


FCC MEASUREMENT REPORT

CERTIFICATION OF COMPLIANCE

PRODUCT : CDMA Repeater
MODEL/TYPE NO : JI-43CP
FCC ID : WYFJI-43CP
TRADE NAME : 
Airpoint Co., Ltd.
APPLICANT : 946 Dunsan-dong, Seo-gu, Daejeon, 302-120, Korea.
Yoon-Sun, Lee / Research Engineer
CLASSIFICATION : TNB Licensed Non-Broadcast Station Transmitter
RULE PART(S) : FCC Part 24
FCC PROCEDURE : Certification
DATES OF TEST : January 9 to 30, 2009
DATES OF ISSUE : February 3, 2009
TEST REPORT No. : BWS-09-RF-003
TEST LAB. : BWS TECH Inc. (Registration No. : 553281)

This CDMA Repeater JI-43CP 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 24.

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.

February 3, 2009

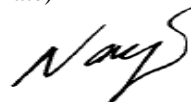
(Date)



Reviewed by **HyunSup, Jin**

February 3, 2009

(Date)



Reviewed by **TaeHyun, Nam**

BWS TECH Inc.

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#611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea

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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 Airpoint Co., Ltd.
Company Address 946 Dunsan-dong, Seo-gu, Daejeon, 302-120, Korea.
Phone/Fax Phone : 82-42-484-5460(ex. 131) Fax :82-42-485-5460

Manufacturer

Company Name Airpoint Co., Ltd.
Company Address 946 Dunsan-dong, Seo-gu, Daejeon, 302-120, Korea.
Phone/Fax Phone : 82-42-484-5460(ex. 131) Fax :82-42-485-5460

- **EUT Type** CDMA Repeater
- **Model Number** JI-43CP
- **FCC Identifier** WYFJI43CP
- **S/N** Prototype
- **FCC Rule Part(s)** FCC Part 24
- **FCC Classification** TNB / Licensed Non-Broadcast Station Transmitter
Uplink : 1850~1915MHz Downlink : 1930~1995MHz

- **Service Block**

■Block A : 1850-1865 MHz	■Block A : 1930-1945 MHz
■Block D : 1865-1870 MHz	■Block D : 1945-1950 MHz
■Block B : 1870-1885 MHz	■Block B : 1950-1965 MHz
■Block E : 1885-1890 MHz	■Block E : 1965-1970 MHz
■Block F : 1890-1895 MHz	■Block F : 1970-1975 MHz
■Block C : 1895-1910 MHz	■Block C : 1975-1990 MHz
■Block G : 1910-1915 MHz	■Block G : 1990-1995 MHz

- **Modulation Method** CDMA
- **Emission Designator** F9W
- **RF Power Output** 20 W / 0.5 W
- **Test Procedure** ANSI C63.4-2003 and ANSI/TIA-603-C-2004
- **Dates of Tests** January 9 to 30, 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-003

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. CDMA Repeater Model : **JI-43CP**

3. Product Information

3.1 General Specification

Description		Unit	JI-43CP	Comment
RF Specifications				
Frequency Band		DL	1930.625MHz~1994.375MHz	
		UL	1850.625MHz~1914.375MHz	
Bandwidth	Total BW		63.75MHz	
DL Power Out(Per Band)		dBm	43dBm(20W)	
UL Power Out(Per Band)		dBm	27dBm(0.5W)	
Gain		dB	DL=105dB / UL=100dB	
Gain Range		dB	35	
Gain Accuracy		±dB	2	
Ripple		±dB	2	
AGC Range		dB	35	
Noise Figure		dB	6/12	UL Max. Gain/Min. Gain
Total System Delay		us	12	
VSWR			1.5:1	
Antenna Port Impedence		Ohms	50	
DL Input Range		dBm	-62~-27	
UL Input Range		dBm	-73~-38	
Number of FA(MAX)			7FA	
Adjacent Channel Power				
885 kHz	30kHz BW		≥45dBc	
1.125 MHz	30kHz BW		≥45dBc	
1.1980 MHz	30kHz BW		≥45dBc	
2.250 MHz	30kHz BW		≥50dBm	
≥4MHz	1MHz BW		≤ -13dBm	
System Measurements				
Frequency Error	Hz		≤ ±0.05ppm(1800MHzx(±0.05ppm)= ±90Hz	
RHO			≥0.912	
Physical				
Size	mm		W X L X H(mm)=430X625X330	Include ROOF and BRACKET
Sound level max @1meter	dBA		<55dBA	
Cabinet IP			IP-55	
Operating temperature	℃		-40~55℃	
Humidity	%		5~95%	
Voltage	VAC		115VAC~240VAC±10%	
Power(W)	W		<450W	
RF ports			7/16 DIN-Female	
CDMA Modem antenna port			Type N Female	

3.2 EUT operating conditions & test configuration

3.2.1 Client Condition

Temperature : -20 °C ~ +50 °C

Humidity : 95 %

3.2.2 EUT Operating Condition

Mode	
Down Link	RF signal from the CDMA signal generator injected to the Doner port of the repeater and the amplified RF output signal from the Service port of the repeater was connected to the Spectrom analyzer.
Up Link	RF signal from the CDMA signal generator injected to the Service port of the repeater and the amplified RF output signal from the Donor port of the repeater was connected to the Spectrom analyzer.

3.2.3 Test Frequency

Mode	Channel	Frequency
Down Link	Bottom channel	1931.25 MHz
	Mid channel	1962.50 MHz
	Top channel	1993.75 MHz
Up Link	Bottom channel	1851.25 MHz
	Mid channel	1882.50 MHz
	Top channel	1913.75 MHz

3.2.4 Test Signal Source

The carrier from the signal generator applied to the repeater was a IS-95 CDMA standard signal.

4. Applied Standards

4.1. FCC Rules and Regulations

- 47 CFR Part 24 Subpart E
Personal Communication Service-Broadband PCS
- 47 CFT Part 15 Subpart B
General Technical requirements

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
- FCC 2-11-04
EAB/RF Amplifier, Booster, and Repeater reminder

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	§24.232	RF Power Output	Pass
§2.1049	-	Occupied Bandwidth	Pass
§2.1051	§24.238	Spurious Emissions at Antenna Terminals	Pass
§2.1053	§24.238	Radiated Spurious Emission	Pass
§2.1055	§24.235	Frequency Stability	Pass
		Out of band Rejection	Pass

5. TEST DATA

5.1 Power Line Conducted Emission

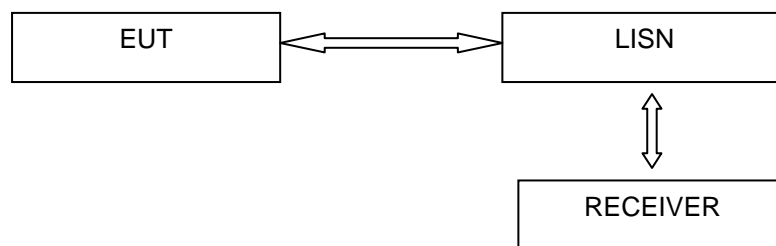
5.1.1 Specification

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]	Correction		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	N	79.00	49.08	49.17	29.83	66.00			
0.202	0.07	0.10	H		44.70	44.87	34.13				
0.262	0.07	0.16	H		60.21	60.44	18.56				
0.390	0.08	0.24	H		54.50	54.82	24.18				
0.650	0.07	0.30	H	73.00	55.96	56.33	16.67	60.00	44.80	45.17	14.83
1.430	0.03	0.46	H		61.14	61.63	11.37		45.93	46.42	13.58
5.738	0.06	0.89	N		69.26	70.21	2.79		52.28	53.23	6.77
13.758	0.07	1.21	H		59.14	60.42	12.58		42.72	44.00	16.00

5.1.6.2 Up link

Freq [MHz]	Correction		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	60.89	60.98	18.02	66.00			
0.202	0.07	0.10	N		47.43	47.60	31.40				
0.262	0.07	0.16	N		60.34	60.57	18.43				
0.390	0.08	0.24	N		56.03	56.35	22.65				
0.650	0.07	0.30	N	73.00	55.56	55.93	17.07	60.00	44.97	45.34	14.66
1.570	0.03	0.48	N		59.65	60.16	12.84		44.79	45.30	14.70
5.698	0.06	0.89	H		70.06	71.01	1.99		53.91	54.86	5.14
9.458	0.07	1.01	H		59.75	60.83	12.17		40.85	41.93	18.07

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 RF Power Output

5.2.1 Specification

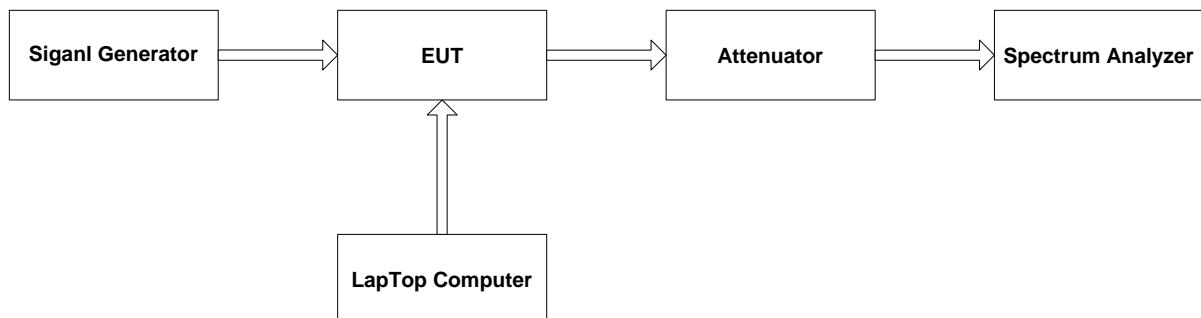
- Measurements were made in the laboratory environment. For RF power measurements, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. The EUT was adjusted to produce maximum power rating of the product specification. The measurement were made at the EUT input and output ports in downlink and uplink transmit modes of operation at B,M,T channels.

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.

5.2.3 Measurement Set-Up



5.2.4 Limit

§ 24.232

5.2.5 Test Result

RF output power measured data

Carrier Band	Frequency(MHz)	Loss offset(dB)	Measured Power(dBm)
Downlink	1931.250	42.3	43.52
	1962.500	42.3	43.61
	1993.750	42.3	43.20
Uplink	1851.250	42.3	27.36
	1882.500	42.3	27.72
	1913.750	42.3	27.42
Supplement information : -. Modulation signal CDMA, Power measurement : Channel power w/ mean value -. Before the measurement, the system calibration for compensation of cable loss and attenuator has been made and include in the test result.			

Maximum composite output power data (7FA)

Carrier Band	Frequency(MHz)	Loss offset(dB)	Measured Power(dBm)
Downlink	1935.000	41.5	43.12
	1962.500	41.5	43.96
	1990.000	41.5	43.01
Uplink	1855.000	41.3	27.35
	1882.500	41.3	27.77
	1910.000	41.3	27.38
Supplement information : -. Modulation signal CDMA, Power measurement : Channel power w/ mean value -. Before the measurement, the system calibration for compensation of cable loss and attenuator has been made and include in the test result.			

5.3.6 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

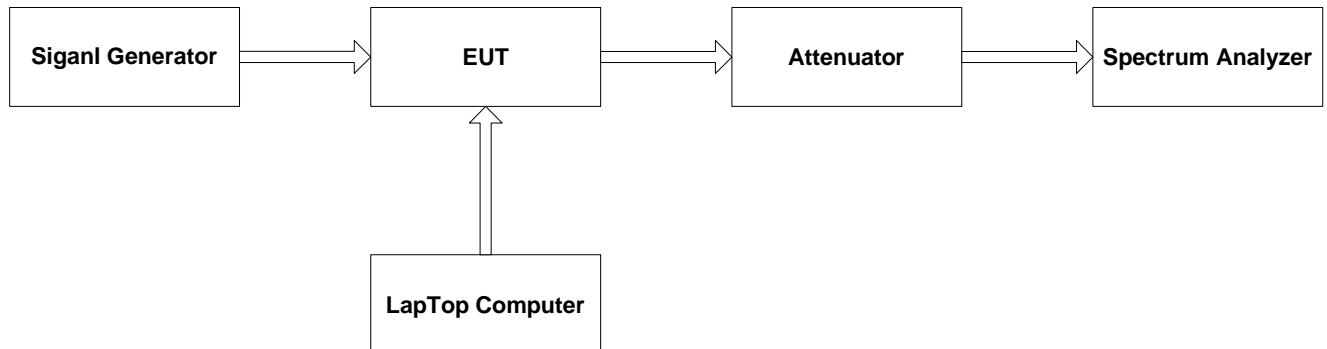
Measurements were made in the laboratory environment. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

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) : 30kHz

5.3.3 Measurement Set-Up



5.3.4 Limit

- According to 47 CFR Part 2 section § 2.1049 and Part 24, no specific modulation characteristics requirement limits is applicable.

5.3.5 Test Result

Occupied Bandwidth measured results

Carrier Band	Frequency(MHz)	Occupied bandwidth (MHz)
Downlink	1931.250	1.266
	1962.500	1.260
	1993.750	1.266
Uplink	1851.250	1.266
	1882.500	1.266
	1913.750	1.266
Supplement information : -. Modulation signal CDMA, modulation applied, 99% bandwidth		

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

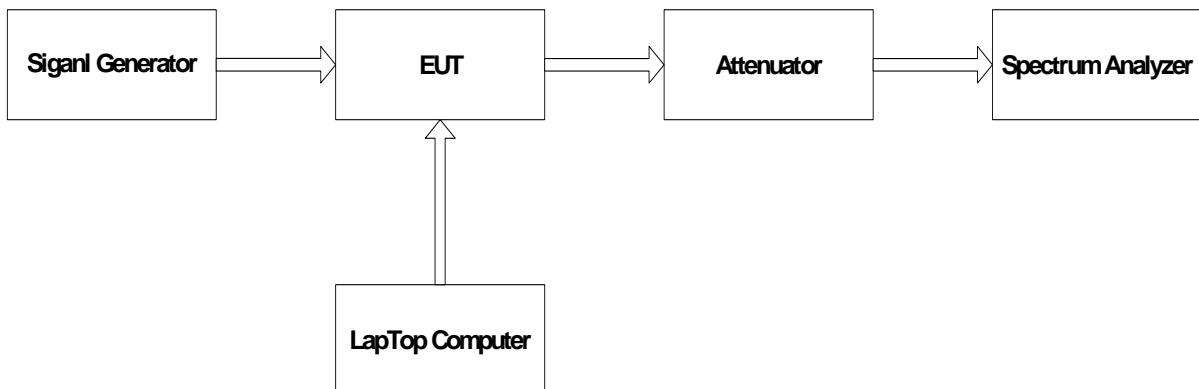
- Measurements were made in the laboratory environment. Conducted spurious emission measurement was made using a direct connection between RF output of the EUT and spectrum analyzer. A modulated carrier signal from the generator was applied to the both uplink and down link port of the EUT. Measurement has been performed with the EUT set to maximum output level at low, mid, and high channel frequencies.

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 $P(W) - \{43 \text{ dB} + 10 \log [P(W)]\} = -13 \text{ dBm}$.

