

Test mode	Measured Maximum Channel Power (dBm)			Limit (dBm)
	Low Channel 2629MHz	Middle Channel 2655MHz	High Channel 2685MHz	
QPSK	24.50	23.75	23.54	< 65
16QAM	24.37	23.71	23.47	< 65
64QAM	24.35	23.65	23.44	< 65

[Up Link]

TX output Power – A-D Block

Test mode	Measured Maximum Channel Power (dBm)			Limit (dBm)
	Low Channel 2507MHz	Middle Channel 2535MHz	High Channel 2563MHz	
QPSK	24.35	24.39	24.10	< 65
16QAM	24.35	24.32	24.02	< 65
64QAM	24.18	24.22	23.96	< 65

TX output Power – E-G Block

Test mode	Measured Maximum Channel Power (dBm)			Limit (dBm)
	Low Channel 2629MHz	Middle Channel 2655MHz	High Channel 2685MHz	
QPSK	24.21	24.00	23.62	< 65
16QAM	24.14	23.90	23.53	< 65
64QAM	24.03	23.83	23.51	< 65

[3FA output Power]

TX output Power – A-D Block

Test mode	Measured Maximum Spurious emission (dBm)		Limit (dBm)
	Down Link	Up Link	
	Center Frequency 2535MHz	Center Frequency 2535MHz	
3FA_QPSK	24.03	24.31	< 65
3FA_16QAM	24.03	24.35	< 65
3FA_64QAM	24.03	24.32	< 65

TX output Power – E-G Block

Test mode	Measured Maximum Spurious emission (dBm)		Limit (dBm)
	Down Link	Up Link	
	Center Frequency 2655MHz	Center Frequency 2655MHz	
3FA_QPSK	23.22	23.62	< 65
3FA_16QAM	23.21	23.21	< 65
3FA_64QAM	23.19	23.59	< 65

5.2.6 Conclusion

The equipment **passed** the requirement of this clause. Also refer to 6.2 of the present test report for detailed.

5.3 Occupied Bandwidth

5.3.1 Specification

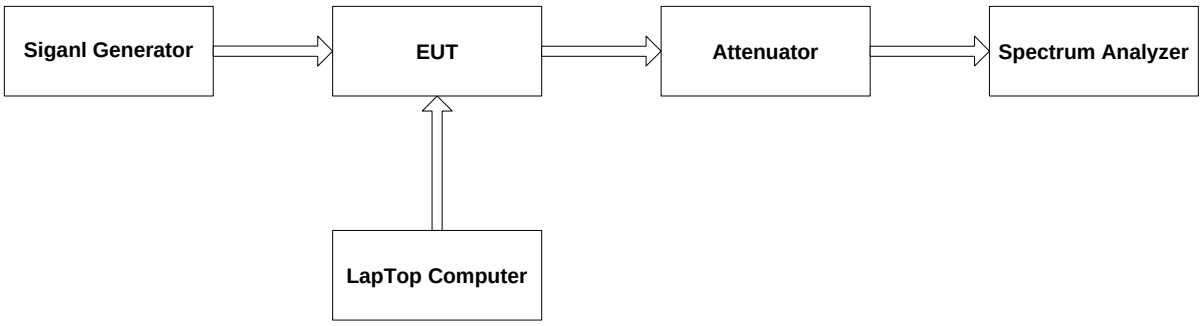
According to 47 CFR Part 2 Section § 2.1049 and Part 27, no specific modulation characteristics requirement limits is applicable.
The occupied bandwidth is defined in section § 2.1049: the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The occupied bandwidth is normally called 99% bandwidth.
According to section §27.53(i)(6), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power. The emission bandwidth is normally called 26dB bandwidth.

5.3.2 Method of Measurement

ANSI/TIA-603-C-2004 Section 2.2.11

-. The EUT was connected to a Signal Analyzer via the main RF connector, and through an appropriate Attenuator.
-. Diversity RF connectors were connected to 50 Ohm match load.
-. The EUT was controlled to power amplifier of each block by a Laptop Computer.
-. Measure and record the occupied bandwidth of the EUT by the Spectrum Analyzer.
-. The transmitter was tested while in a continuous transmit mode.
-. The EUT was tuned to a low, middle, and high channel in both the downlink and uplink directions.
-. The main settings of the Signal Analyzer were as below:
Measurement bandwidth (RBW) : 100kHz

5.3.3 Measurement Set-Up



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5.3.4 Limit

-. According to 47 CFR Part 2 section § 2.1049 and Part 27, no specific modulation characteristics requirement limits is applicable.
-. This EUT used 10 MHz bandwidth.

5.3.5 Test Result

[Down Link]

TX occupied bandwidth – A-D Block

Test mode	Measured occupied bandwidth (MHz)					
	Low Channel 2507MHz		Middle Channel 2535MHz		High Channel 2563MHz	
	99%	26dB	99%	26dB	99%	26dB
QPSK	9.11	9.42	9.13	9.46	9.14	9.50
16QAM	9.13	9.46	9.08	9.43	9.13	9.44
64QAM	9.10	9.43	9.11	9.45	9.14	9.51

TX occupied bandwidth – E-G Block

Test mode	Measured occupied bandwidth (MHz)					
	Low Channel 2629MHz		Middle Channel 2655MHz		High Channel 2685MHz	
	99%	26dB	99%	26dB	99%	26dB
QPSK	9.13	9.45	9.17	9.50	9.12	9.45
16QAM	9.14	9.45	9.14	9.45	9.13	9.49
64QAM	9.09	9.48	9.14	9.50	9.10	9.45

[Up Link]

TX occupied bandwidth – A-D Block

Test mode	Measured occupied bandwidth (MHz)					
	Low Channel 2507MHz		Middle Channel 2535MHz		High Channel 2563MHz	
	99%	26dB	99%	26dB	99%	26dB
QPSK	9.13	9.32	9.13	9.33	9.13	9.34
16QAM	9.16	9.48	9.13	9.33	9.03	9.42
64QAM	9.13	9.32	9.05	9.33	9.04	9.33

TX occupied bandwidth – E-G Block

Test mode	Measured occupied bandwidth (MHz)					
	Low Channel 2629MHz		Middle Channel 2655MHz		High Channel 2685MHz	
	99%	26dB	99%	26dB	99%	26dB
QPSK	9.13	9.32	9.13	9.34	9.13	9.34
16QAM	9.03	9.42	9.04	9.43	9.03	9.43
64QAM	9.04	9.33	9.05	9.33	9.05	9.33

5.3.6 Conclusion

The equipment **passed** the requirement of this clause. Also refer to 6.3 of the present test report for detailed.

5.4 Spurious Emissions at Antenna Terminals

5.4.1 Specification

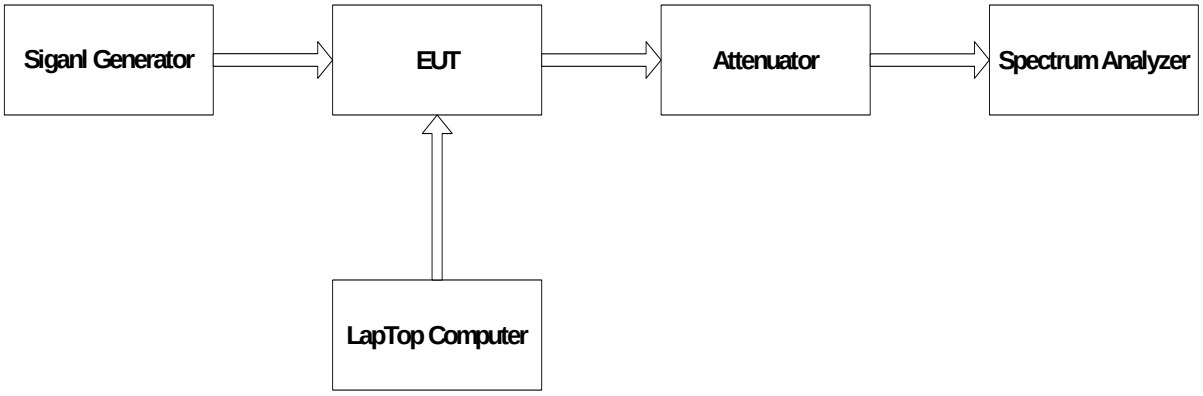
According to 47 CFR Part 2 section § 2.1051 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 lg (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater.

5.4.2 Method of Measurement

ANSI/TIA-603-C-2004 Section 2.2.13

-. The EUT was connected to a Signal Analyzer via the main RF connector, and through an appropriate Attenuator.
-. Diversity RF connectors were connected to 50 Ohm match load.
-. The EUT was controlled to power amplifier of each block by a LapTop Computer.
-. Measure and record the spurious emissions bandwidth of the EUT by the Spectrum Analyzer.
-. The transmitter was tested while in a continuous transmit mode.
-. The EUT was tuned to a low, middle, and high channel in both the downlink and uplink directions.

5.4.3 Measurement Set-Up



5.4.5 Limit

-.
-.The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = -13 dBm.

5.4.6 Data

TX Spurious emission at antenna terminal – A-D Block

Test mode	Measured Maximum Spurious emission (dBm)		Limit (dBm)
	Down Link	Up Link	
	Center Frequency 2535MHz	Center Frequency 2535MHz	
3FA_QPSK	-27.86	-26.86	< -13

TX Spurious emission at antenna terminal – E-G Block

Test mode	Measured Maximum Spurious emission (dBm)		Limit (dBm)
	Down Link	Up Link	
	Center Frequency 2655MHz	Center Frequency 2655MHz	
3FA_QPSK	-27.67	-26.97	< -13

5.4.7 Conclusion

The equipment **passed** the requirement of this clause. Also refer to 6.4 of the present test report for detailed.

5.5 Band Edge Compliance with intermodulation

5.5.1 Specification

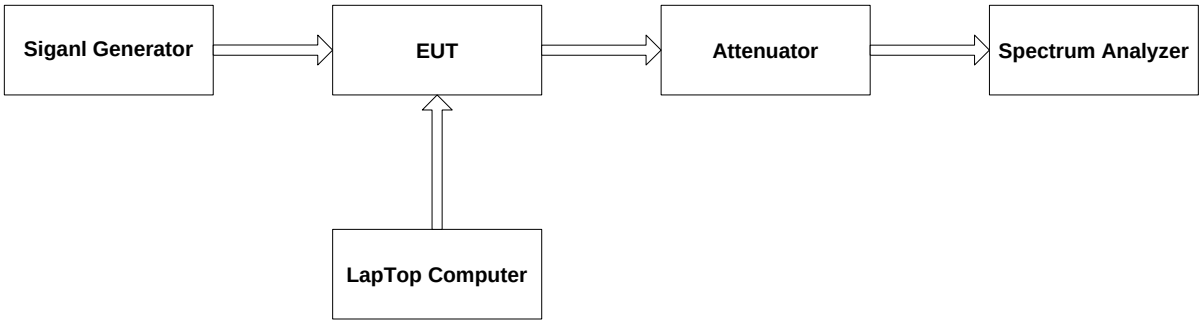
According to 47 CFR Part 2 section § 2.1051 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 lg (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater

5.5.2 Method of Measurement

ANSI/TIA-603-C-2004 Section 2.2.13

-. The EUT was connected to a Signal Analyzer via the main RF connector, and through an appropriate Attenuator.
-. Diversity RF connectors were connected to 50 Ohm match load.
-. The EUT was controlled to power amplifier of each block by a LapTop Computer.
-. Measure and record the spurious emissions bandwidth of the EUT by the Spectrum Analyzer.
-. The transmitter was tested while in a continuous transmit mode.
-. The EUT was tuned to a low, high channel in both the downlink and uplink directions.
-. The intermodulation measurement input signal used tone signal.

5.5.3 Measurement Set-Up



5.5.4 Limit

-.The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = -13 dBm.

5.5.5 Data

TX Band Edge Compliance – A-D Block

Test mode	Measured Maximum band edge emission (dBm)				Limit (dBm)
	Down Link		Up Link		
	Low Channel 2507MHz	High Channel 2563MHz	Low Channel 2507MHz	High Channel 2563MHz	
QPSK	-29.22	-28.74	-32.20	-32.21	< -13
16QAM	-29.52	-28.95	-31.60	-30.74	< -13
64QAM	-27.20	-29.54	-30.39	-32.27	< -13

TX Band Edge Compliance – E-G Block

Test mode	Measured Maximum band edge emission (dBm)				Limit (dBm)
	Down Link		Up Link		
	Low Channel 2629MHz	High Channel 2685MHz	Low Channel 2629MHz	High Channel 2685MHz	
QPSK	-31.54	-28.08	-29.65	-36.48	< -13
16QAM	-23.81	-34.24	-28.57	-34.83	< -13
64QAM	-28.27	-31.72	-31.31	-34.83	< -13

TX Band Intermodulation – A-D Block

Test mode	Measured Maximum band edge emission (dBm)		Limit (dBm)
	Down Link	Up Link	
Band edge emission	-33.11	-30.27	< -13

TX Band Intermodulation – E-G Block

Test mode	Measured Maximum band edge emission (dBm)		Limit (dBm)
	Down Link	Up Link	
Band edge emission	-18.40	-28.91	< -13

5.5.6 Conclusion

The equipment **passed** the requirement of this clause. Also refer to 6.5 of the present test report for detailed.

5.6 Field Strength of Spurious Radiation

5.6.1 Specification

According to 47 CFR Part 2 section § 2.1051 and Part 27 section § 27.53(l)(2) and § 27.53(l)(6), the power of any emissions outside the licensee's frequency bands of operation must be attenuated below the transmitter power (P in watts) by at least 43 +10 log (P) dB. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater

5.6.2 Method of Measurement

ANSI/TIA-603-C-2004 Section 2.2.12

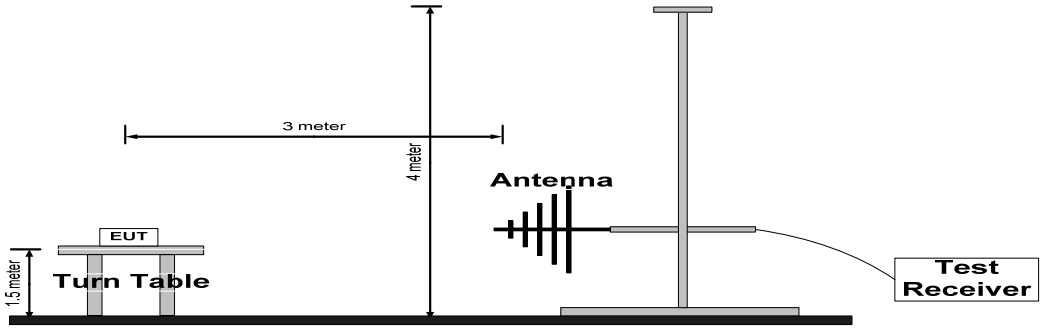
The EUT, equipped with non-integral antenna, was connected to 50 Ohm match load. The EUT was controlled to transmit maximum power by a Console computer.

For transmitters other then single sideband, independent sideband and controlled carrier radiotelephone, the values of current and voltage on the circuit elements specified in section § 2.1033(c)(8). The EUT was connected to ancillary in order to simulate normal operating conditions with reference to the guidance given in the standard for this type equipment.

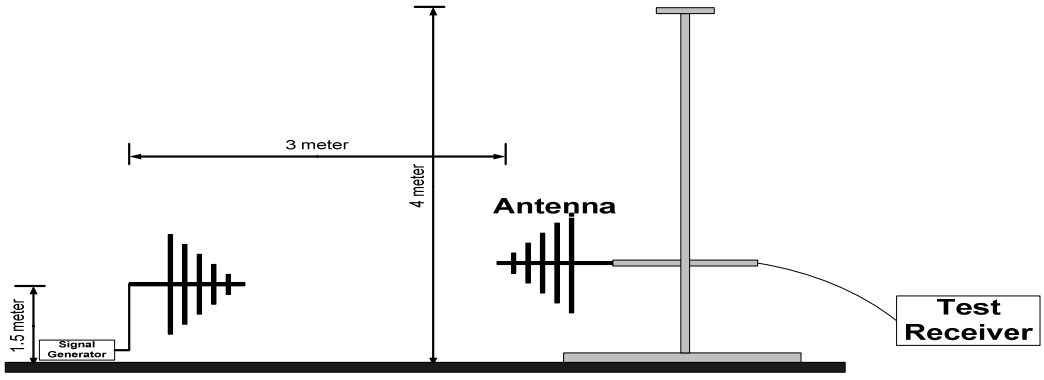
Step (a): Measure the radiated maximum output power by the Test Receiver received from the Test Antenna.
Step (b): Use substitution method to verify the maximum output power. The EUT was substituted by a dipole antenna. The dipole is connected to a Signal Generator. And then adjust the output level Of the Signal Generator to get the same received power recorded in step (b) on Test Receiver, and record the power level of Signal Generator. The cable loss at the test frequency should be compensated.

5.6.3 Measurement Set-Up

Step 1.



Step 2.



5.6.4 Limit

-..
-.The limit is calculated to be P (W) - {43 dB + 10 log [P (W)]} = -13 dBm.

5.6.5 Data

Test frequency range	Measured maximum spurious emission levels (dBm)	Limit (dBm)
30 MHz to 10th harmonic included	-41.268	<-13

5.6.6 Conclusion

The equipment **passed** the requirement of this clause. Also refer to 6.6 of the present test report for detailed.

5.7 Frequency Stability

5.7.1 Specification

According to 47 CFR Part 2 section §2.1055 and Part 27 section §27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stay within the authorized bands of operation.

5.7.2 Method of Measurement

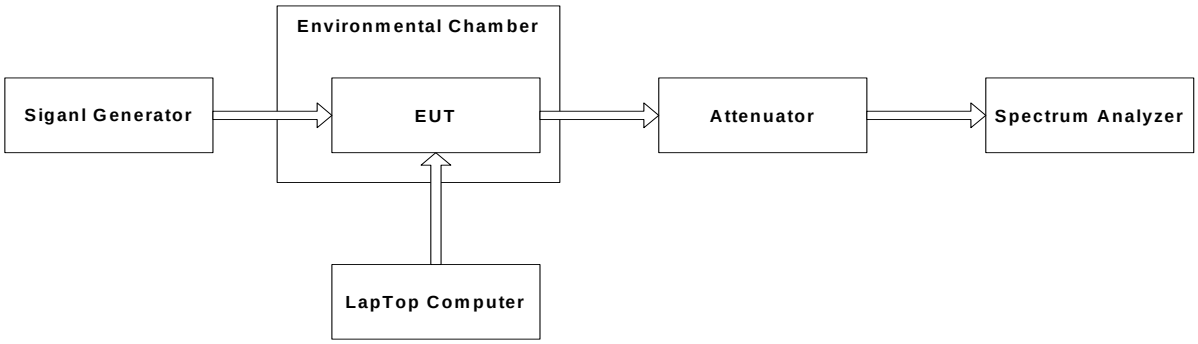
ANSI/TIA-603-C-2004 Section 2.2.2

The frequency stability shall be measured with variation of ambient temperature form -10℃to +50℃. Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10℃ through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement.

The frequency stability shall be measured with variation of primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.

5.7.3 Measurement Set-Up



5.7.5 Limit

The frequency tolerance is limited to ±2ppm.

5.7.6 Data

TX frequency stability – A-D Block

Test environment		Measured maximum frequency error				Limit(ppm)
		Down Link 2535MHz		Up Link 2535MHz		
Voltage (V)	Temperature (℃)	Hz	ppm	Hz	ppm	
100	-10	0.0	0.0	0.0	0.0	<±2
	0	0.0	0.0	0.0	0.0	<±2
	10	0.0	0.0	0.0	0.0	<±2
	20	0.0	0.0	0.0	0.0	<±2
	30	0.0	0.0	0.0	0.0	<±2
	40	0.0	0.0	0.0	0.0	<±2
	50	0.0	0.0	0.0	0.0	<±2
85	20	0.0	0.0	0.0	0.0	<±2
115	20	0.0	0.0	0.0	0.0	<±2

TX frequency stability – E-G Block

Test environment		Measured maximum frequency error				Limit(ppm)
		Down Link 2655MHz		Up Link 2655MHz		
Voltage (V)	Temperature (℃)	Hz	ppm	Hz	ppm	
100	-10	0.0	0.0	0.0	0.0	<±2
	0	0.0	0.0	0.0	0.0	<±2
	10	0.0	0.0	0.0	0.0	<±2
	20	0.0	0.0	0.0	0.0	<±2
	30	0.0	0.0	0.0	0.0	<±2
	40	0.0	0.0	0.0	0.0	<±2
	50	0.0	0.0	0.0	0.0	<±2
85	20	0.0	0.0	0.0	0.0	<±2
115	20	0.0	0.0	0.0	0.0	<±2

5.5.6 Conclusion

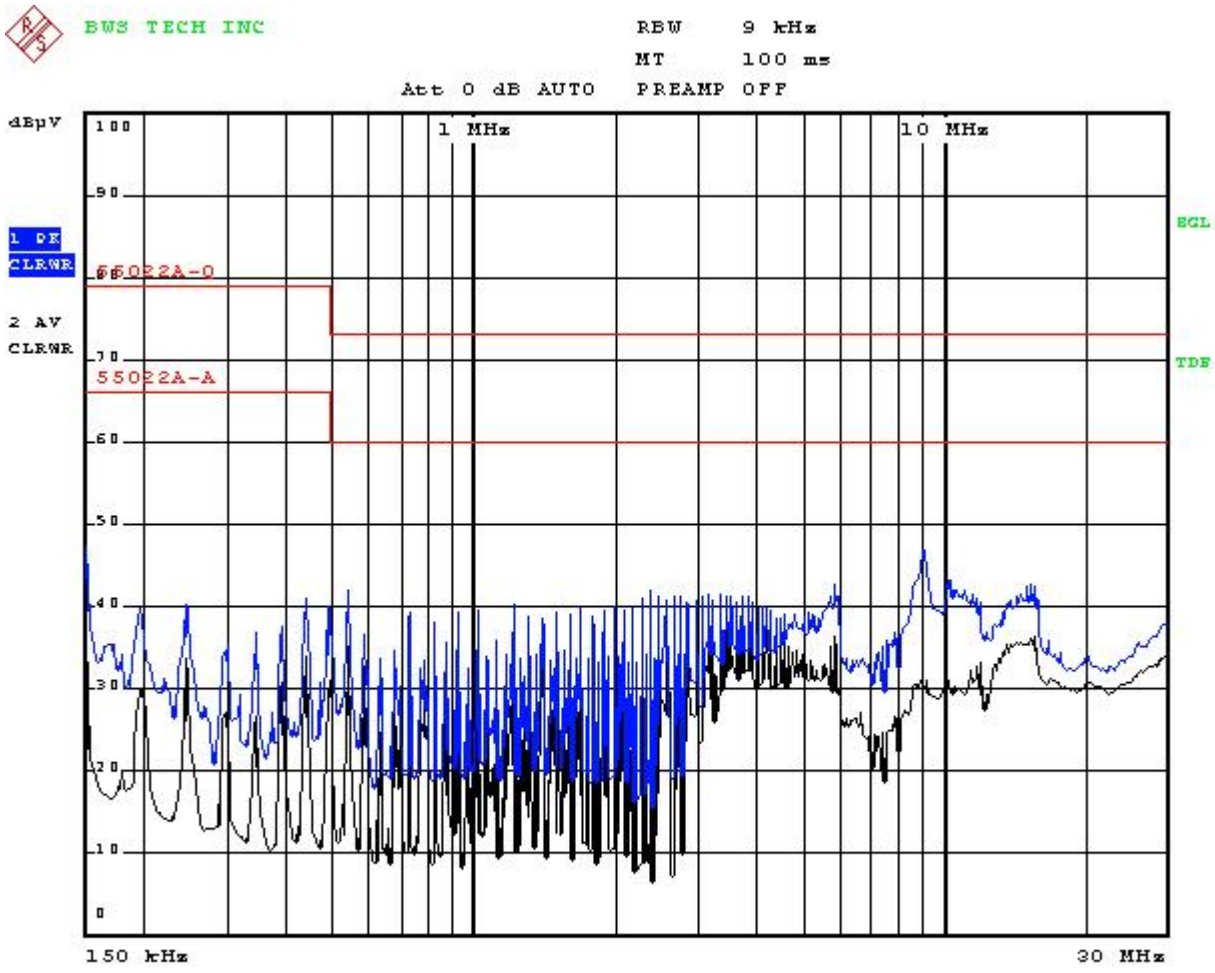
The equipment **passed** the requirement of this clause. Also refer to 6.7 of the present test report for detailed.