5.4.6 Data

Antenna terminal conducted spurious emission results

Carrier Band	Tuned Frequency(MHz)	Loss offset(dB)	Spurious emission measured (dBm)	Limit (dBm)	Margin (dB)
Downlink	1931.250	42.3	-19.606	-13	6.606
	1962.500	42.3	-19.480	-13	6.480
	1993.750	42.3	-19.590	-13	6.590
Uplink	1851.250	42.3	-19.320	-13	6.320
	1882.500	42.3	-20.342	-13	7.342
	1913.750	42.3	-19.680	-13	6.680

Supplement information :

- Carrier signal was modulated with CDMA, Power measurement : Peak power measured.
- For each tuned carrier frequency, the maximum spurious emission detected was recorded.

Two carrier Intermodulation

Carrier Band		Tuned Frequency(MHz)	Loss offset(dB)	Spurious emission measured (dBm)	Limit (dBm)	Margin (dB)
Downlink	Lower edge	1932.500	42.3	-29.32	-13	16.32
	Higher edge	1992.500	42.3	-29.21	-13	16.21
Uplink	Lower edge	1852.500	42.3	-40.42	-13	26.58
	Higher edge	1912.500	42.3	-44.15	-13	30.85

Supplement information :

- Carrier signal was modulated with CDMA, Power measurement : Peak power measured.
- For each tuned carrier frequency, the maximum spurious emission detected was recorded.

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 Field Strength of Spurious Radiation

5.5.1 Specification

According to 47 CFR Part 2 section § 2.1053 and Part 24 section § 24.238, 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

5.5.2 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.

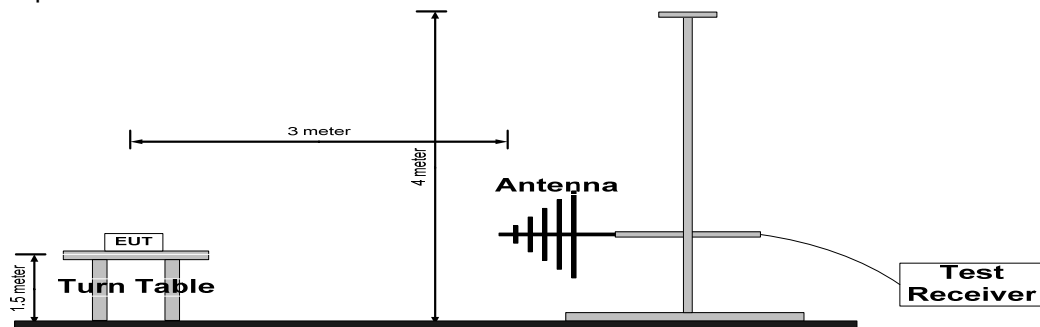
For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, the values of current and voltage on the circuit elements specified in section § 2.1033(c)(8). The EUT was connected to ancillary in order to simulate normal operating conditions with reference to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

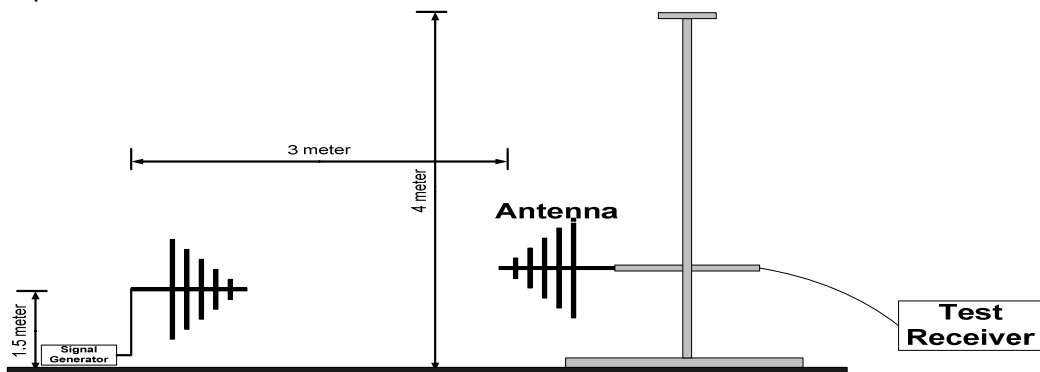
Step (b): Use substitution method to verify the maximum output power. The EUT was substituted by a dipole antenna. The dipole is connected to a Signal Generator. And then adjust the output level Of the Signal Generator to get the same received power recorded in step (b) on Test Receiver, and record the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

5.5.3 Measurement Set-Up

Step 1.



Step 2.



5.5.4 Limit

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

5.5.5 Data

Test frequency range	Measured maximum spurious emission levels (dBm)	Limit (dBm)
30 MHz to 10 th harmonic included	-29.803	<-13

5.5.6 Conclusion

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

5.6 Frequency Stability

5.6.1 Specification

According to 47 CFR Part 2 section §2.1055 and Part 24 section §24.135, §24.235 the frequency stability shall be sufficient to ensure that the fundamental emission stay within the authorized bands of operation.

5.6.2 Method of Measurement

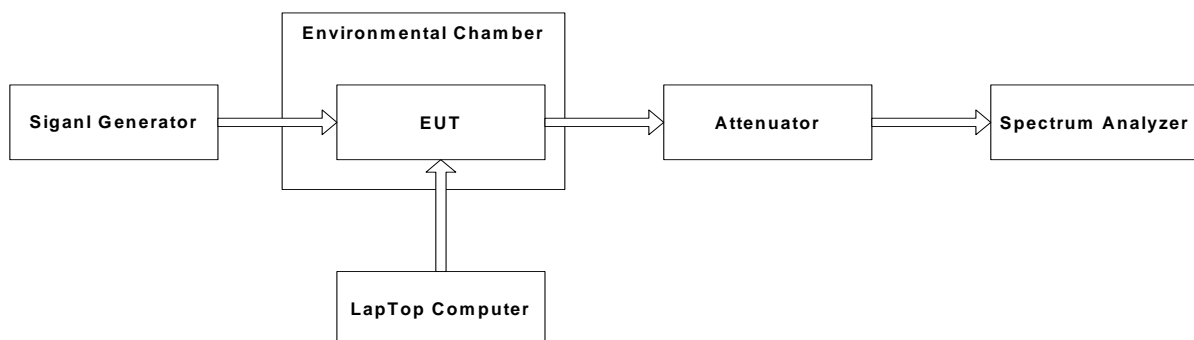
ANSI/TIA-603-C-2004 Section 2.2.2

The frequency stability shall be measured with variation of ambient temperature form -20°C to +50°C. Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10°C 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.

5.6.3 Measurement Set-Up



5.6.5 Limit

The frequency tolerance is limited to ± 2 ppm.

5.6.6 Data

TX frequency stability

Test environment		Measured maximum frequency error				Limit(ppm)
		Down Link 1962.5MHz		Up Link 1882.5MHz		
Voltage (V)	Temperature (℃)	Hz	ppm	Hz	ppm	
100	-20	0.0	0.0	0.0	0.0	<±2
	-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

5.6.7 Conclusion

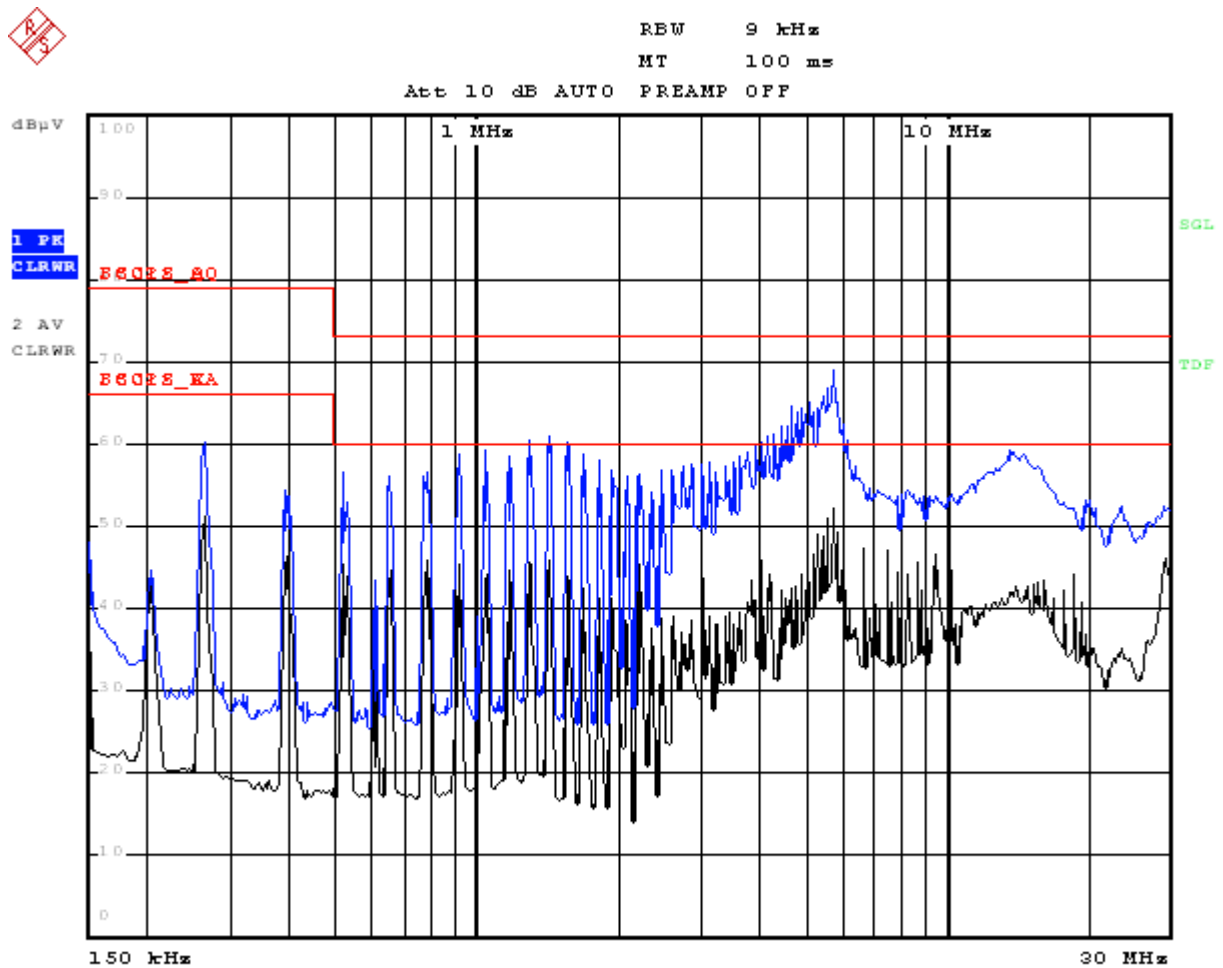
The equipment **passed** the requirement of this clause. Also refer to 6.7 of the present test report for detailed.

6. TEST PLOT

6.1 Power Line Conducted Emission

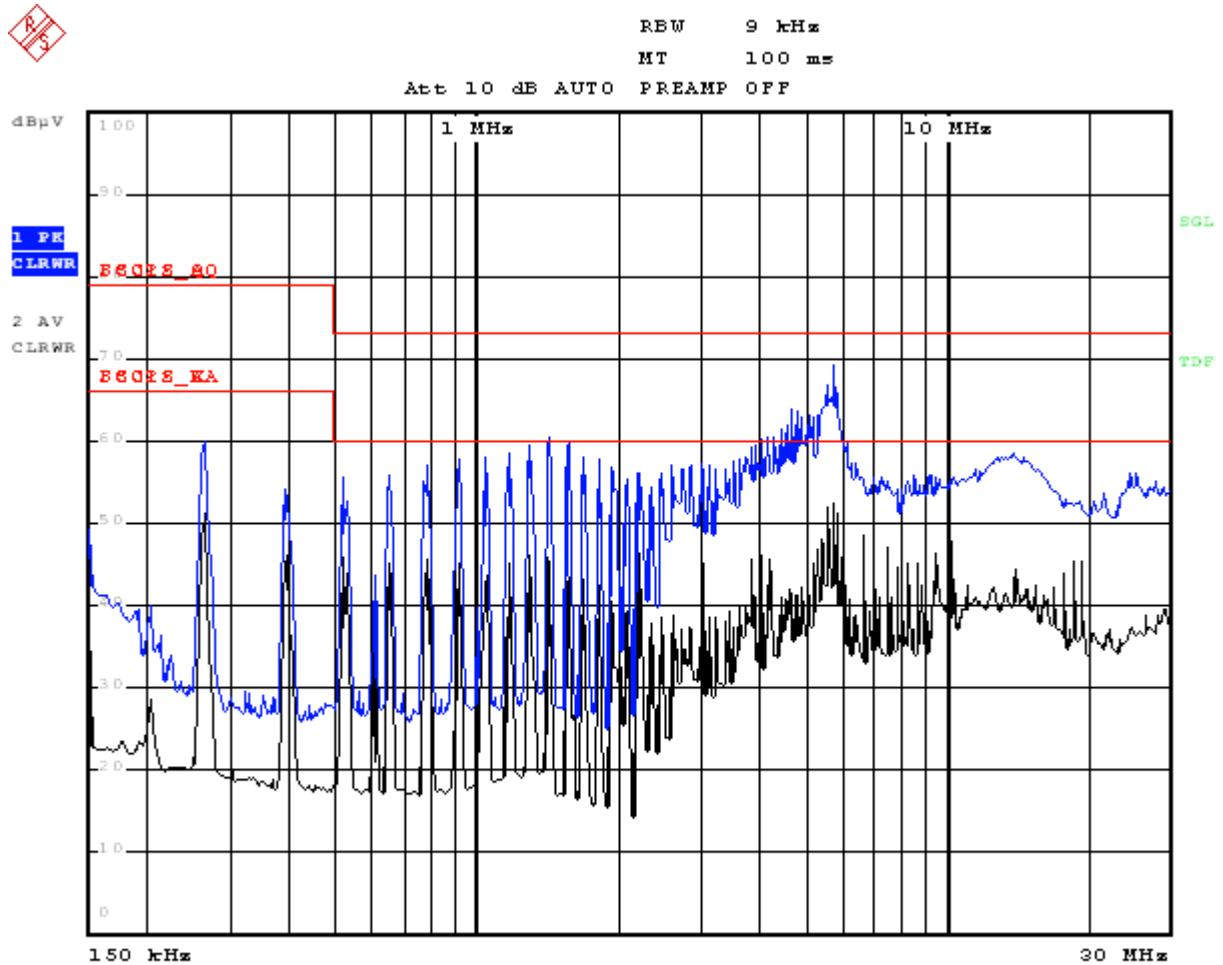
6.1.1 Down Link / HOT

FCC Rules :	Part 15 §15.107
Operating Path :	Down Link
Test Mode :	HOT
Input Level :	-62 dBm
System Gain :	105 dB
Bandwidth :	8.75 MHz