6. TEST PLOT

6.1 Power Line Conducted Emission

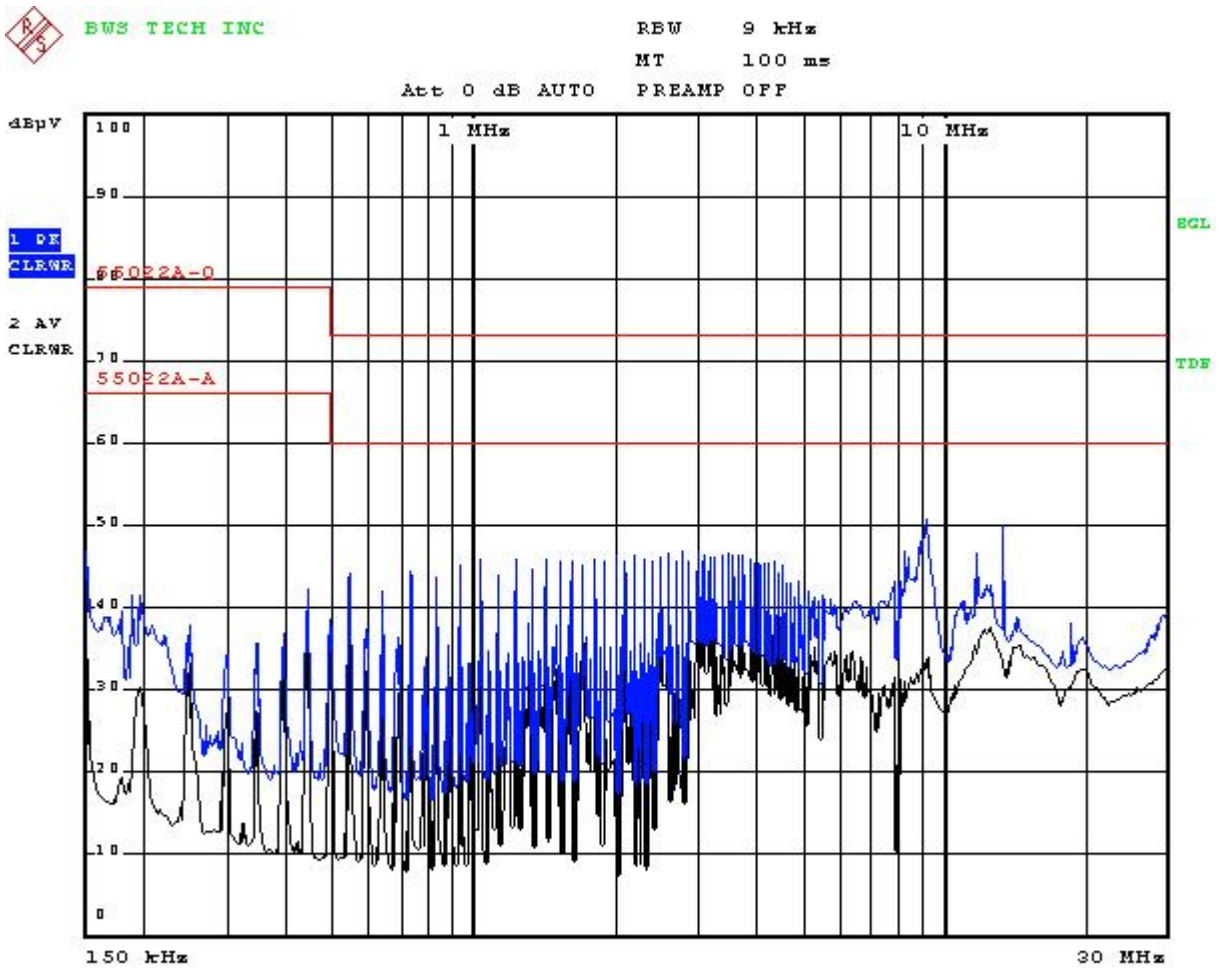
6.1.1 Down Link / HOT

FCC Rules :	Part 15 §15.107
Operating Path :	Down Link
Test Mode :	HOT
Input Level :	-52 dBm
System Gain :	80 dB
Bandwidth :	30 MHz
Number of FA :	3 FA



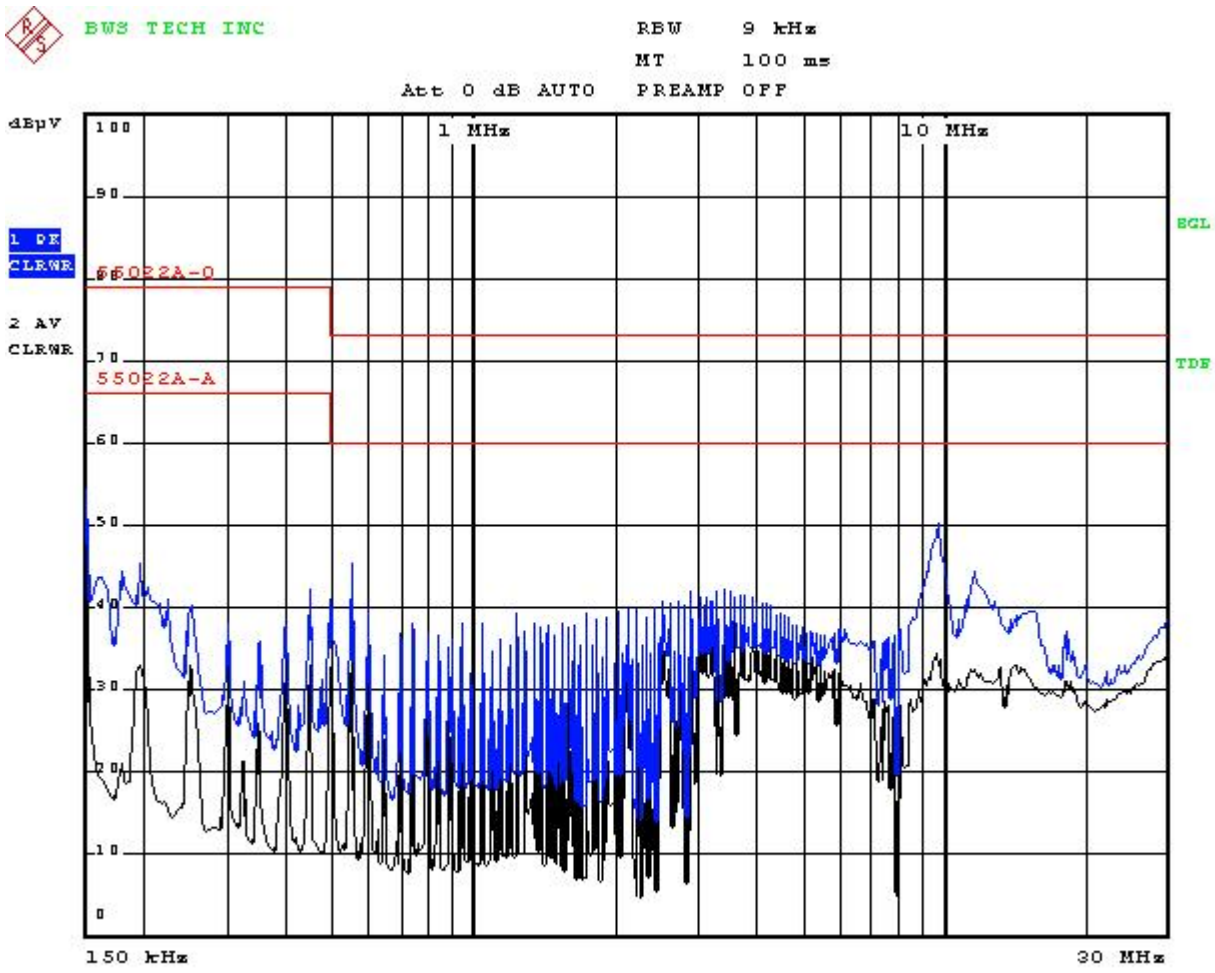
6.1.2 Down Link / Neutral

FCC Rules :	Part 15 §15.107
Operating Path :	Down Link
Test Mode :	Neutral
Input Level :	-52 dBm
System Gain :	80 dB
Bandwidth :	30 MHz
Number of FA :	3 FA



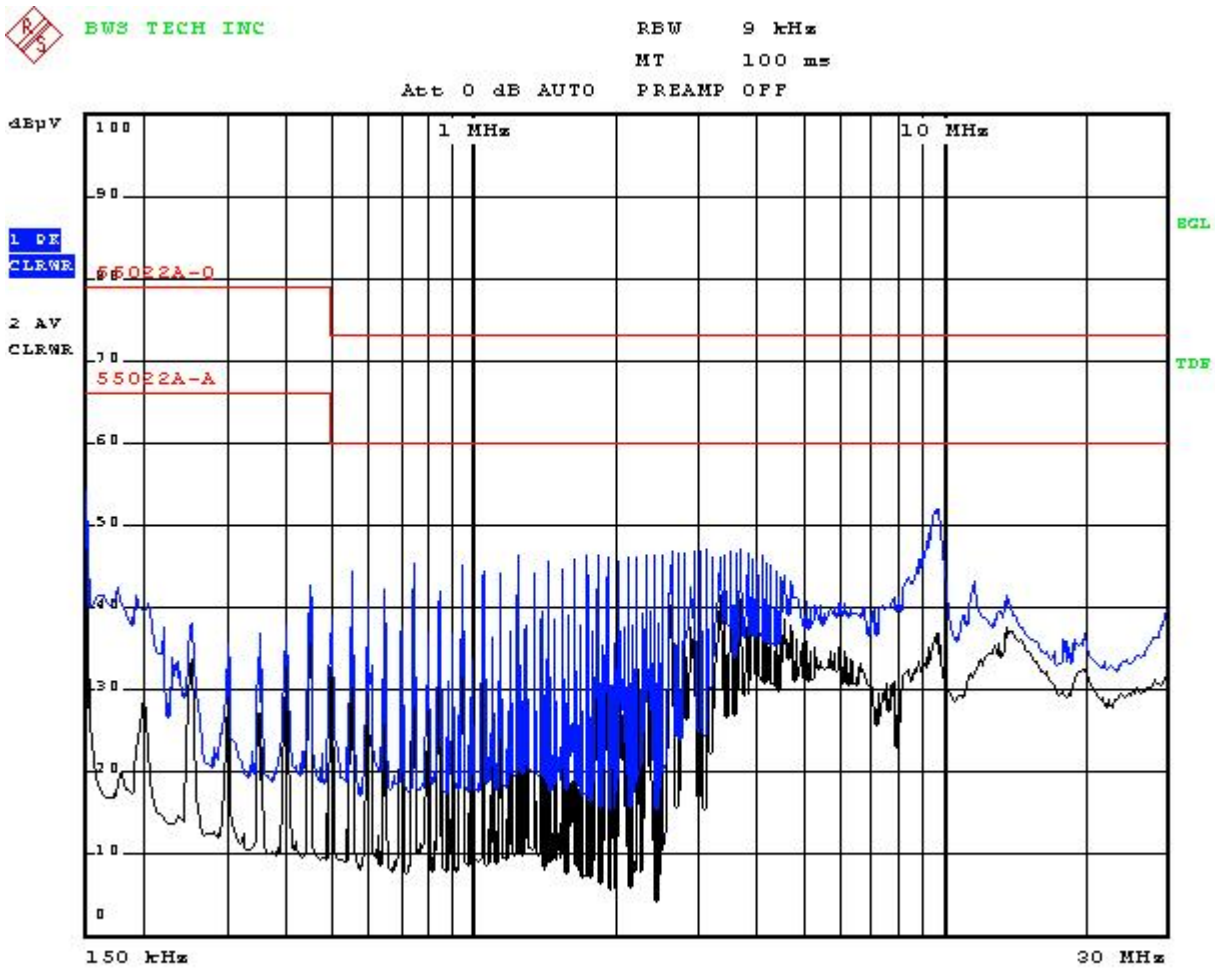
6.1.3 Up Link / HOT

FCC Rules :	Part 15 §15.107
Operating Path :	Up Link
Test Mode :	HOT
Input Level :	-52 dBm
System Gain :	80 dB
Bandwidth :	30 MHz
Number of FA :	3 FA



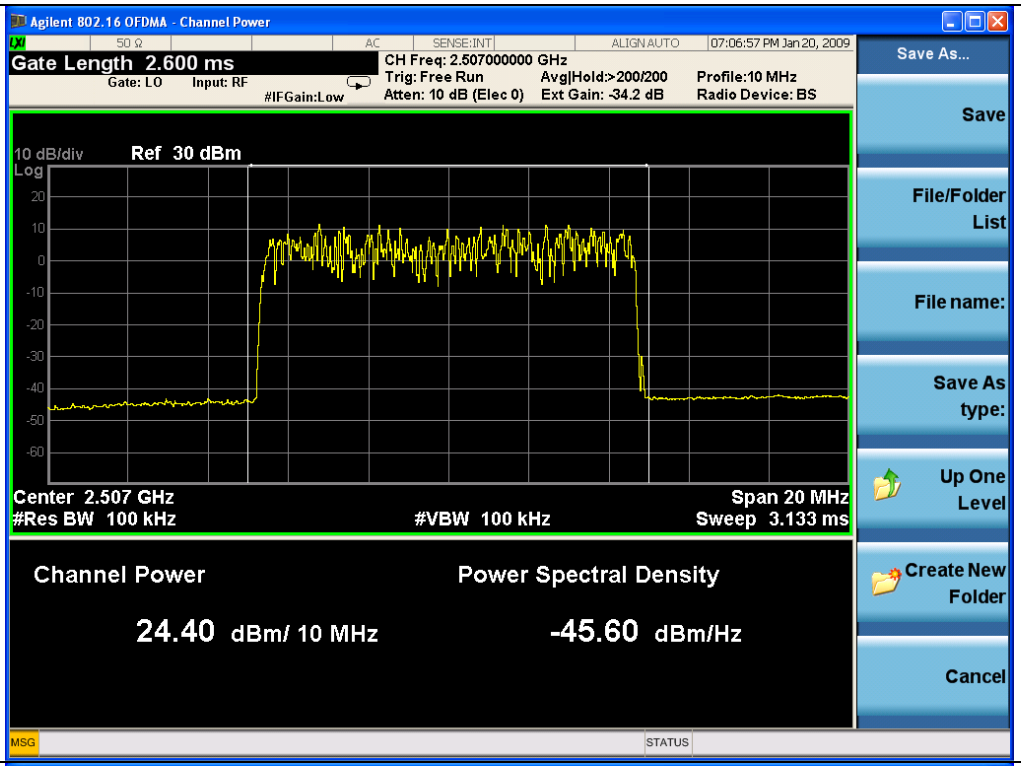
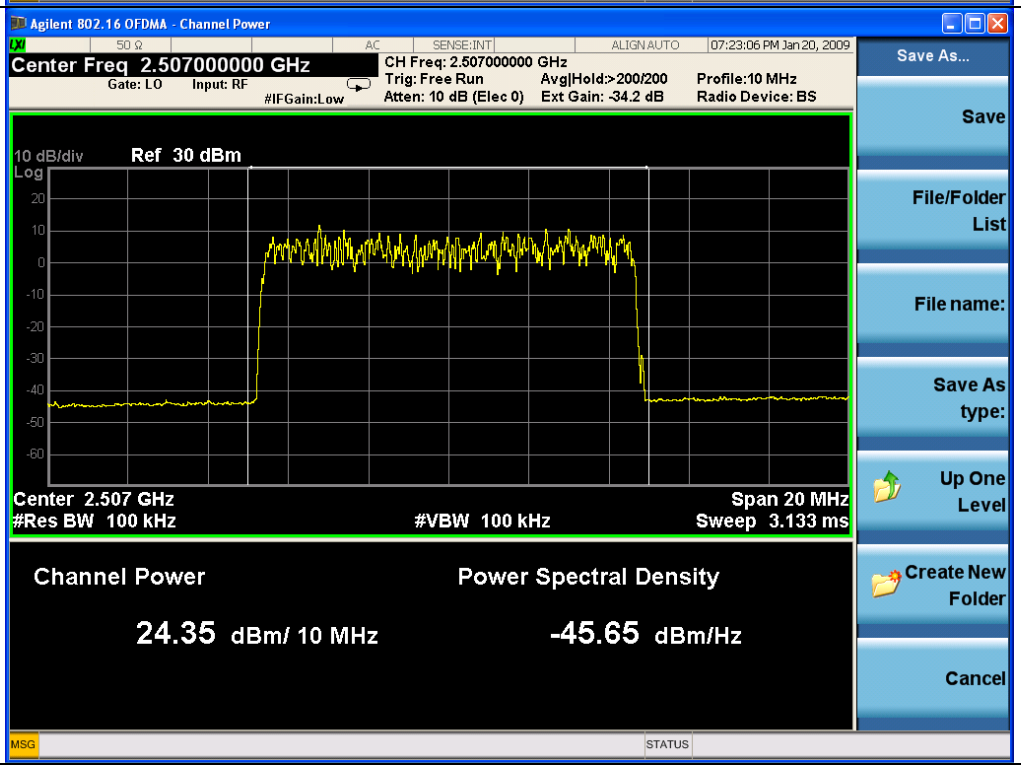
6.1.4 Up Link / Neutral

FCC Rules :	Part 15 §15.107
Operating Path :	Up Link
Test Mode :	Neutral
Input Level :	-52 dBm
System Gain :	80 dB
Bandwidth :	30 MHz
Number of FA :	3 FA

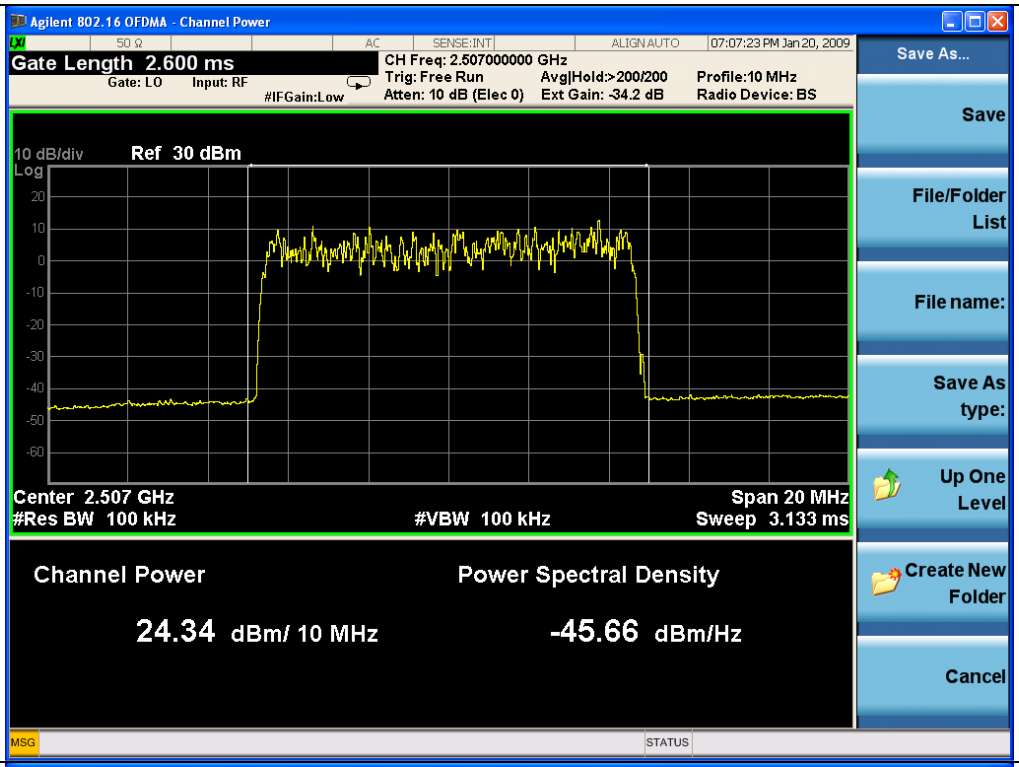
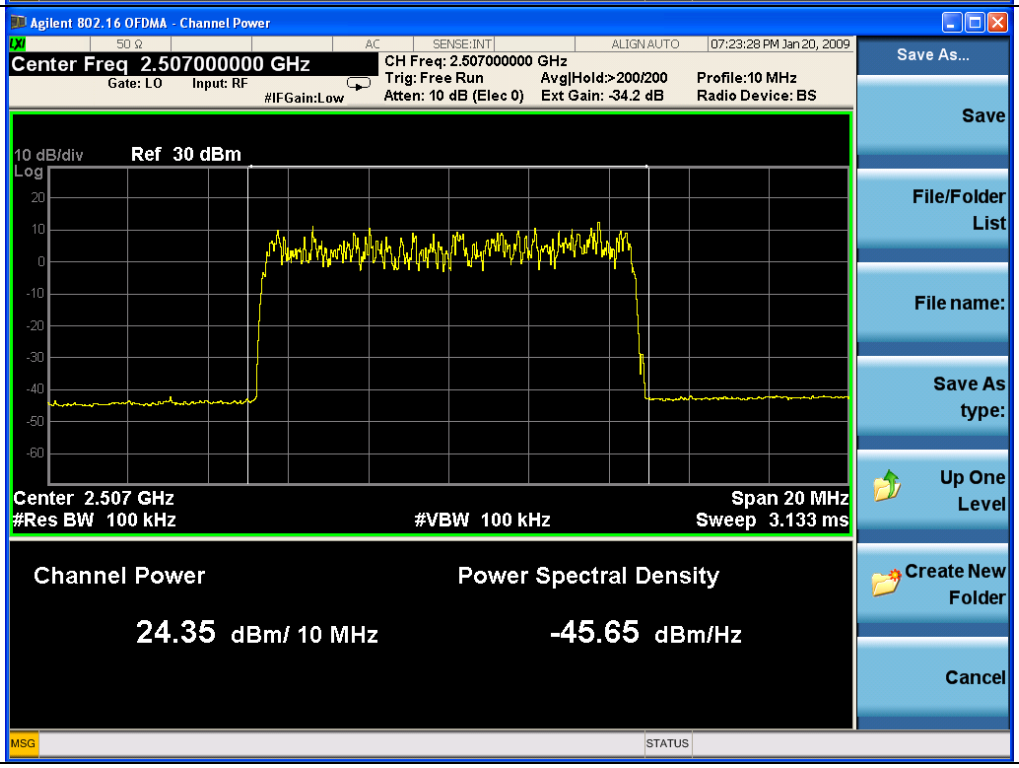