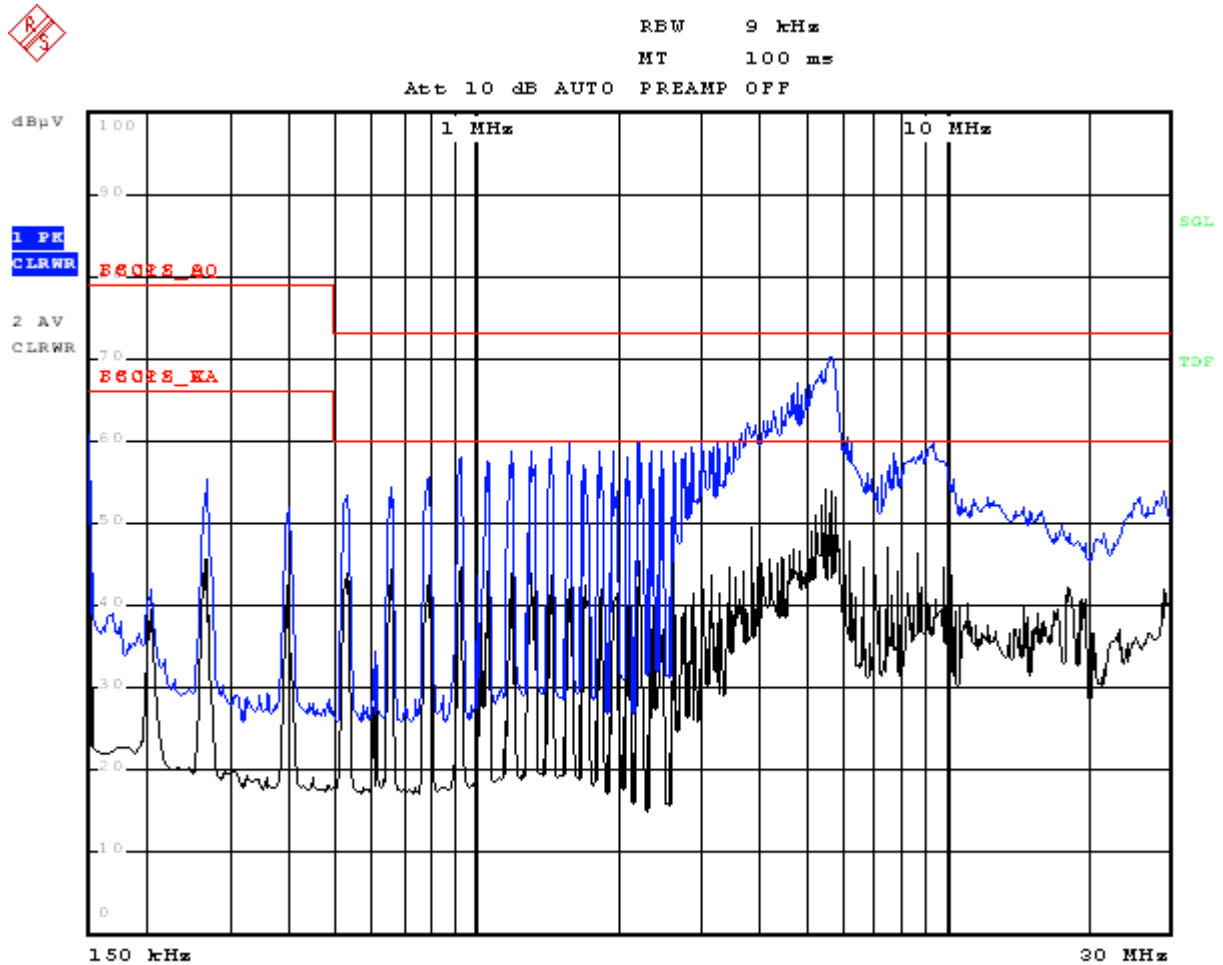
6.1.2 Down Link / Neutral

FCC Rules :	Part 15 §15.107
Operating Path :	Down Link
Test Mode :	Neutral
Input Level :	-62 dBm
System Gain :	105 dB
Bandwidth :	8.25 MHz



6.1.3 Up Link / HOT

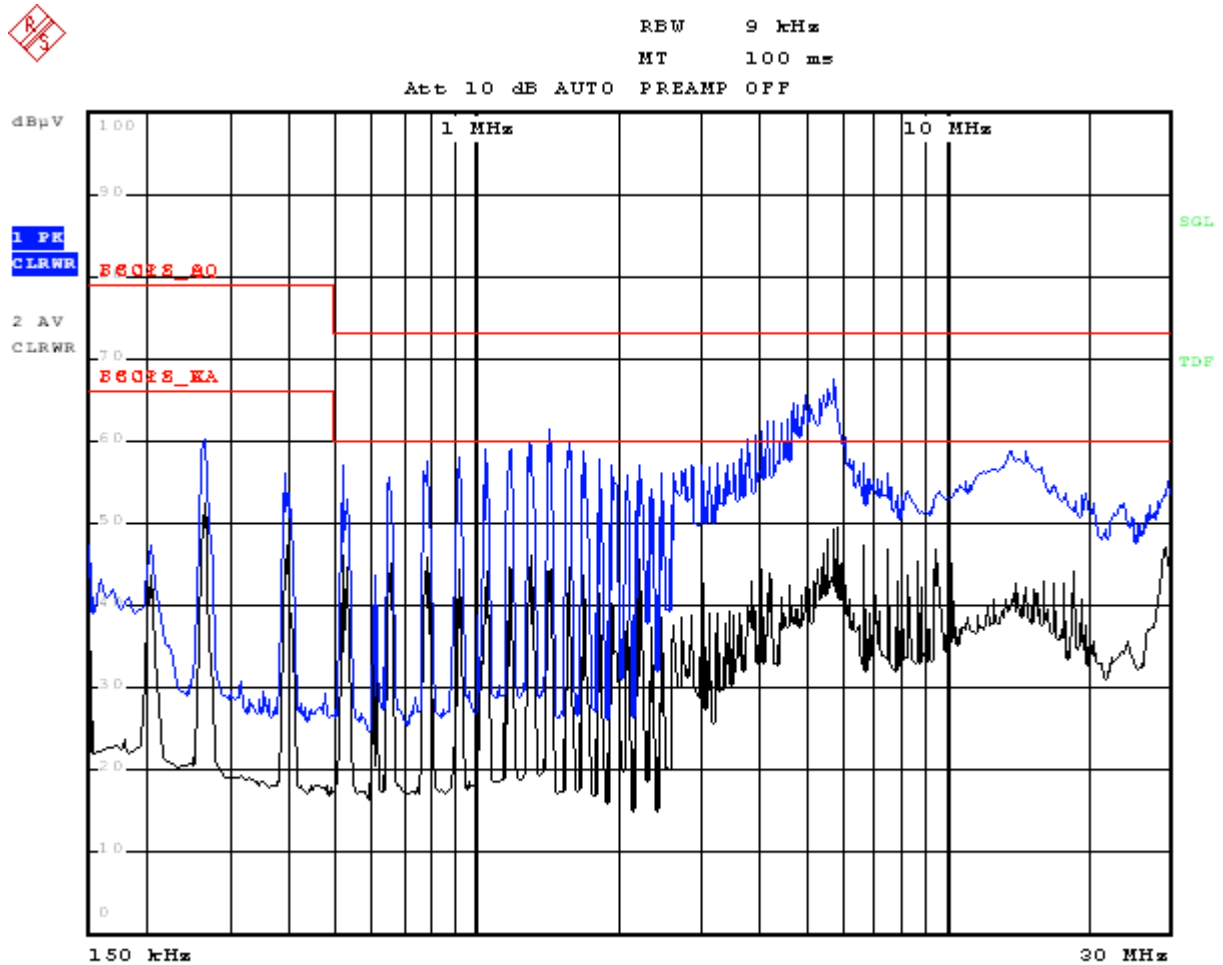
FCC Rules :	Part 15 §15.107
Operating Path :	Up Link
Test Mode :	HOT
Input Level :	-73 dBm
System Gain :	100 dB
Bandwidth :	8.25 MHz



Date: 2.FEB.2009 01:38:53

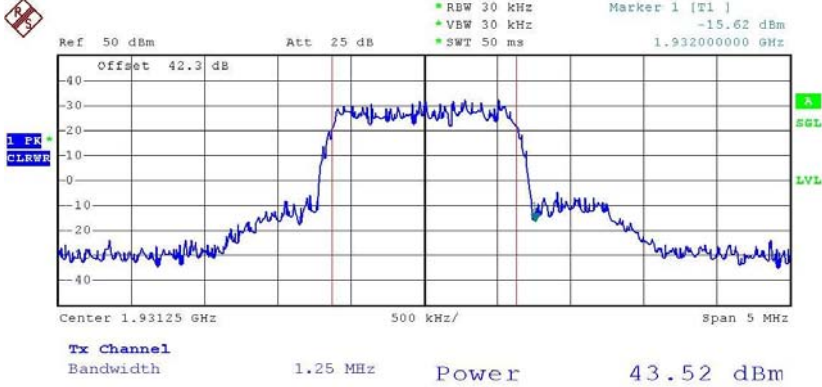
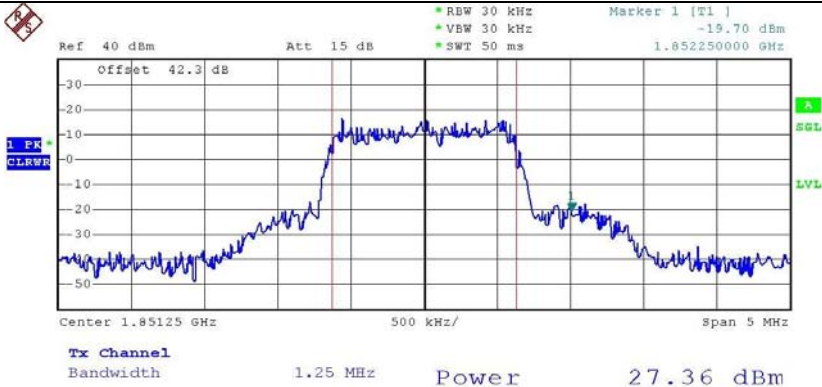
6.1.4 Up Link / Neutral

FCC Rules :	Part 15 §15.107
Operating Path :	Up Link
Test Mode :	Neutral
Input Level :	-73 dBm
System Gain :	100 dB
Bandwidth :	8.25 MHz

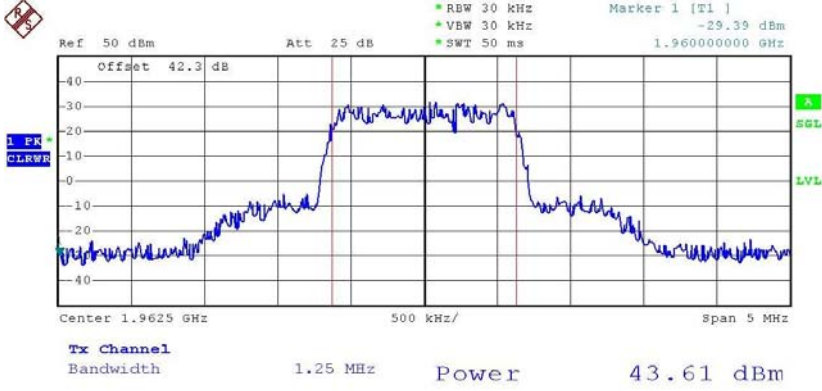
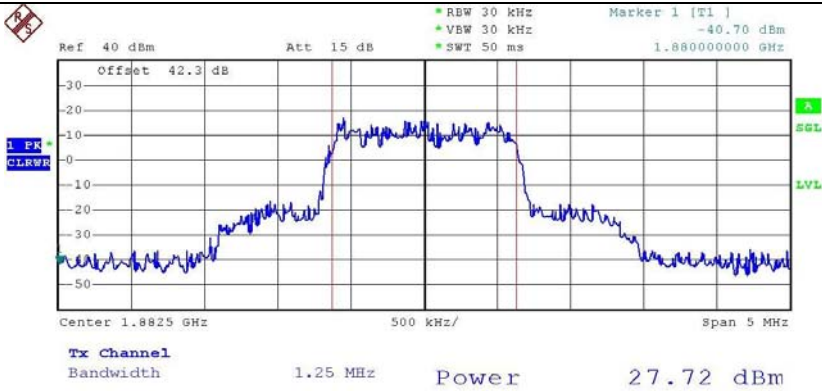


6.2 RF output power

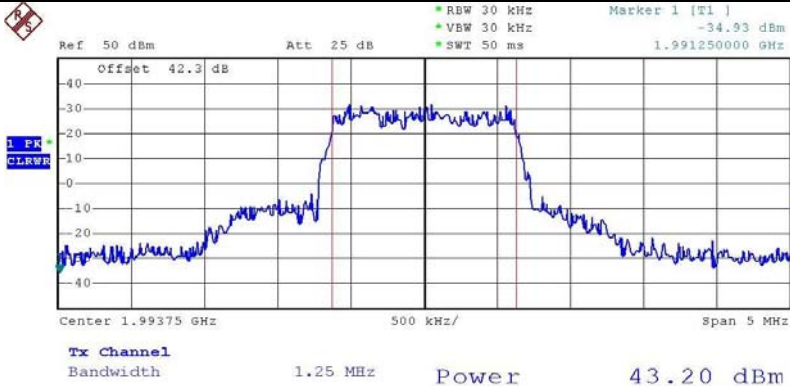
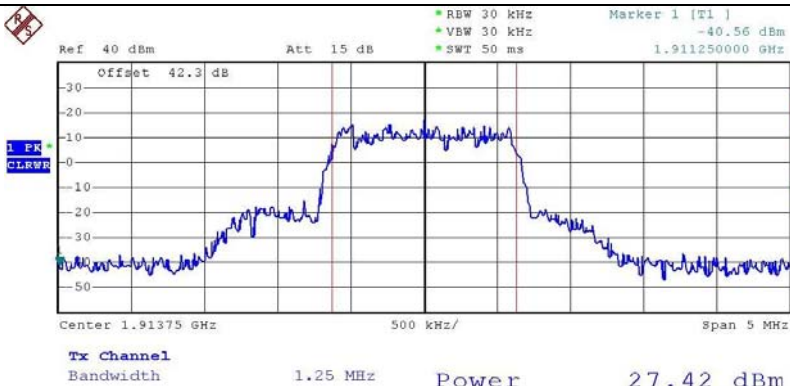
6.2.1 Low frequency

<p>Down Link</p> <p>Carrier Frequency 1931.25MHz z</p>	 <p>Ref 50 dBm Att 25 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 (T1) -15.62 dBm 1.93200000 GHz</p> <p>Offset 42.3 dB</p> <p>1 PK CLRWR</p> <p>Center 1.93125 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 43.52 dBm</p>
<p>Up Link</p> <p>Carrier Frequency 1851.25MHz z</p>	 <p>Ref 40 dBm Att 15 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 (T1) -19.70 dBm 1.852250000 GHz</p> <p>Offset 42.3 dB</p> <p>1 PK CLRWR</p> <p>Center 1.85125 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 27.36 dBm</p>

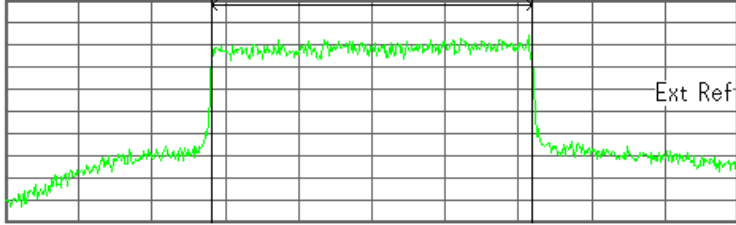
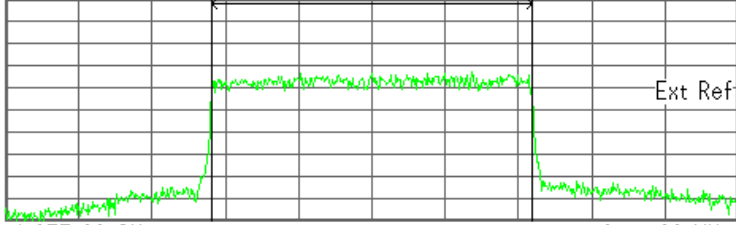
6.2.2 Mid Frequency

<p>Down Link</p> <p>Carrier Frequency 1962.50MH Z</p>	 <p>Ref 50 dBm Att 25 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 [T1] -29.39 dBm 1.960000000 GHz</p> <p>Offset 42.3 dB</p> <p>Center 1.9625 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 43.61 dBm</p>
<p>Up Link</p> <p>Carrier Frequency 1882.50MH Z</p>	 <p>Ref 40 dBm Att 15 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 [T1] -40.70 dBm 1.880000000 GHz</p> <p>Offset 42.3 dB</p> <p>Center 1.8825 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 27.72 dBm</p>

6.2.3 High frequency

<p>Down Link</p> <p>Carrier Frequency 1993.75MHz</p> <p>Z</p>	 <p>Ref 50 dBm Att 25 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 [T1] -34.93 dBm 1.991250000 GHz</p> <p>Offset 42.3 dB</p> <p>1 PK CLRWR</p> <p>Center 1.99375 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 43.20 dBm</p>
<p>Up Link</p> <p>Carrier Frequency 1913.75MHz</p> <p>Z</p>	 <p>Ref 40 dBm Att 15 dB RBW 30 kHz VBW 30 kHz SWT 50 ms Marker 1 [T1] -40.56 dBm 1.911250000 GHz</p> <p>Offset 42.3 dB</p> <p>1 PK CLRWR</p> <p>Center 1.91375 GHz 500 kHz/ Span 5 MHz</p> <p>Tx Channel Bandwidth 1.25 MHz Power 27.42 dBm</p>

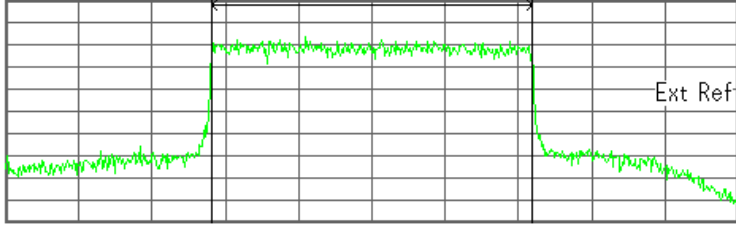
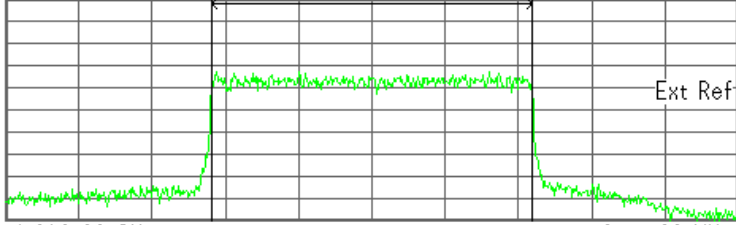
6.2.4 Low frequency (7FA)

<p>Down Link</p> <p>Carrier Frequency 1935MHz</p>	<p>Agilent</p> <p>Ch Freq 1.935 GHz Trig Free</p> <p>Channel Power</p> <p>Ref Level 40.00 dBm</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.5 dB</p>  <p>Center 1.935 00 GHz Span 20 MHz #Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density 43.12 dBm /8.7500 MHz -26.30 dBm/Hz</p> <p>File Operation Status, A:\SCREEN015.GIF file saved</p>	<p>Amplitude</p> <p>Ref Level 40.00 dBm</p> <p>Attenuation 10.00 dB Auto Man</p> <p>Scale/Div 10.00 dB</p> <p>Scale Type Log Lin</p> <p>Presel Center</p> <p>Presel Adjust [3-26 GHz] 0.000 Hz</p> <p>More 1 of 3</p>
<p>Up Link</p> <p>Carrier Frequency 1855MHz</p>	<p>Agilent</p> <p>Ch Freq 1.855 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.3 dB</p>  <p>Center 1.855 00 GHz Span 20 MHz #Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density 27.35 dBm /8.7500 MHz -42.07 dBm/Hz</p> <p>File Operation Status, A:\SCREEN032.GIF file saved</p>	<p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits</p> <p>Active Fctn Position Top</p> <p>Title</p> <p>Preferences</p>

6.2.5 Mid Frequency (7FA)

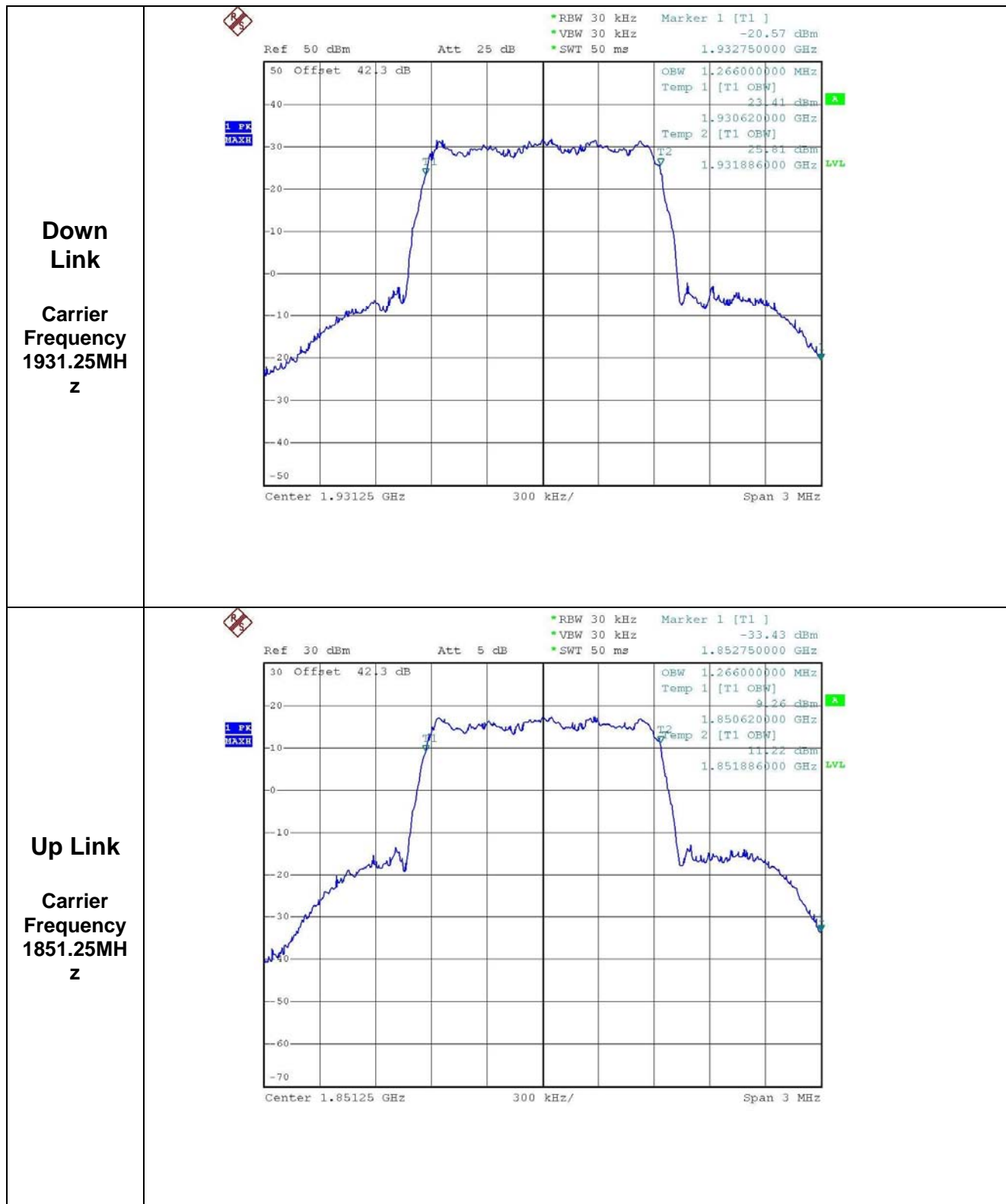
<p>Down Link</p> <p>Carrier Frequency 1962.50MHz</p> <p>z</p>	<p>Agilent</p> <p>Ext Ref</p> <p>Ch Freq 1.9625 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.5 dB</p> <p>Center 1.962 50 GHz Span 20 MHz</p> <p>#Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density</p> <p>43.96 dBm /8.7500 MHz -25.46 dBm/Hz</p> <p>File Operation Status, A:\SCREN019.GIF file saved</p>	<p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits></p> <p>Active Fctn Position> Top</p> <p>Title></p> <p>Preferences></p>
<p>Up Link</p> <p>Carrier Frequency 1882.50MHz</p> <p>z</p>	<p>Agilent</p> <p>Ext Ref</p> <p>Ch Freq 1.8825 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.3 dB</p> <p>Center 1.882 50 GHz Span 20 MHz</p> <p>#Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density</p> <p>27.77 dBm /8.7500 MHz -41.65 dBm/Hz</p> <p>File Operation Status, A:\SCREN029.GIF file saved</p>	<p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits></p> <p>Active Fctn Position> Top</p> <p>Title></p> <p>Preferences></p>

6.2.6 High frequency (7FA)

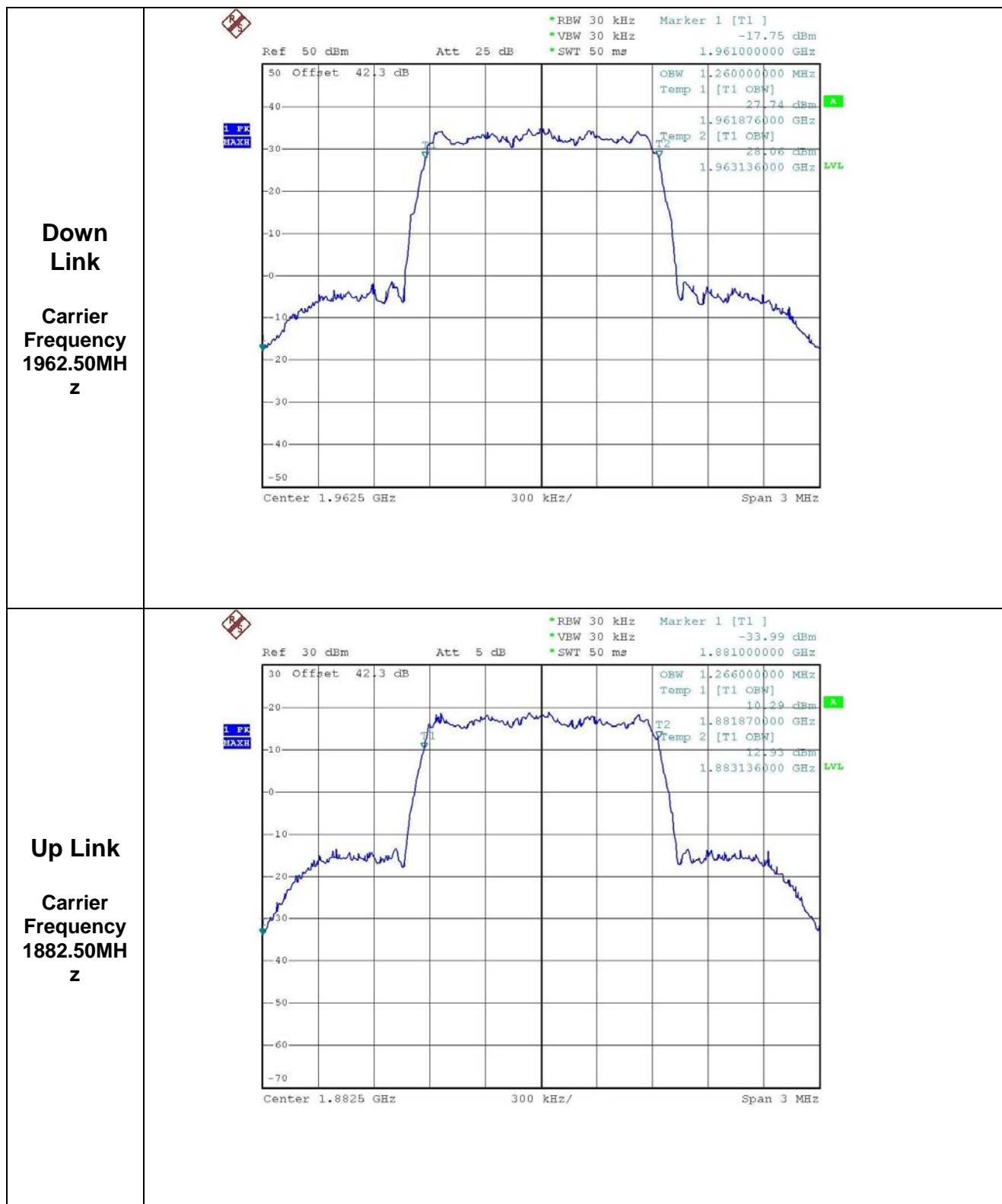
<p>Down Link</p> <p>Carrier Frequency 1990MHz</p>	<p>Agilent</p> <p>Ext Ref</p> <p>Ch Freq 1.99 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.5 dB</p>  <p>Center 1.990 00 GHz Span 20 MHz #Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density 43.01 dBm /8.7500 MHz -26.41 dBm/Hz</p> <p>File Operation Status, A:\SCREN023.GIF file saved</p>	<p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits></p> <p>Active Fctn Position> Top</p> <p>Title></p> <p>Preferences></p>
<p>Up Link</p> <p>Carrier Frequency 1910MHz</p>	<p>Agilent</p> <p>Ext Ref</p> <p>Ch Freq 1.91 GHz Trig Free</p> <p>Channel Power</p> <p>Ref 40 dBm Atten 10 dB</p> <p>#Avg Log 10 dB/ Offst 41.3 dB</p>  <p>Center 1.910 00 GHz Span 20 MHz #Res BW 30 kHz VBW 30 kHz Sweep 84.76 ms (601 pts)</p> <p>Channel Power Power Spectral Density 27.38 dBm /8.7500 MHz -42.04 dBm/Hz</p> <p>Copyright 2000-2007 Agilent Technologies</p>	<p>Display</p> <p>Full Screen</p> <p>Display Line -13.00 dBm On Off</p> <p>Limits></p> <p>Active Fctn Position> Top</p> <p>Title></p> <p>Preferences></p>