6.2 Maximum Channel Power

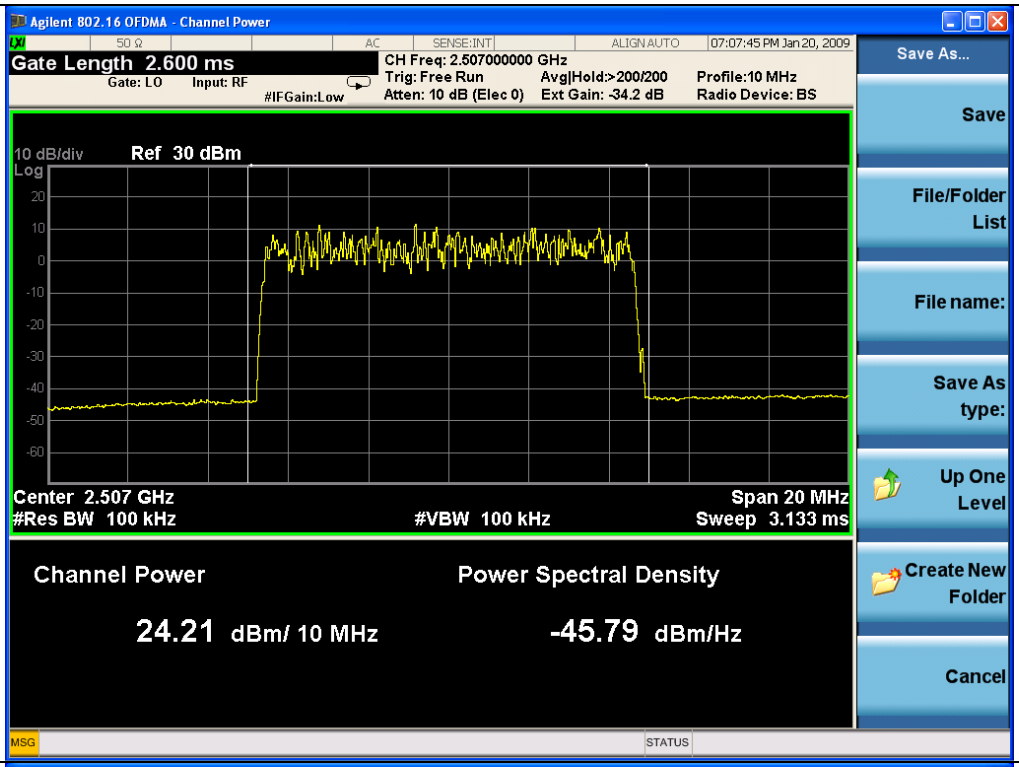
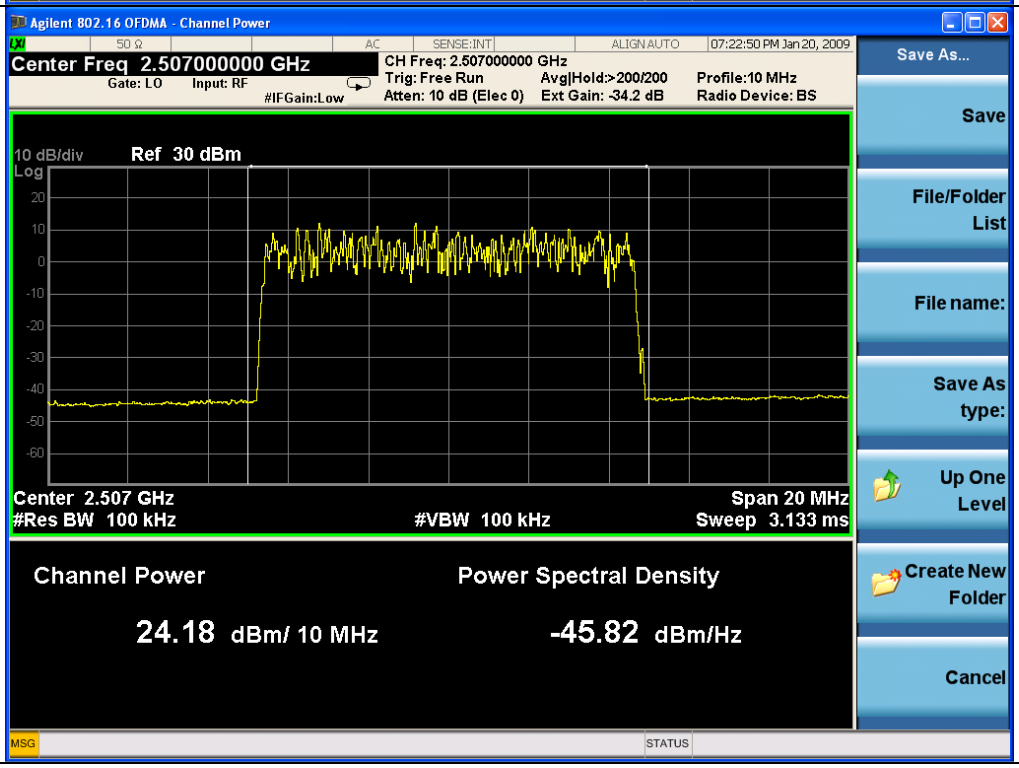
6.2.1 A-D Block [2507MHz - QPSK]

Down Link		
Up Link		

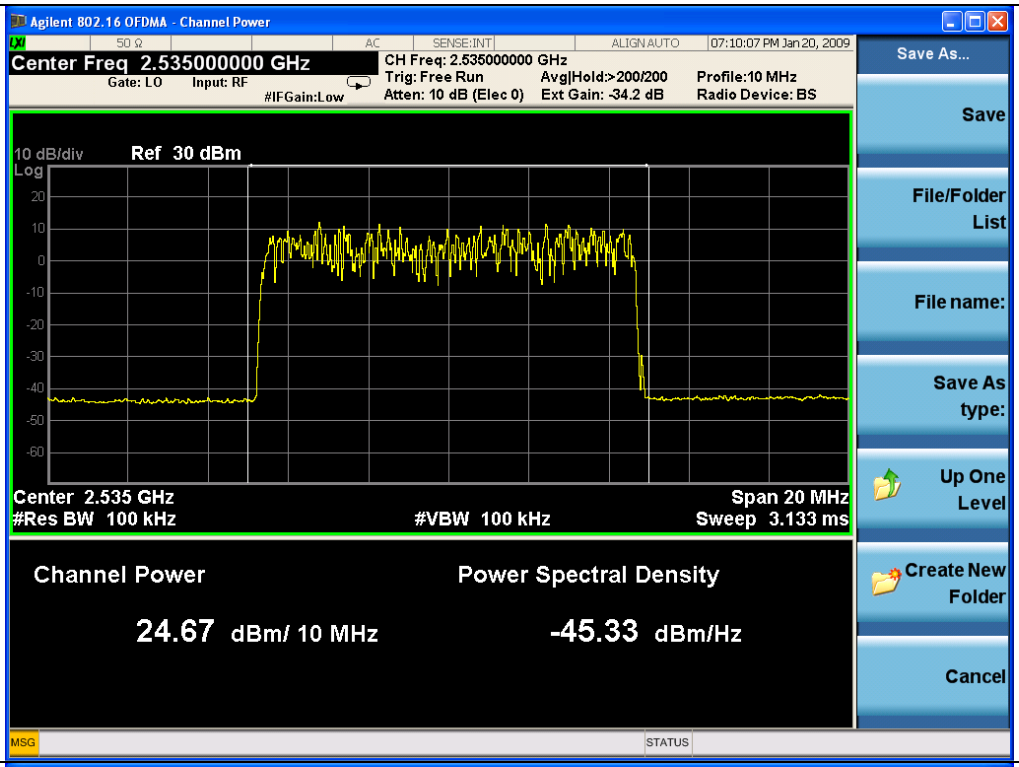
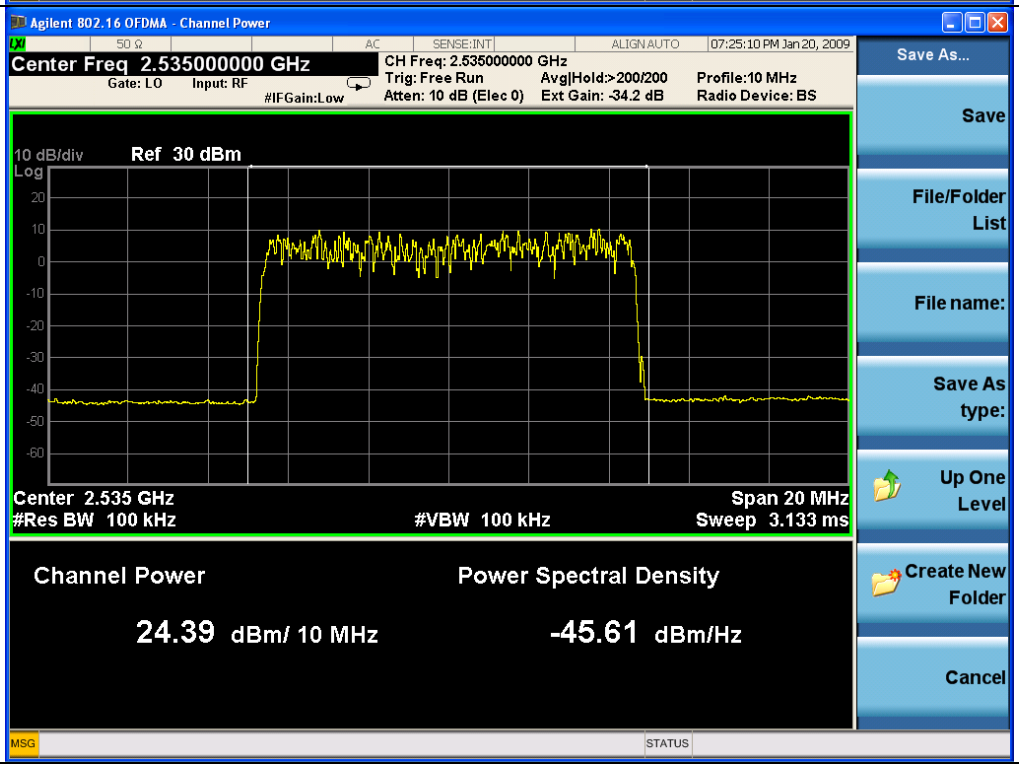
6.2.2 A-D Block [2507MHz – 16QAM]

Down Link		
Up Link		

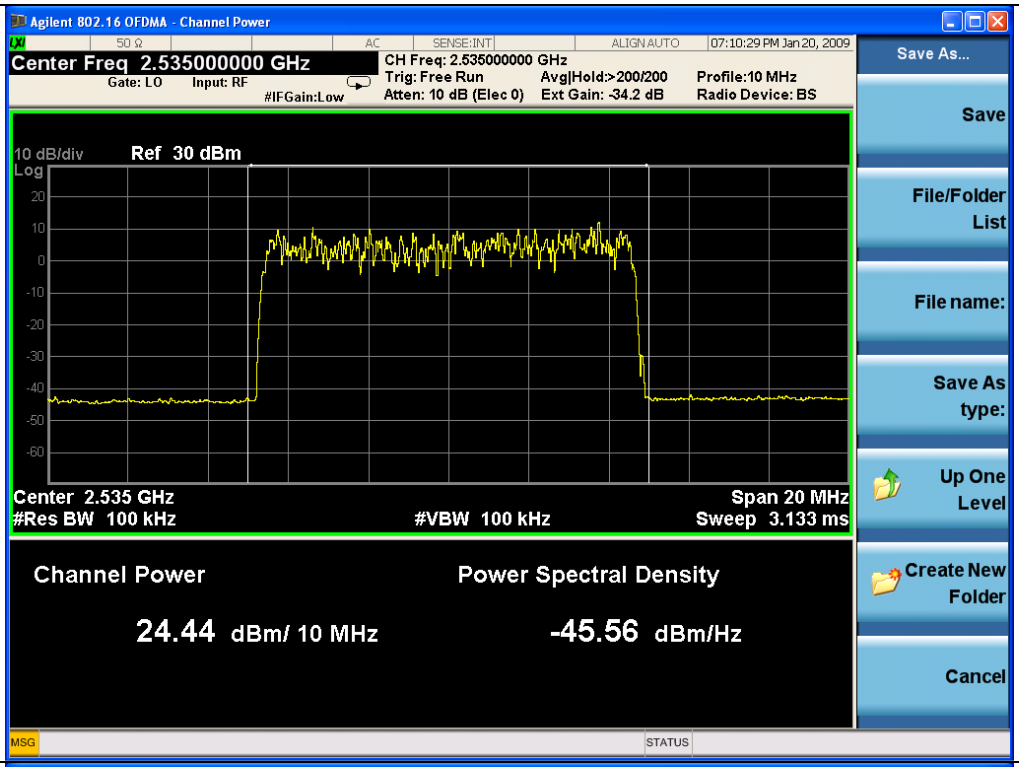
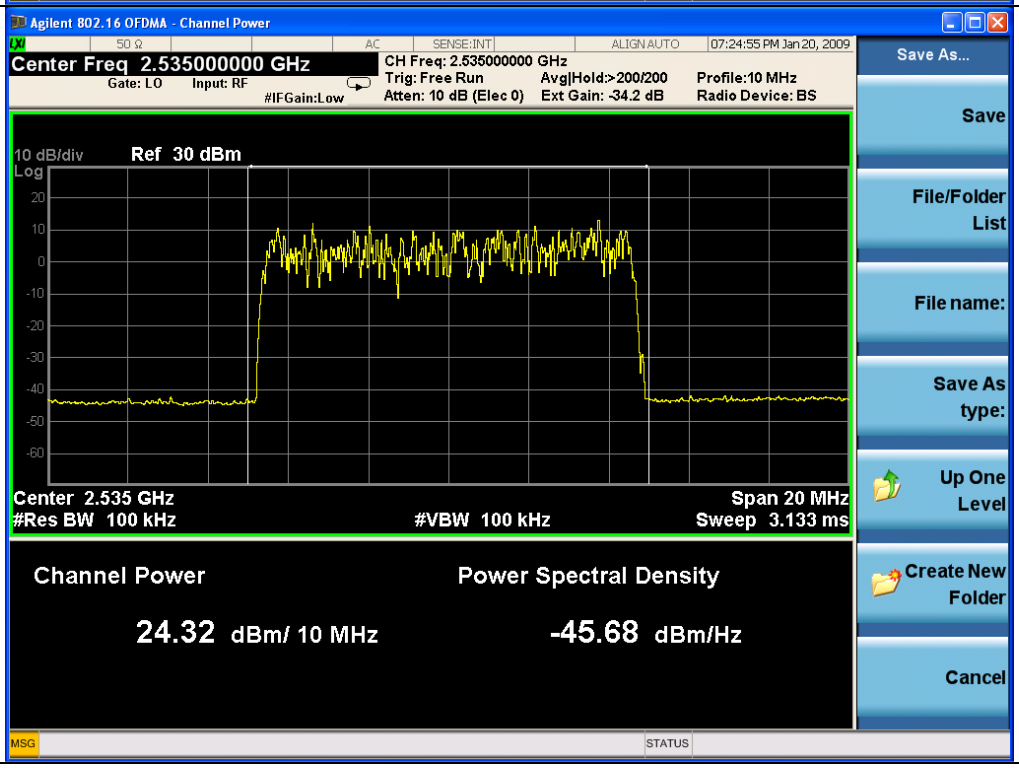
6.2.3 A-D Block [2507MHz – 64QAM]

Down Link		
Up Link		

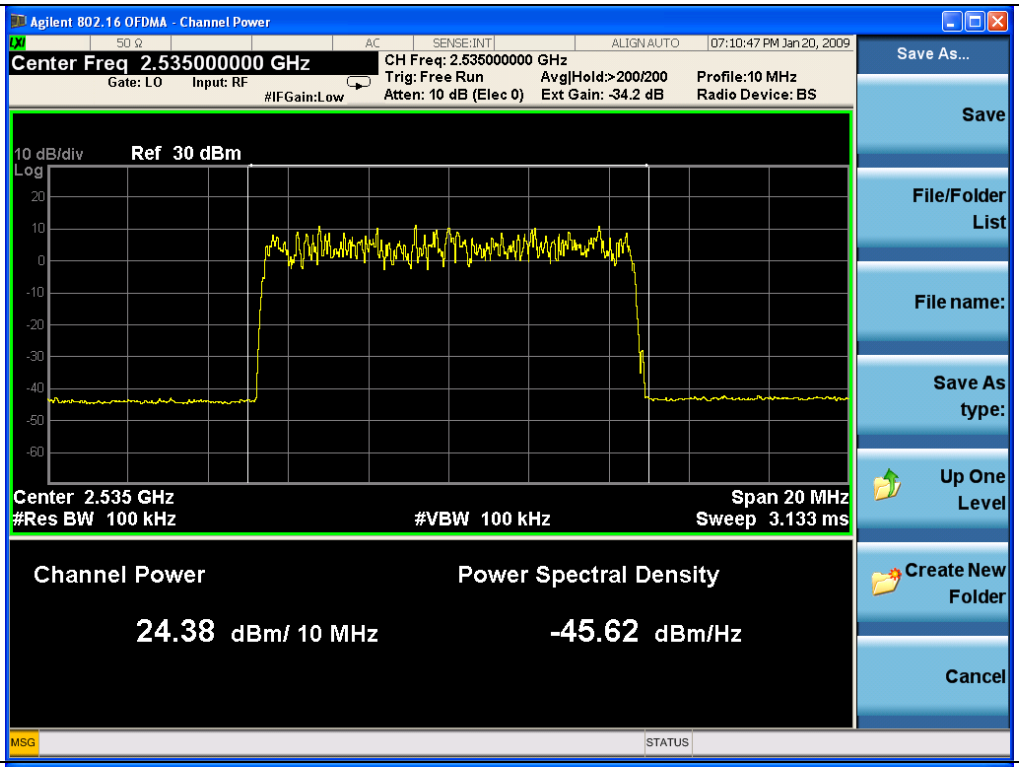
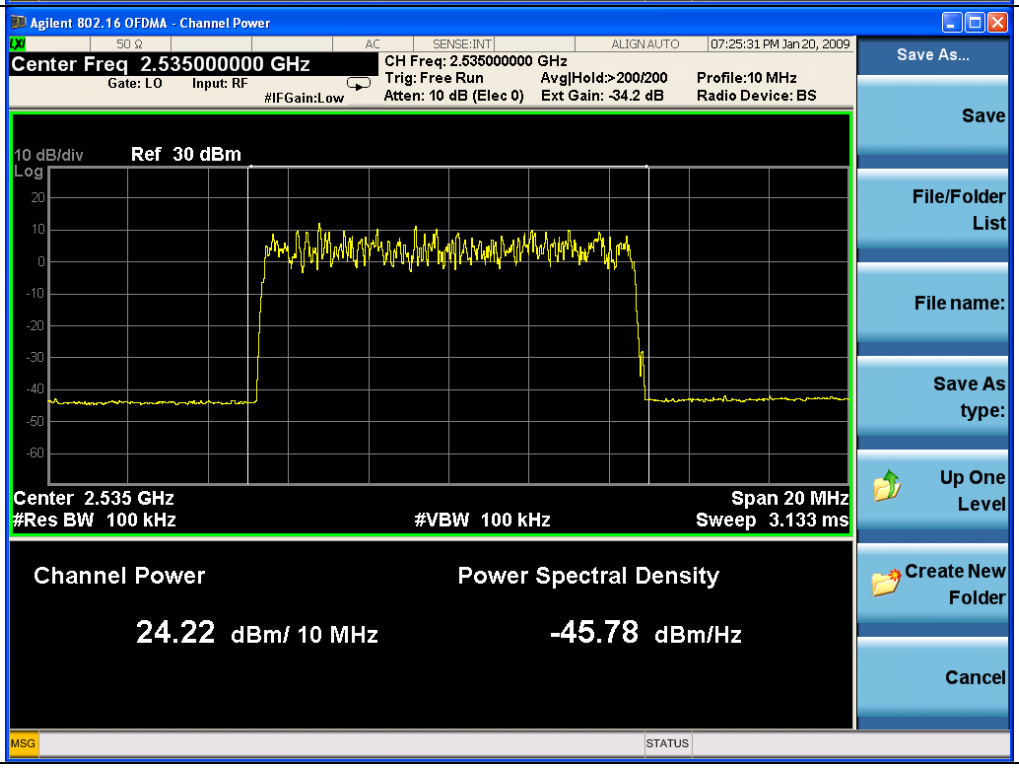
6.2.4 A-D Block [2535MHz – QPSK]