6.3 Occupied Bandwidth

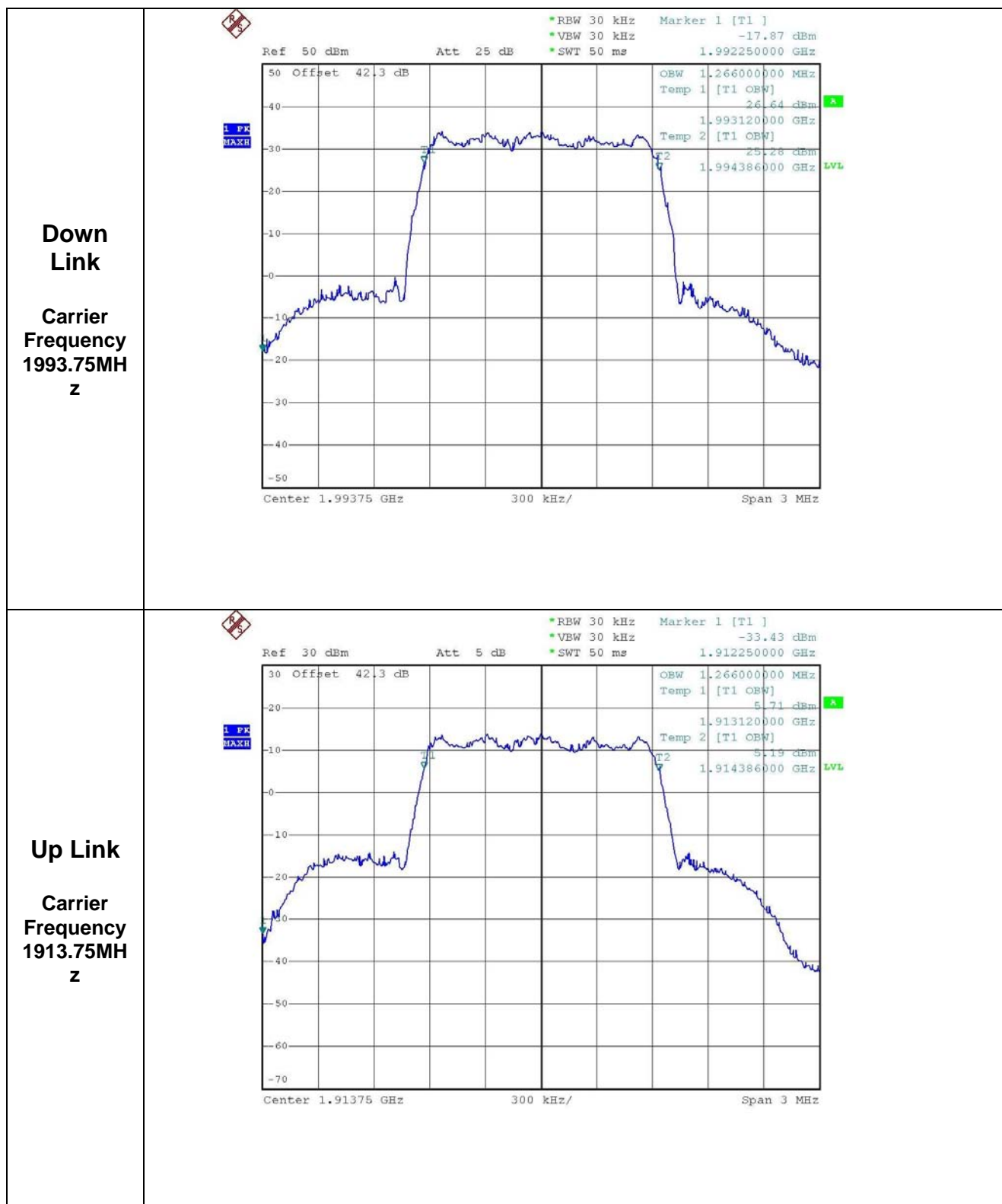
6.3.1 Low frequency



6.3.2 Mid Frequency



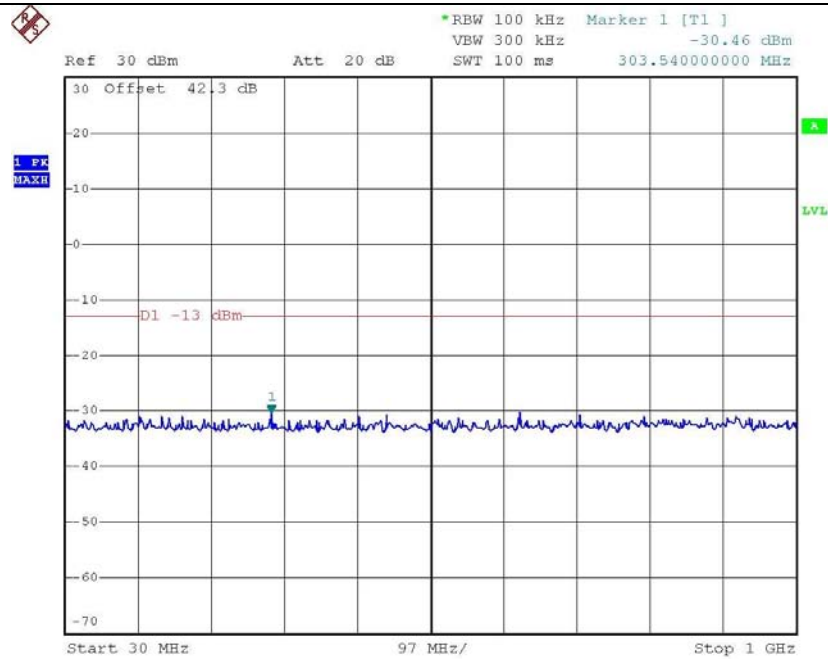
6.3.3 High frequency



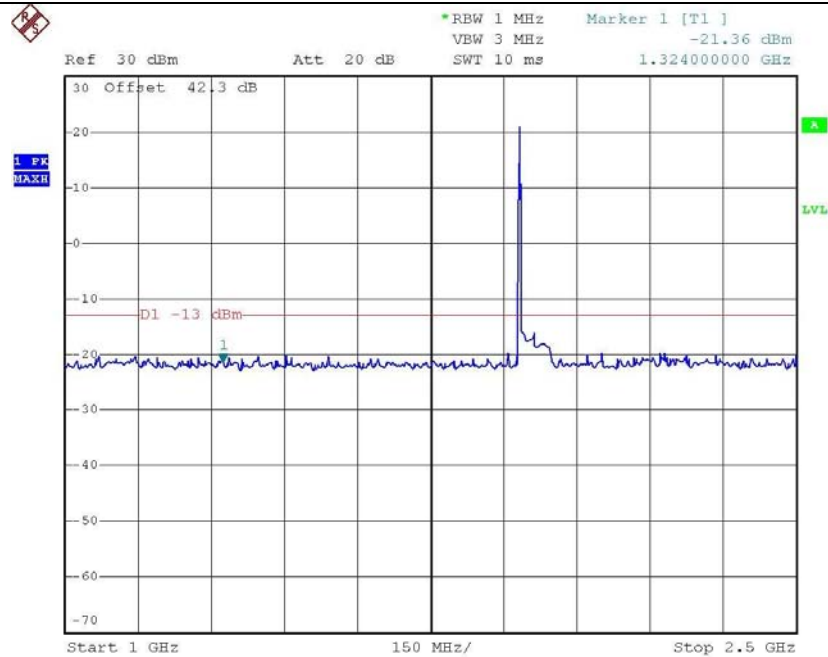
6.4 Spurious Emissions at Antenna Terminals

6.4.1 Down link, Channel tuned :1931.25MHz

Frequency Range
30MHz~1GHz



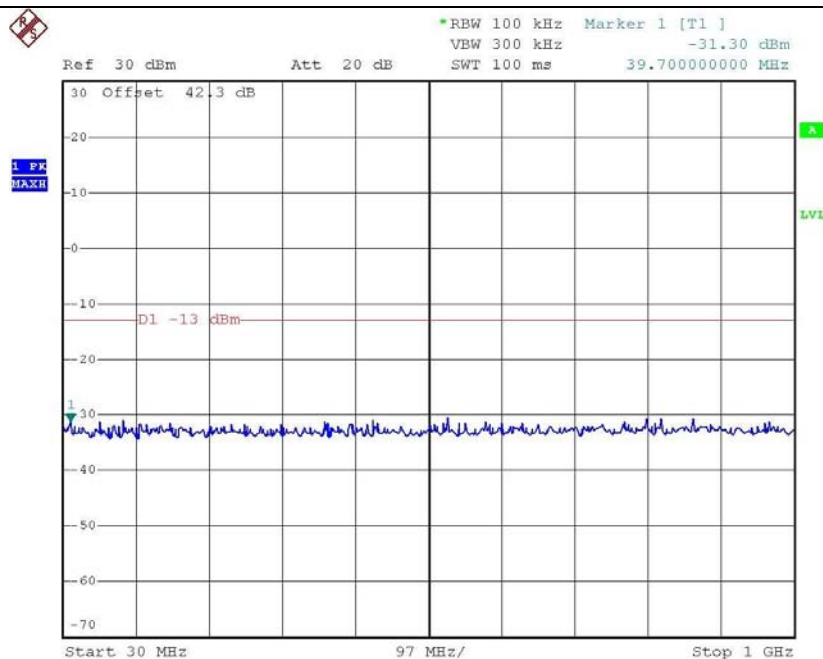
Frequency Range
1GHz~2.5GHz



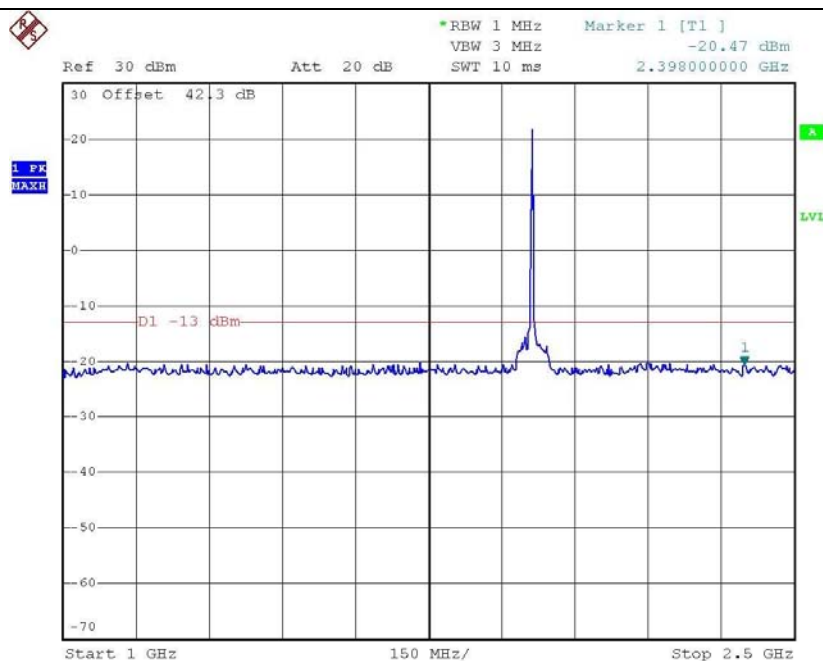


6.4.2 Down link, Channel tuned :1962.50MHz

Frequency Range
30MHz~1GHz



Frequency Range
1GHz~2.5GHz

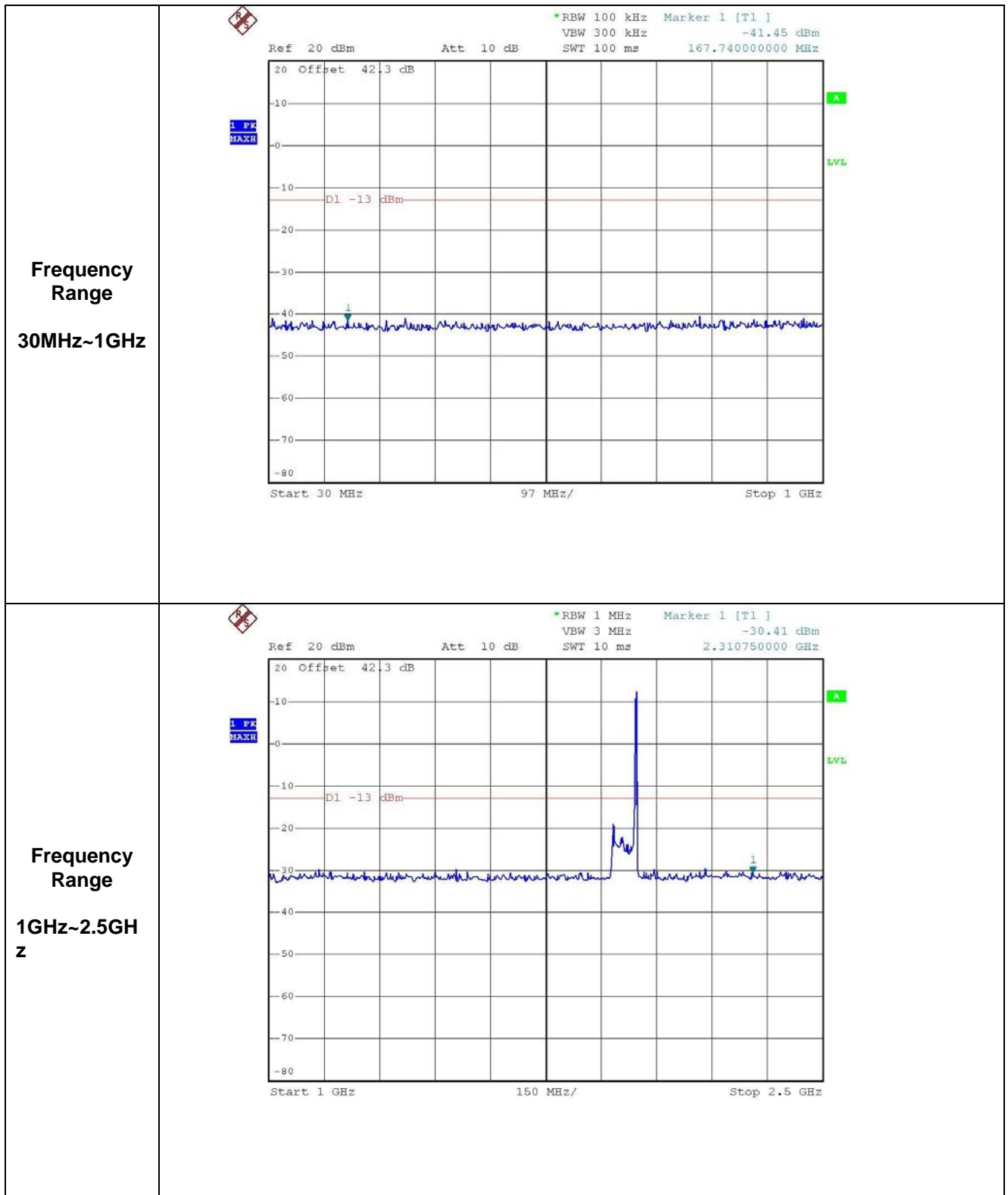


Frequency
Range

2.5GHz~26GHz
Z



6.4.3 Down link, Channel tuned :1993.75MHz

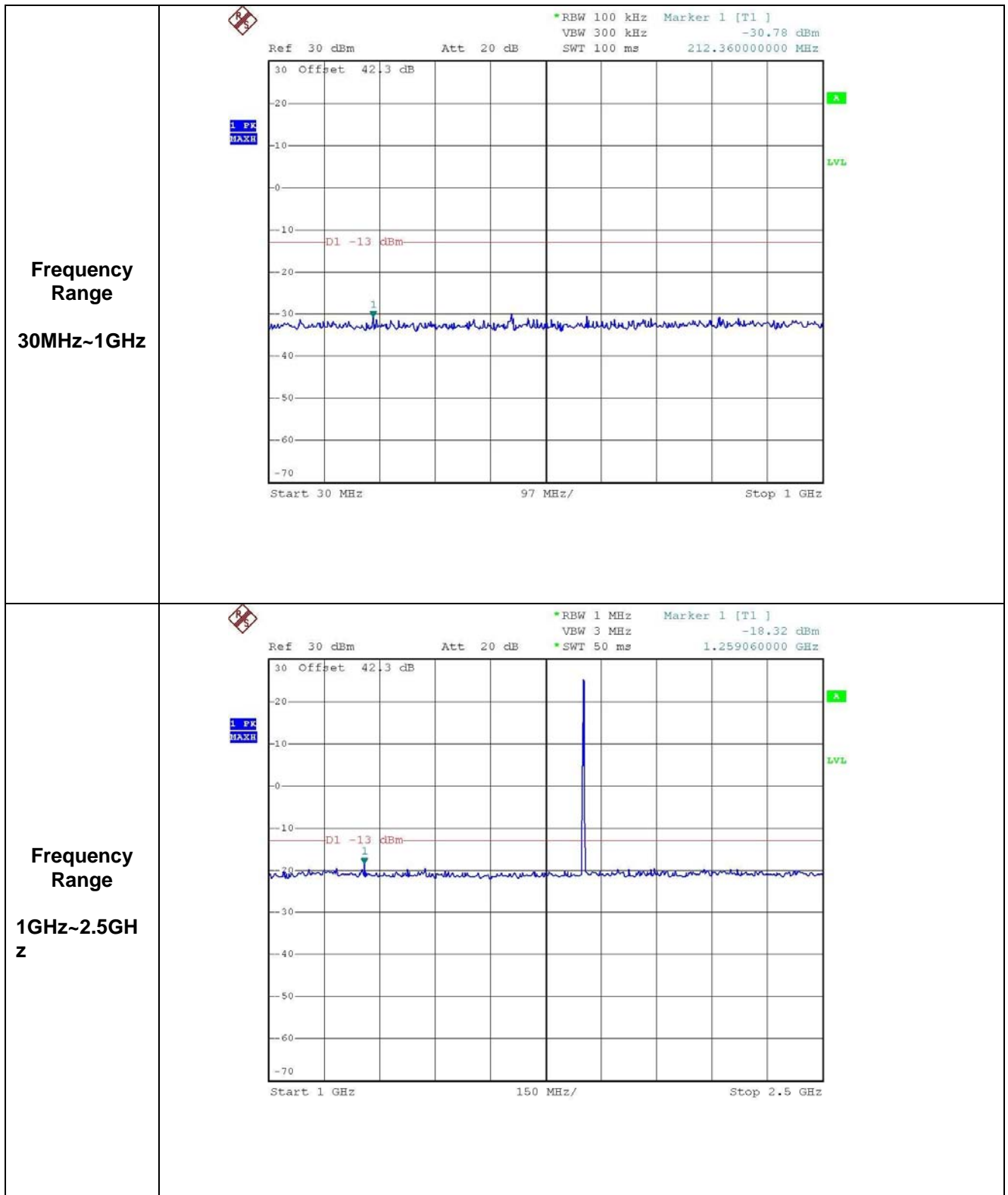


Frequency Range

2.5GHz~26GHz
Z



6.4.4 Up link, Channel tuned :1851.25MHz

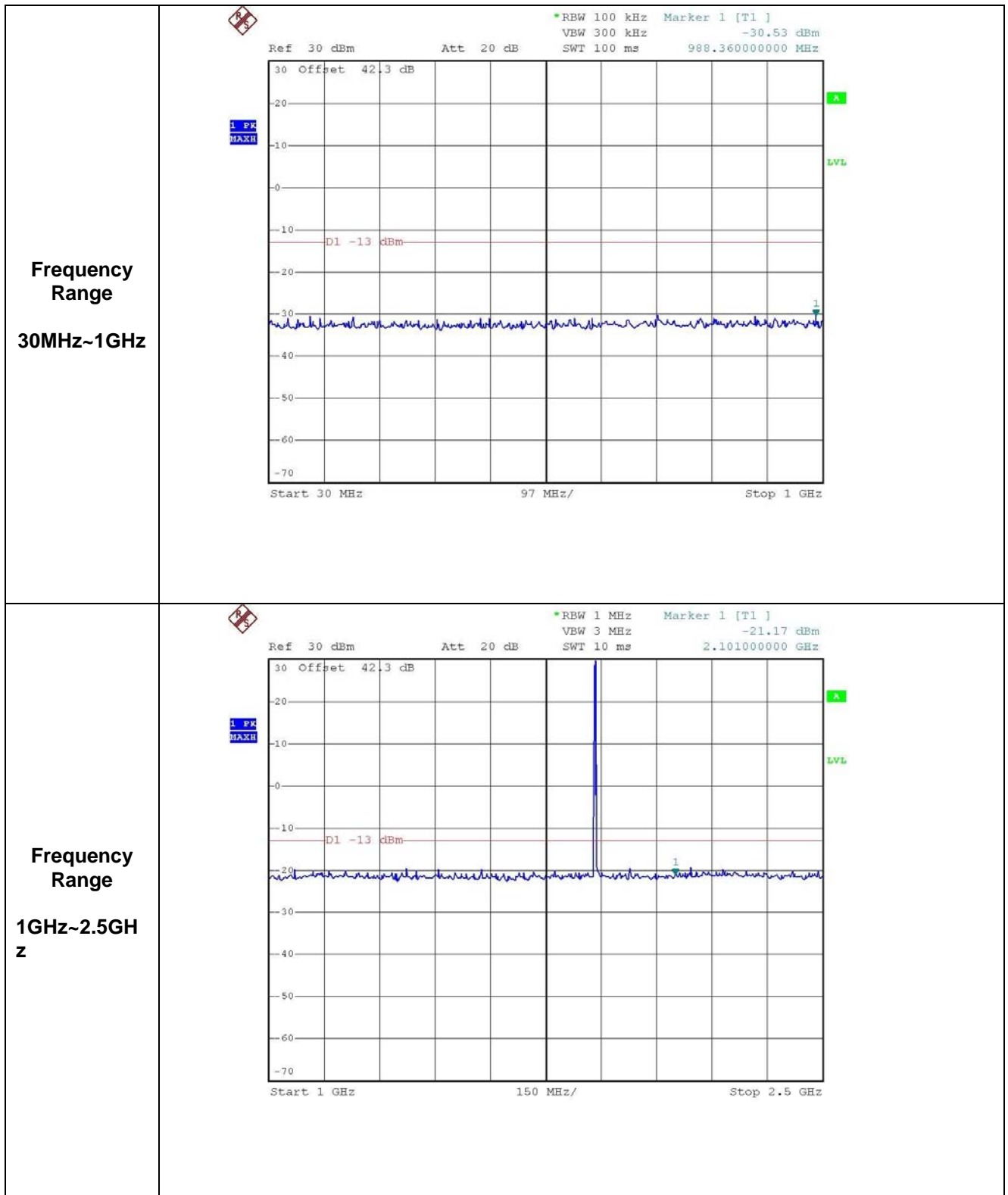


Frequency Range