Down Link		
Up Link		

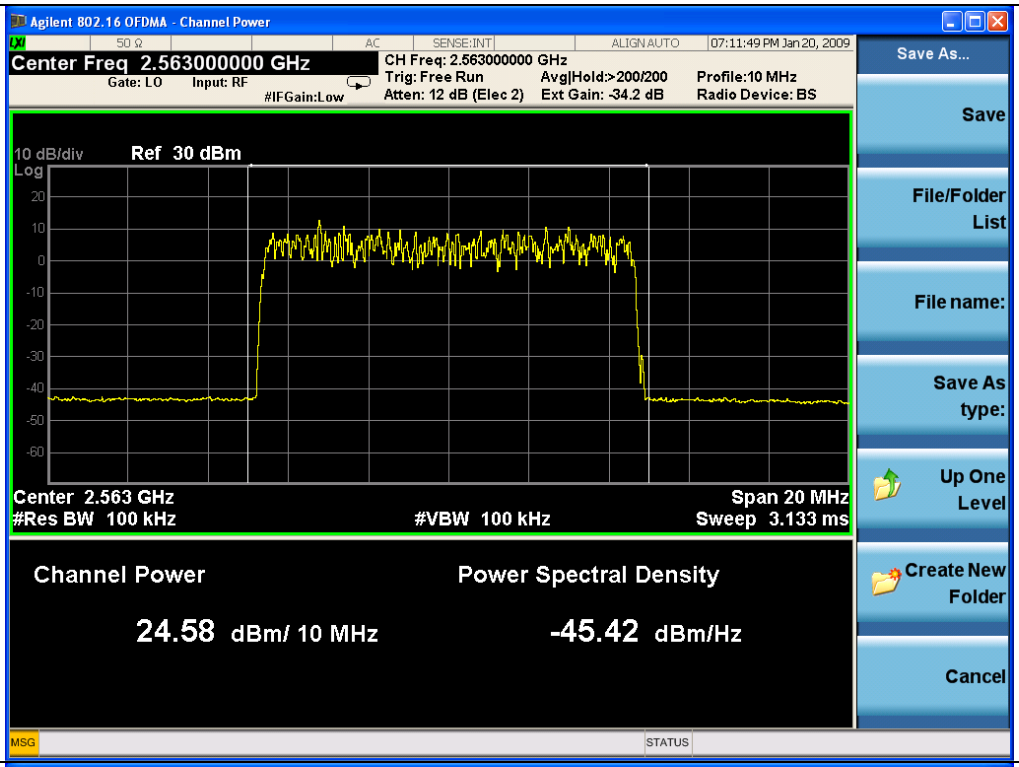
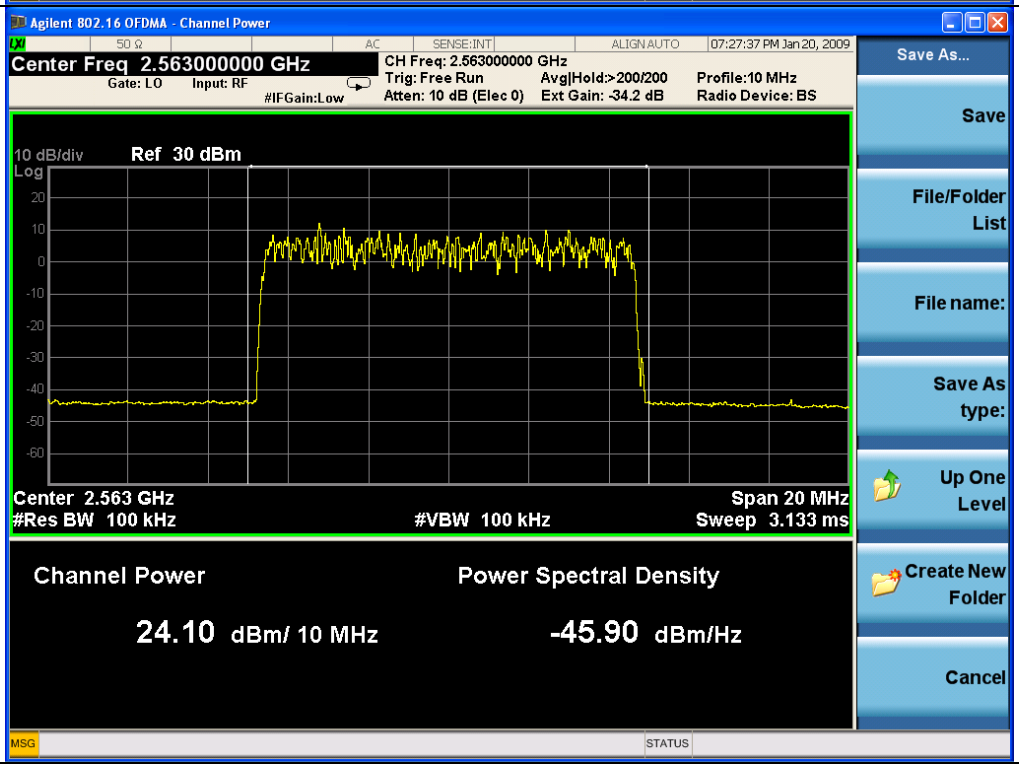
6.2.5 A-D Block [2535MHz – 16QAM]

Down Link		
Up Link		

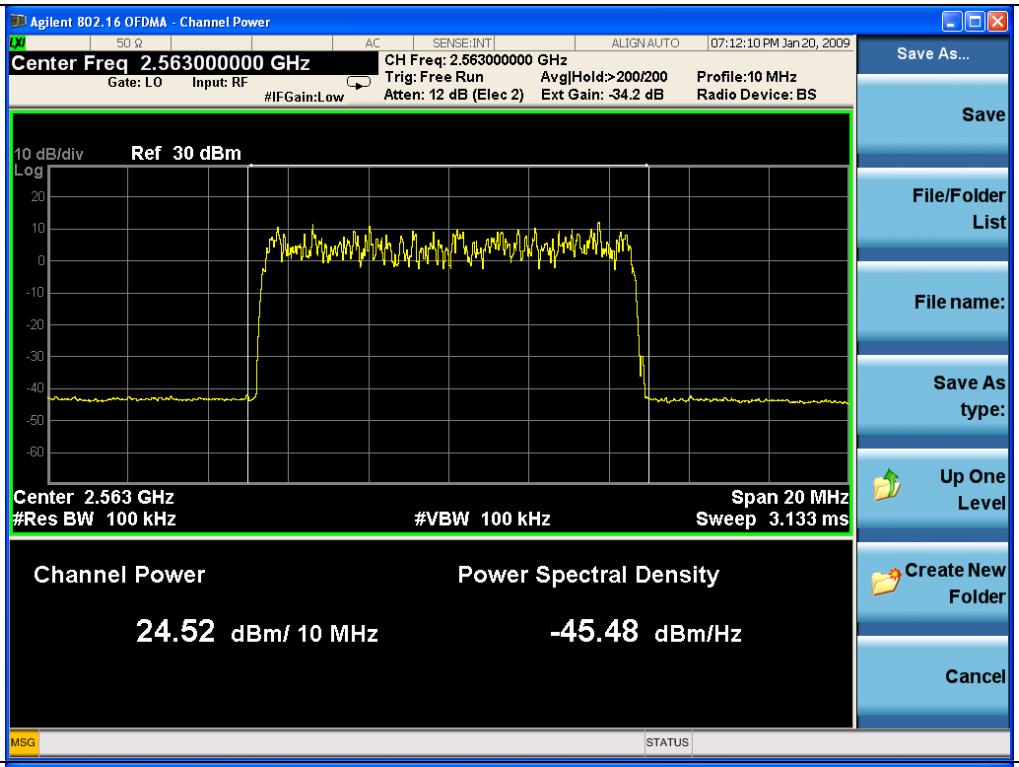
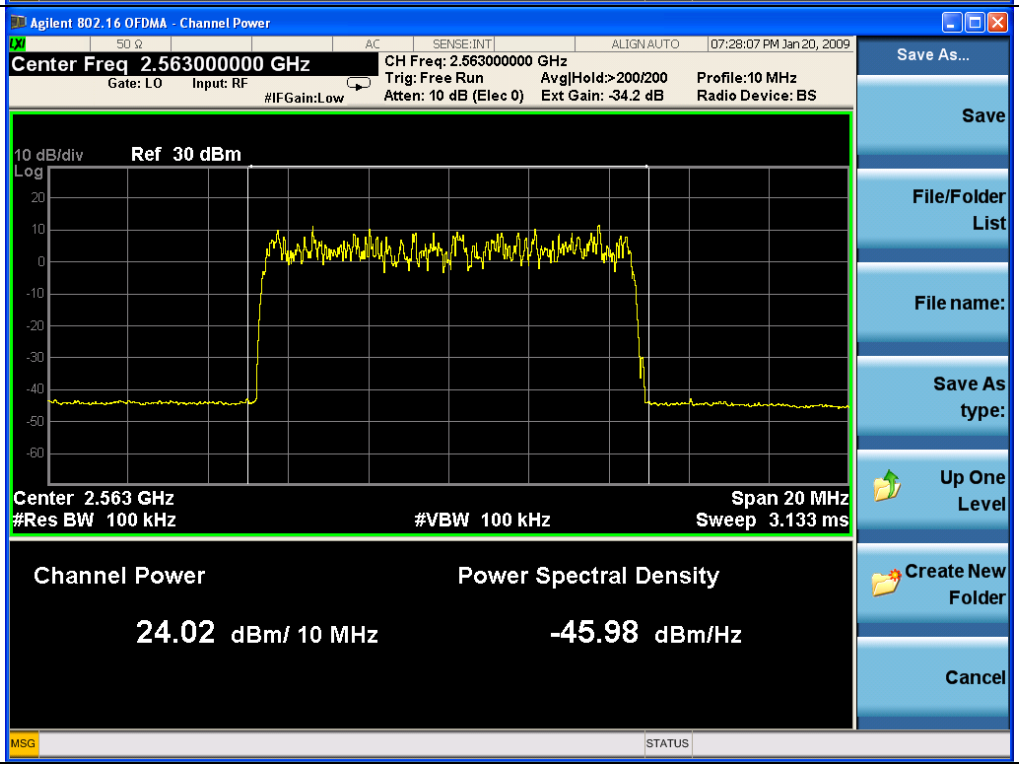
6.2.6 A-D Block [2535MHz – 64QAM]