2.5GHz~26GHz
Z



6.4.5 Up link, Channel tuned :1882.50MHz



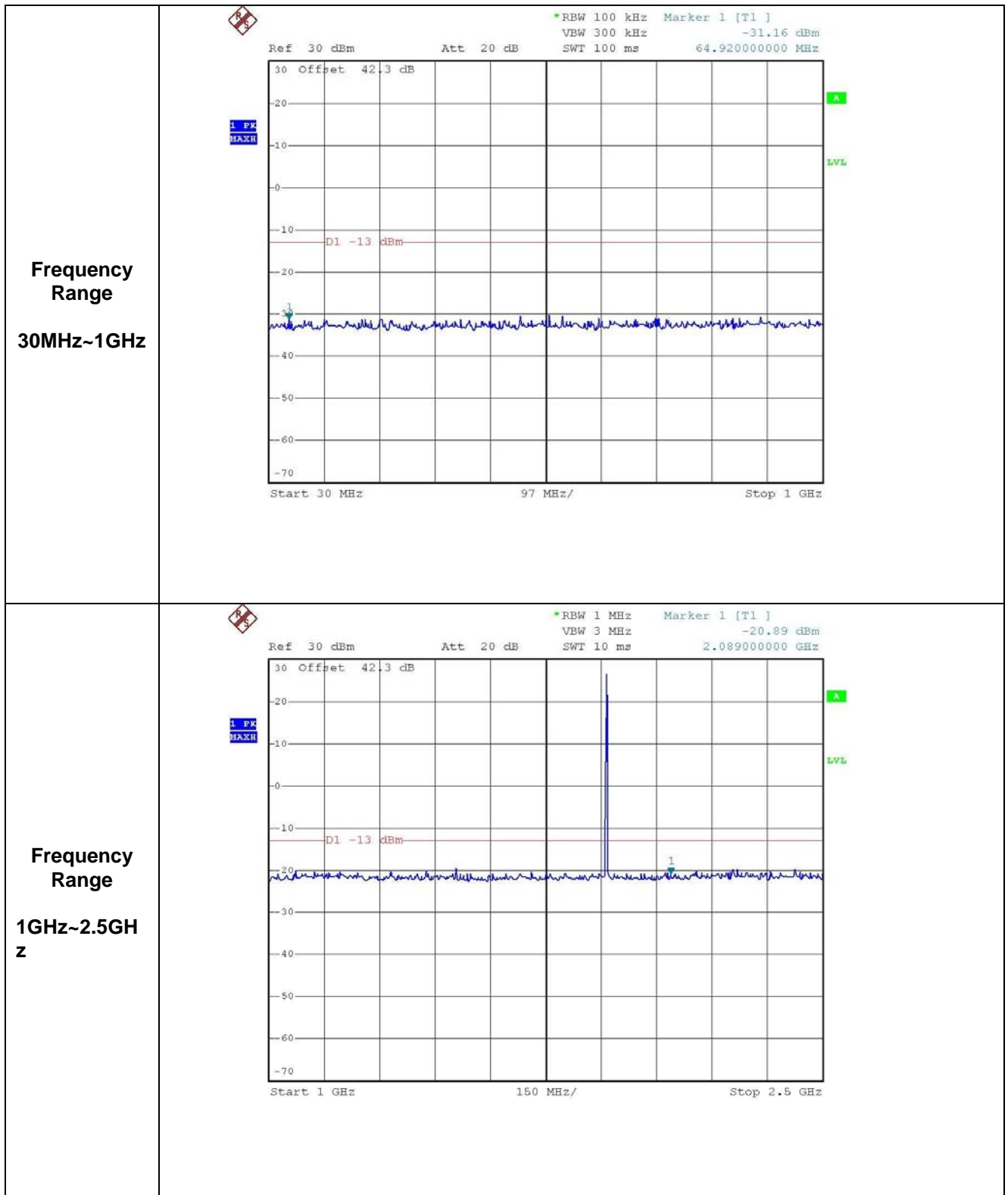
Frequency Range

2.5GHz~26GHz

Z



6.4.6 Up link, Channel tuned :1913.75MHz



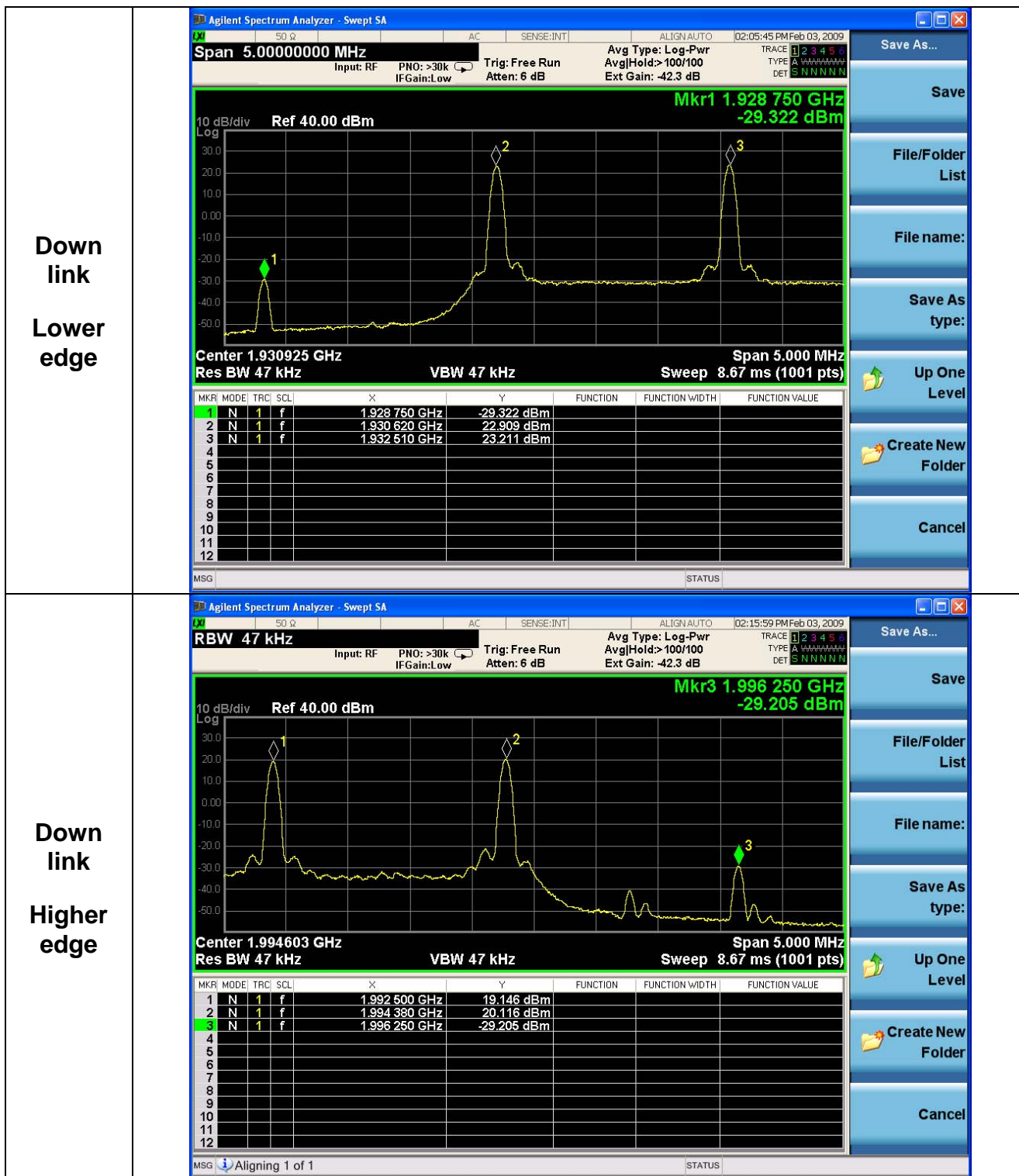
Frequency Range

2.5GHz~26GHz

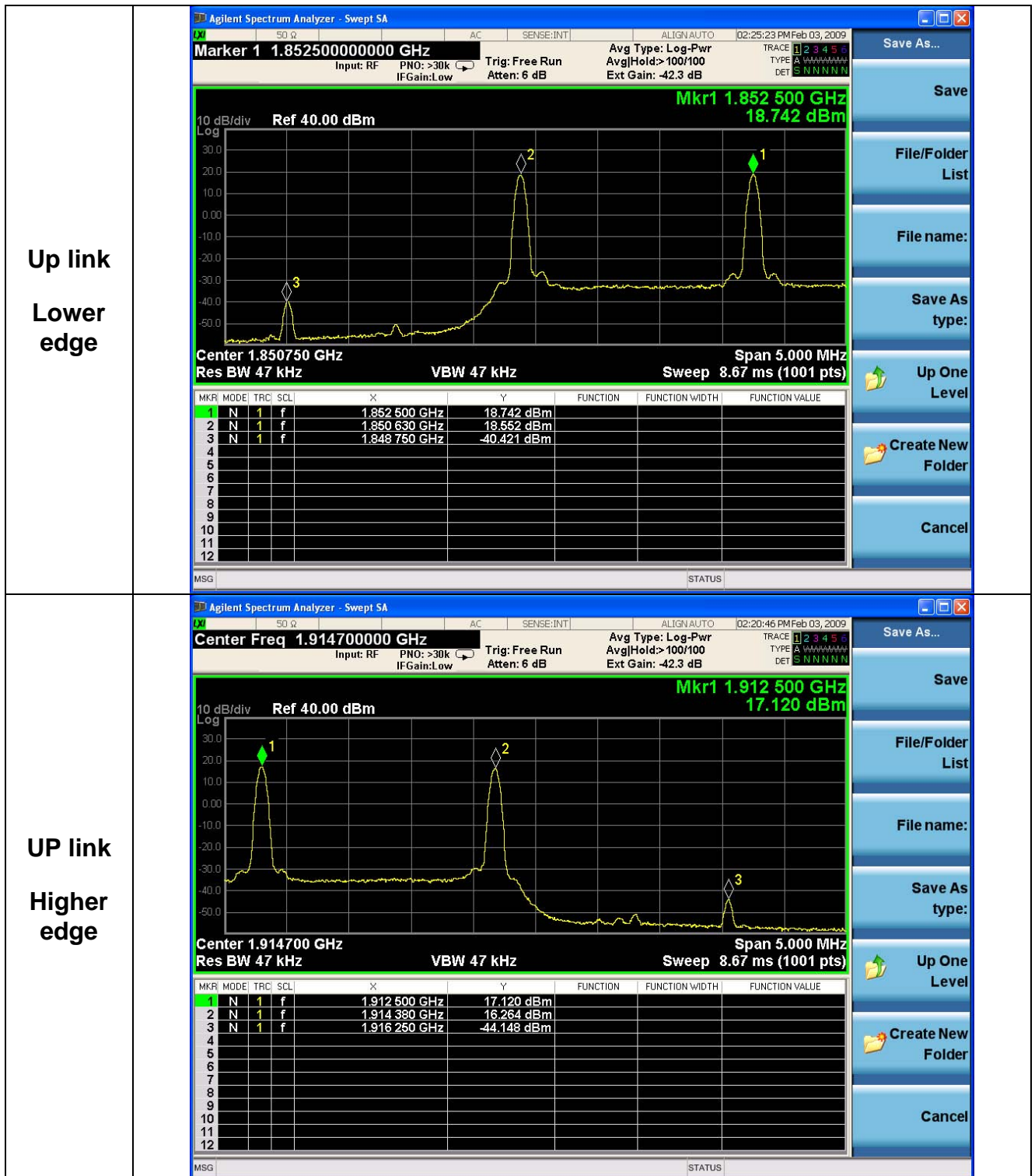
Z



6.4.7 Two Carrier Intermodulation Down link

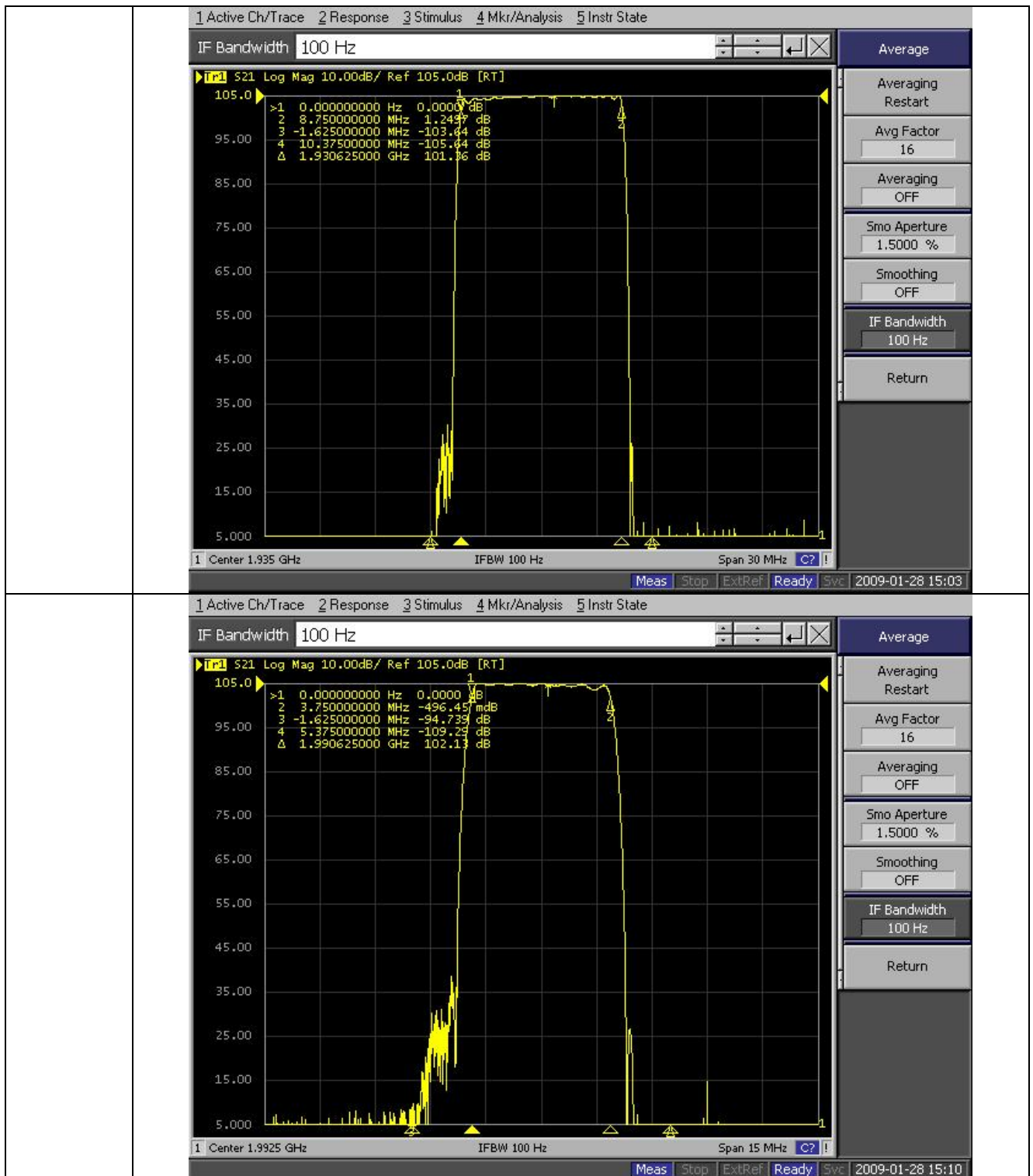


6.4.8 Two Carrier Intermodulation Up link

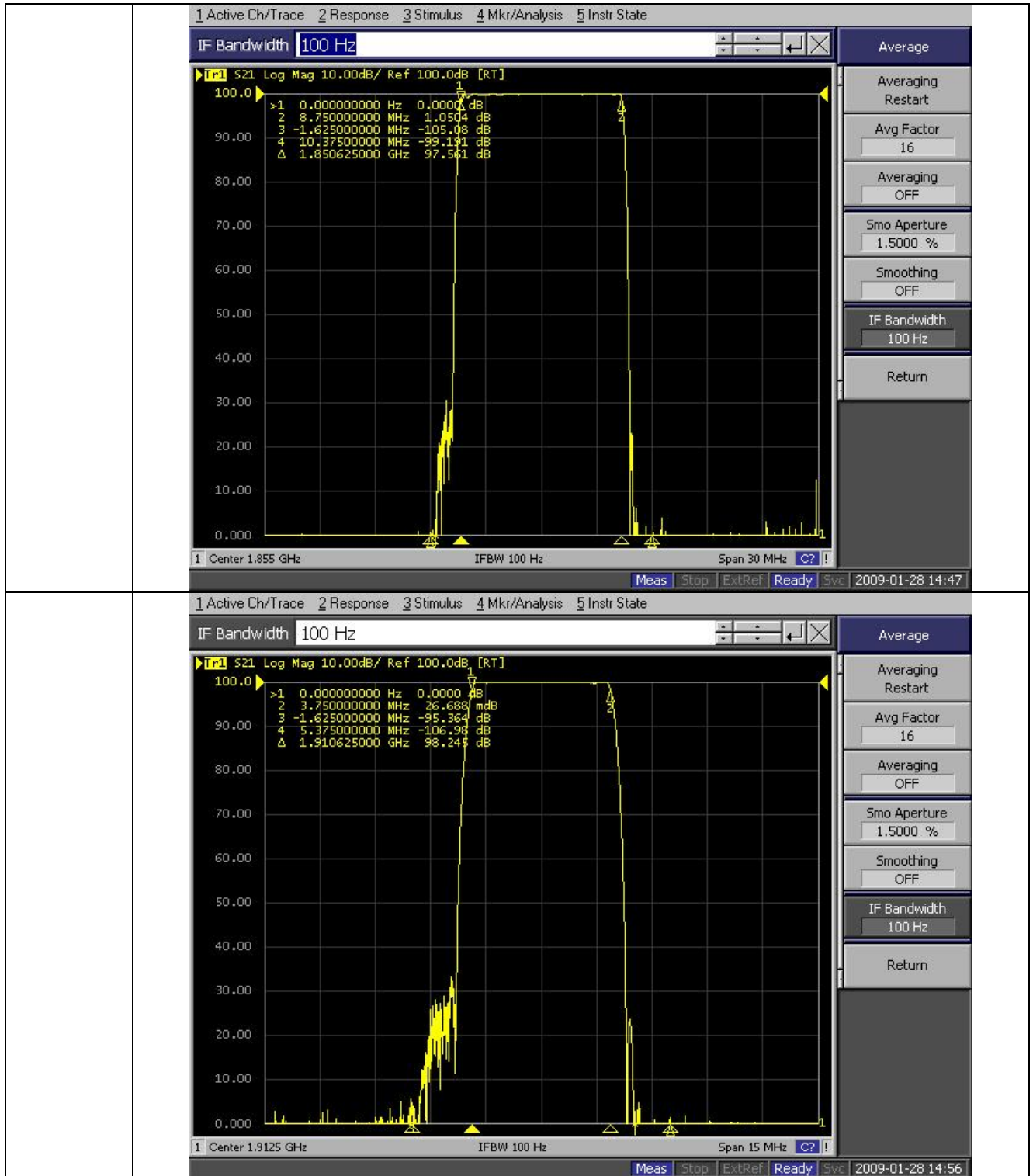


6.5 Out of band Filter Rejection

6.5.1 Down link

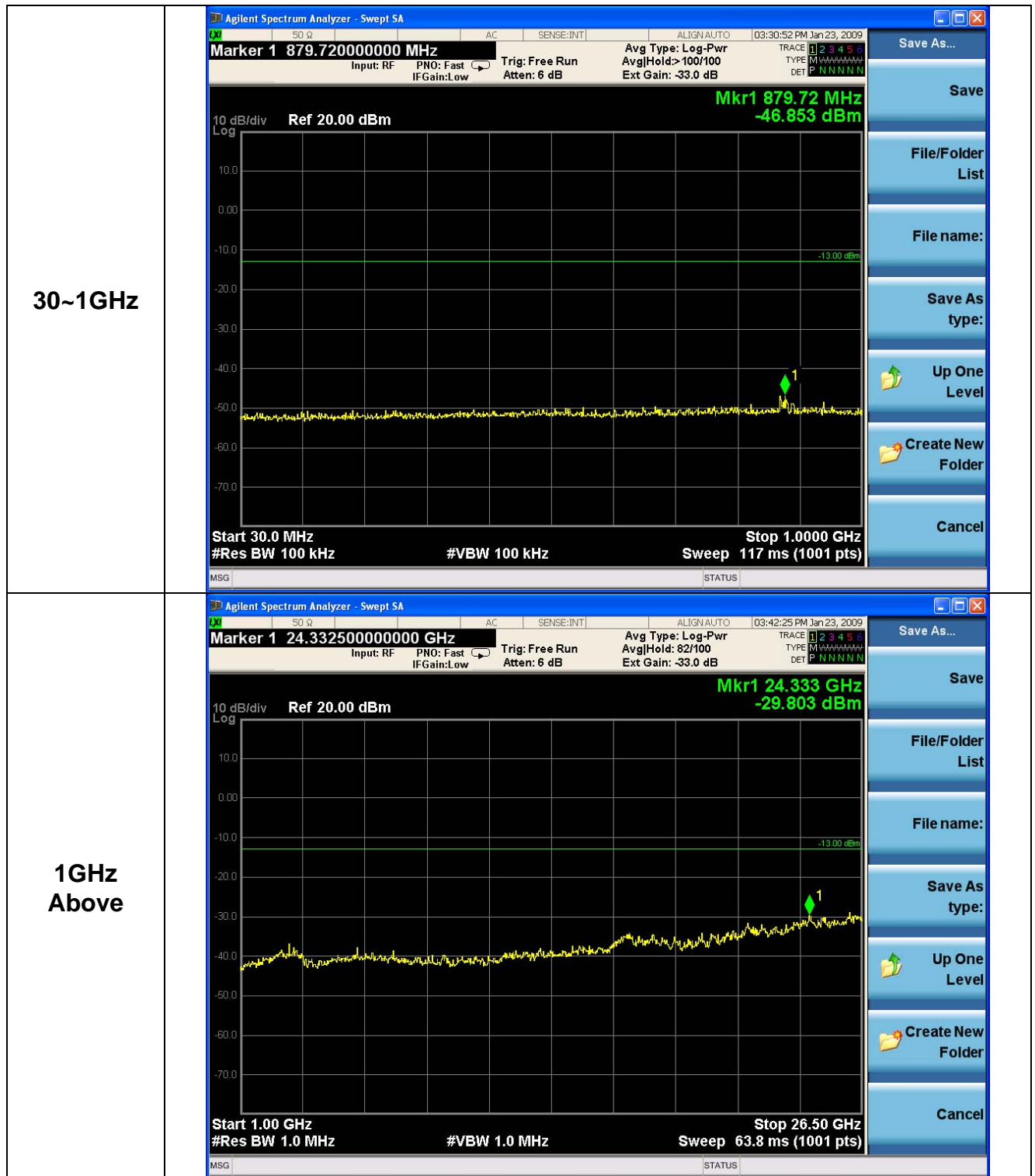


6.5.2 Up link