Down Link		
Up Link		

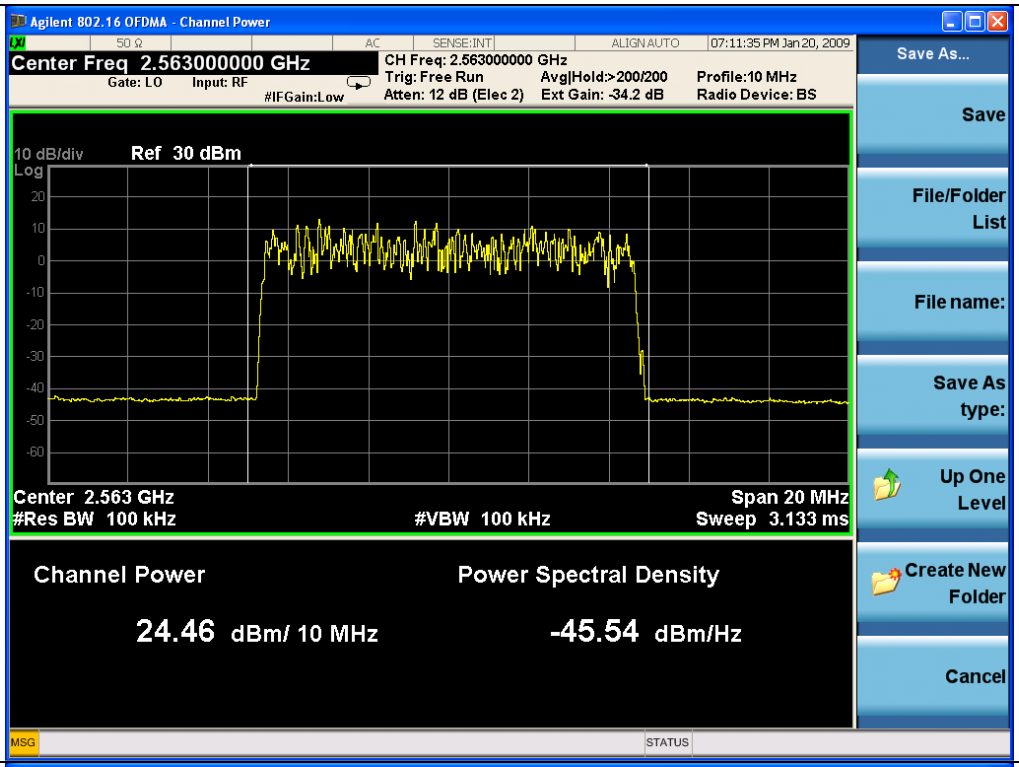
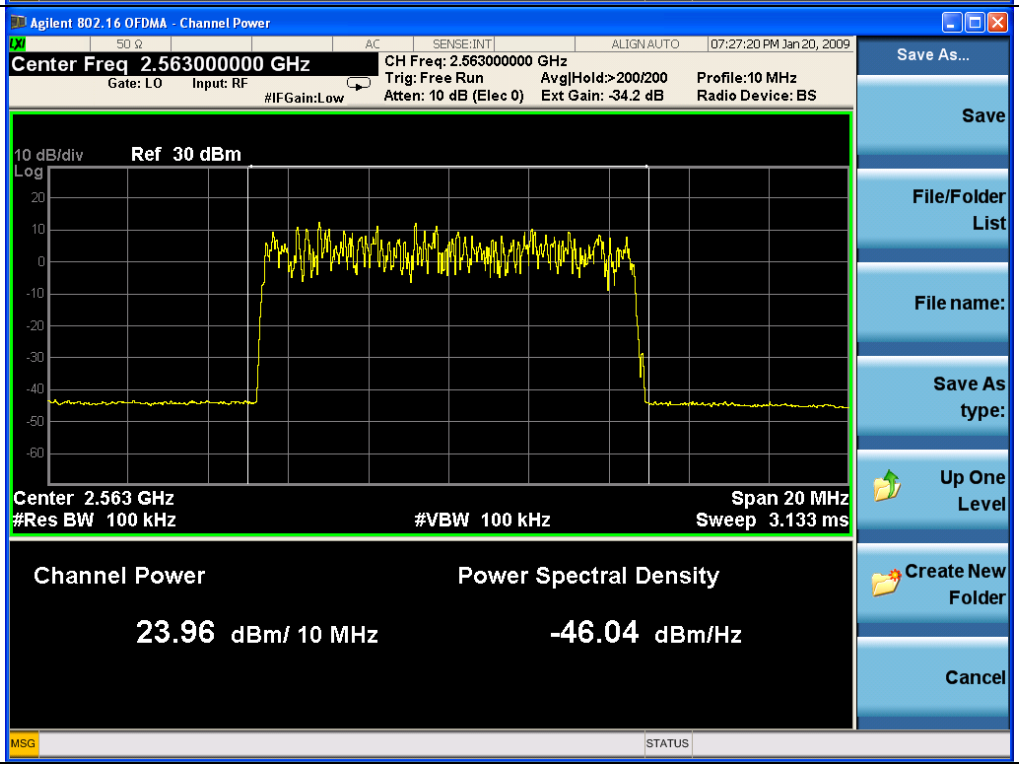
6.2.7 A-D Block [2563MHz – QPSK]

Down Link		
Up Link		

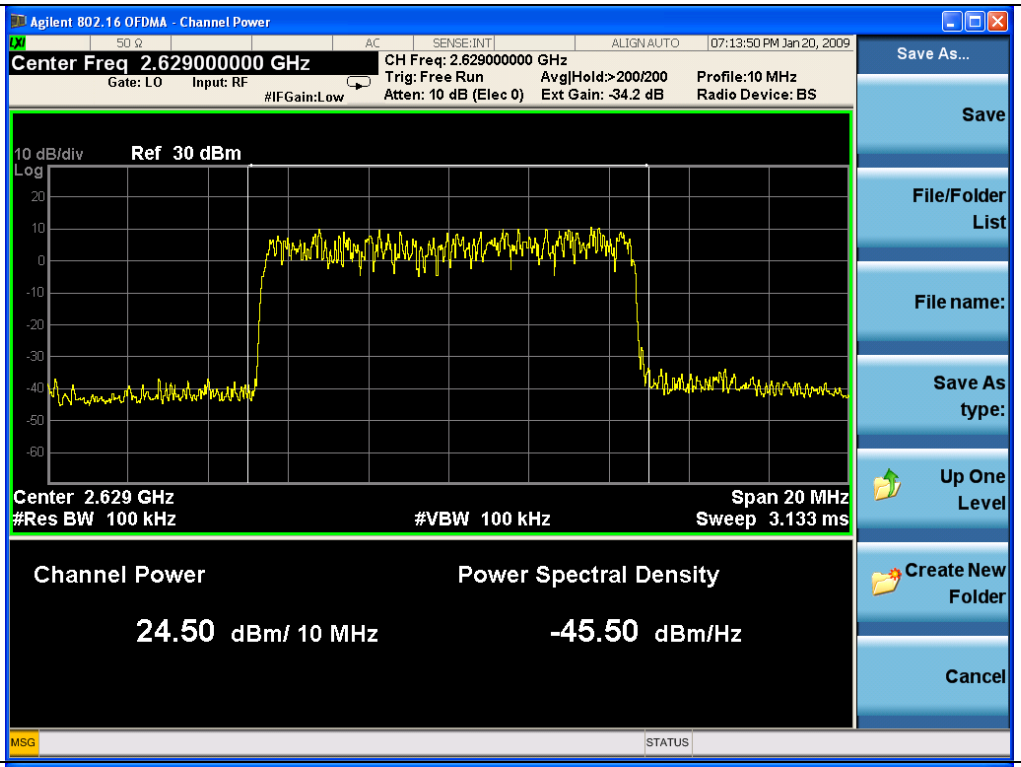
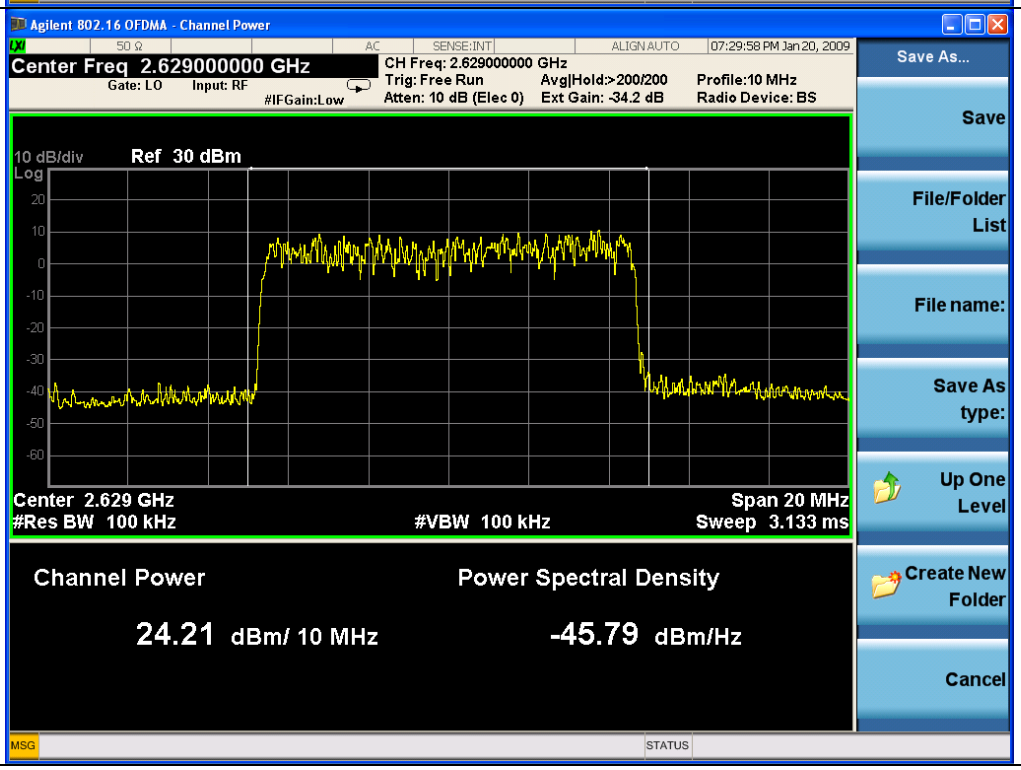
6.2.8 A-D Block [2563MHz – 16QAM]

Down Link		
Up Link		

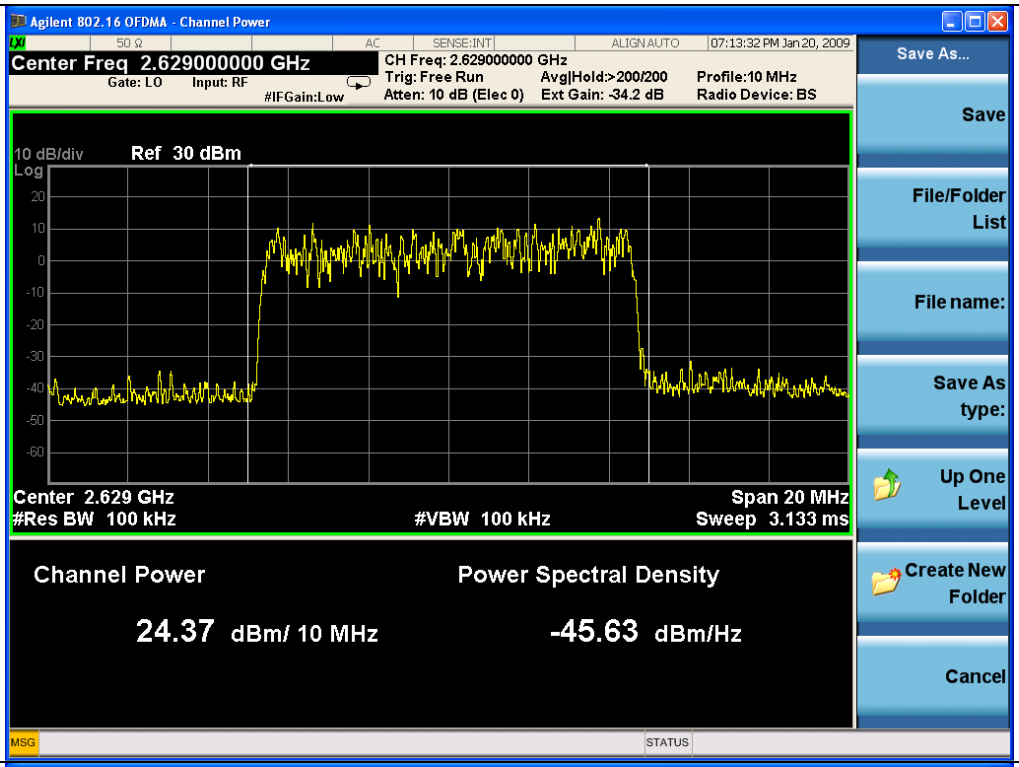
6.2.9 A-D Block [2563MHz – 64QAM]

Down Link		
Up Link		

6.2.10 E-G Block [2629MHz - QPSK]

Down Link	
Up Link	

6.2.11 E-G Block [2629MHz – 16QAM]

Down Link		
Up Link