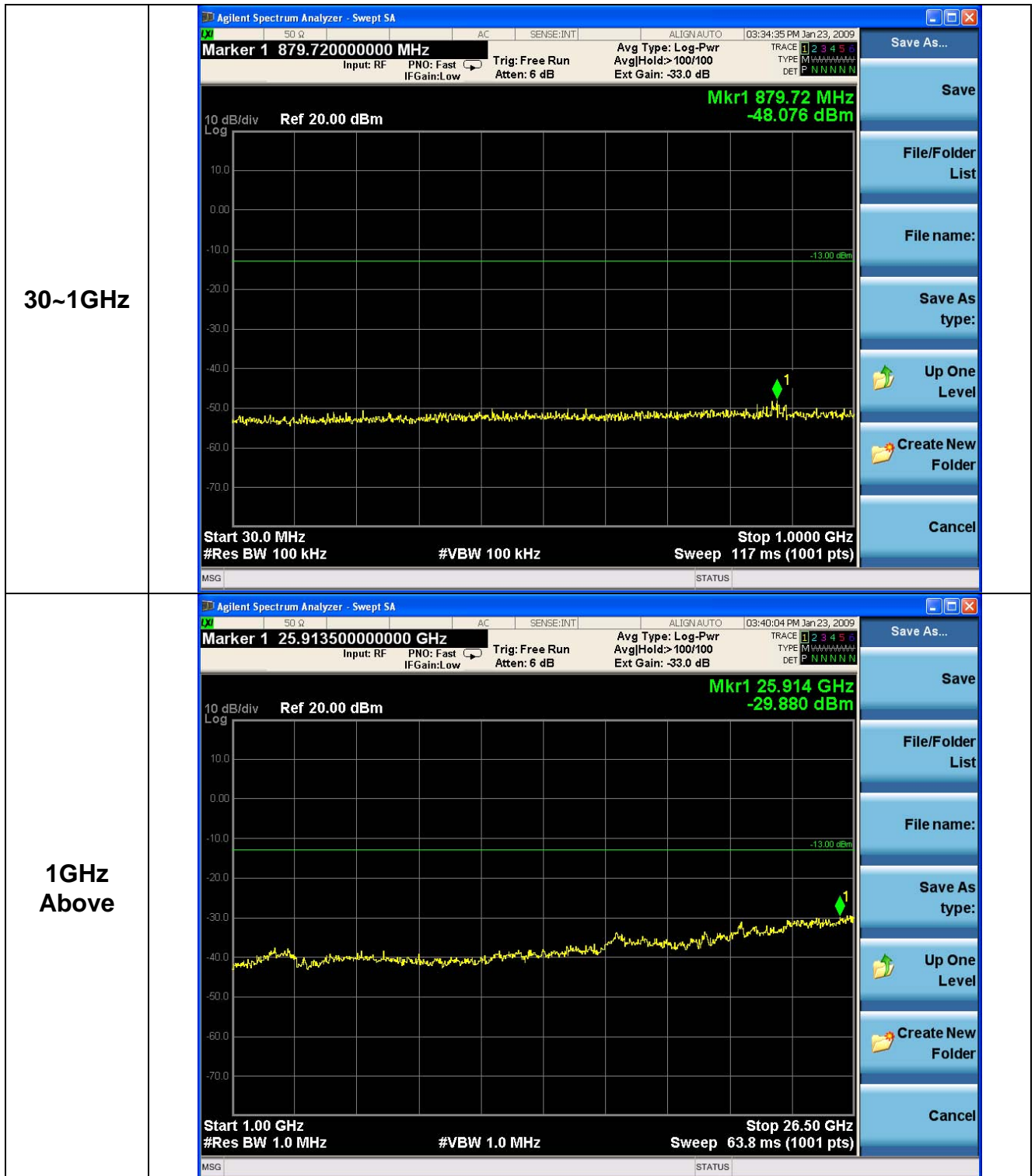


6.6 Field Strength of Spurious Radiation

6.6.1 [1962.5MHz] Down Link



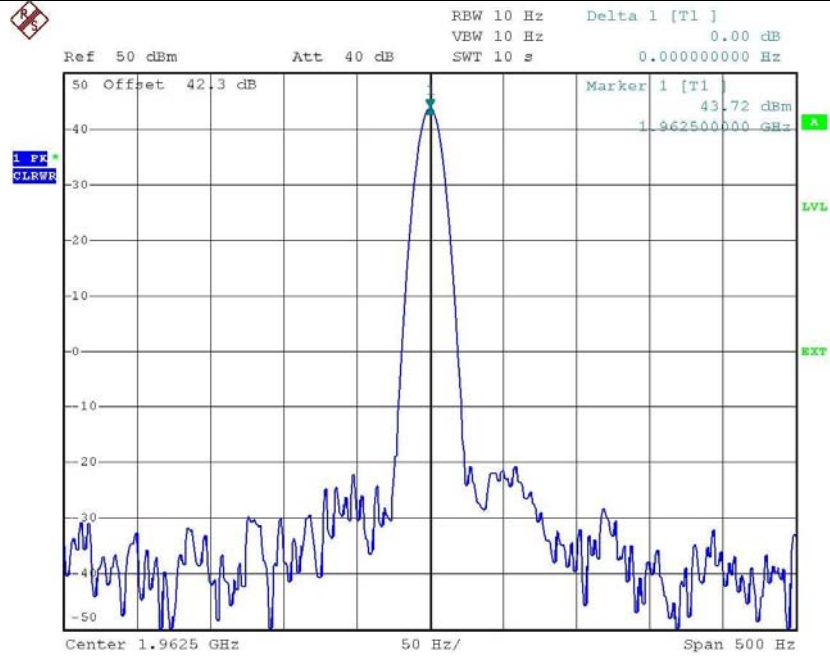
6.6.2 [1882.5MHz] Up Link



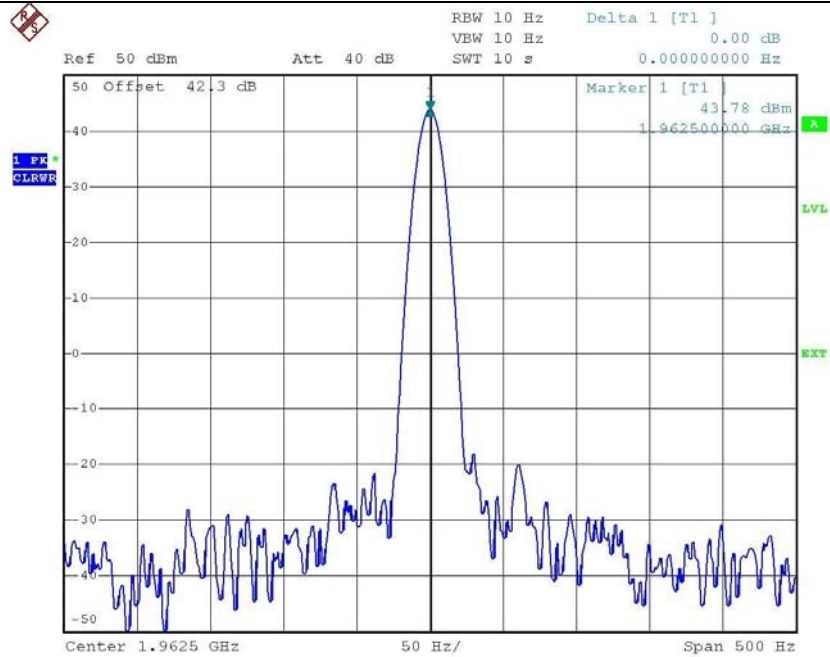
6.7 Frequency Stability

6.7.1 [MID Frequency: 1962.5MHz] Down link

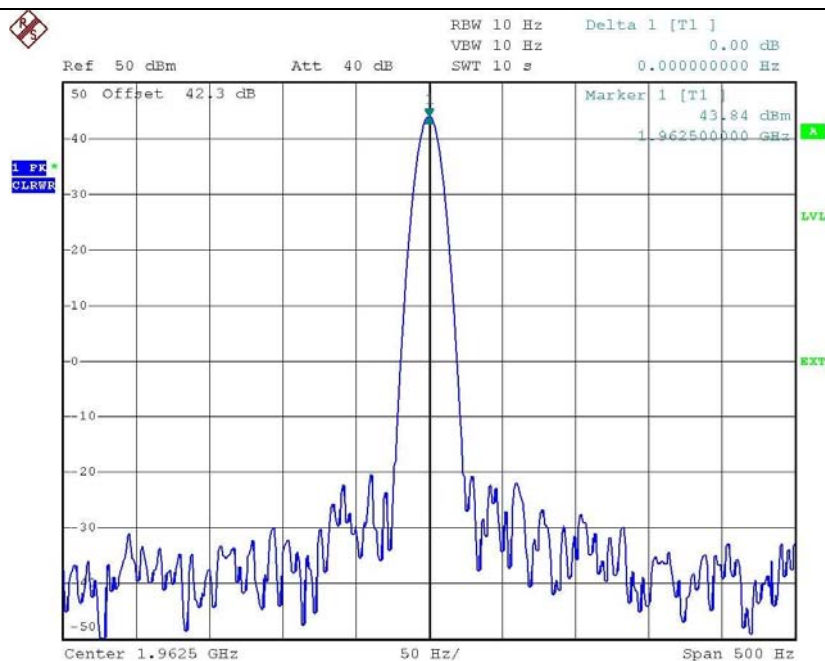
Temperature
-20℃



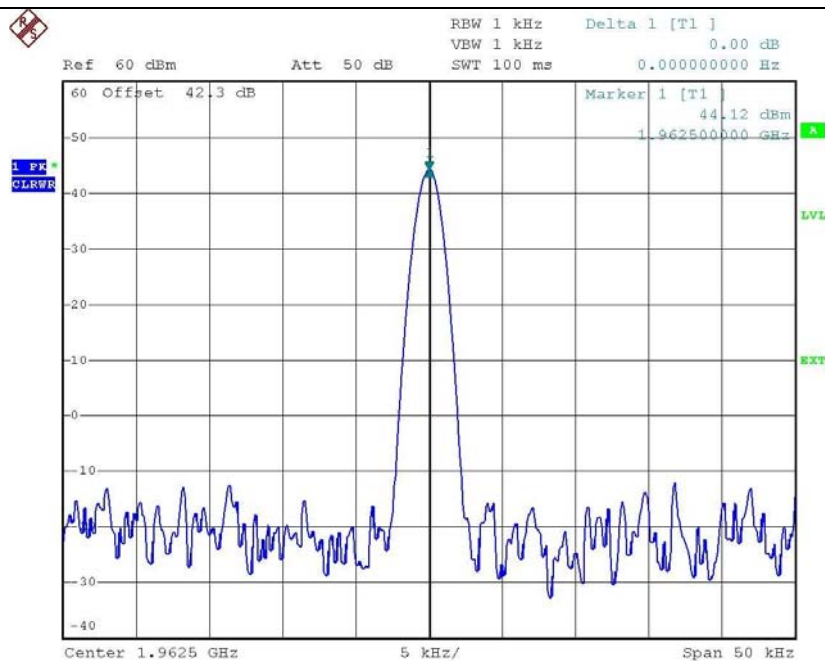
Temperature
-10℃



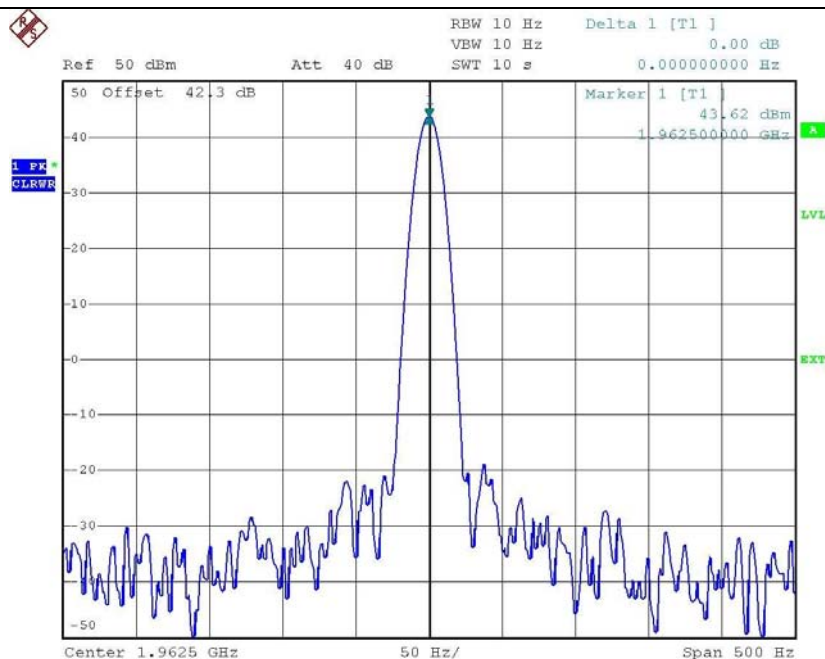
Temperature
0°C



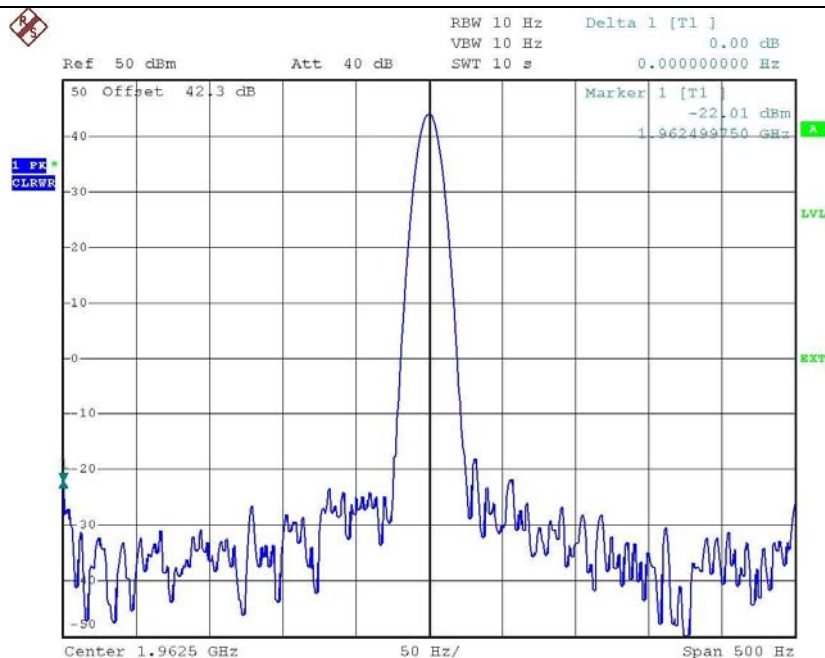
Temperature
10°C



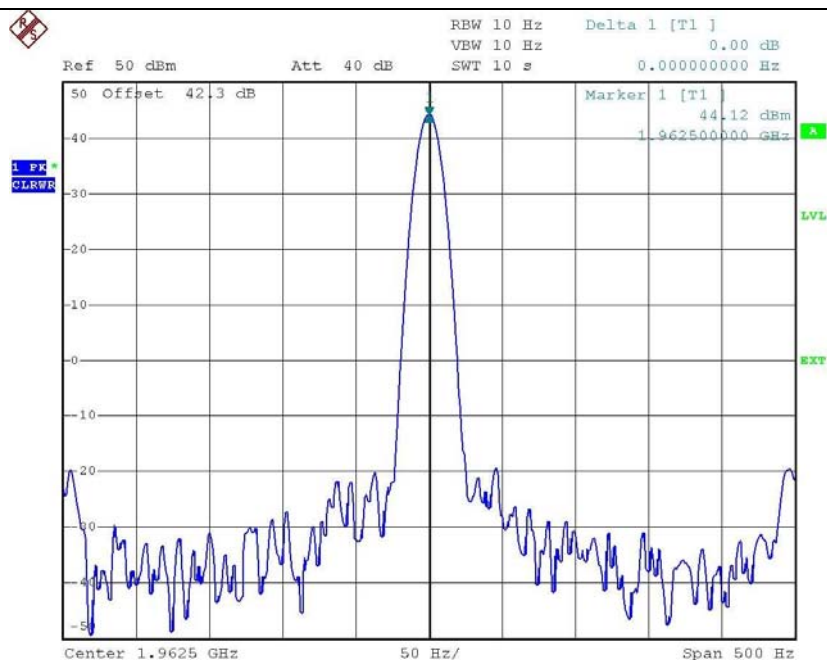
Temperature
20°C



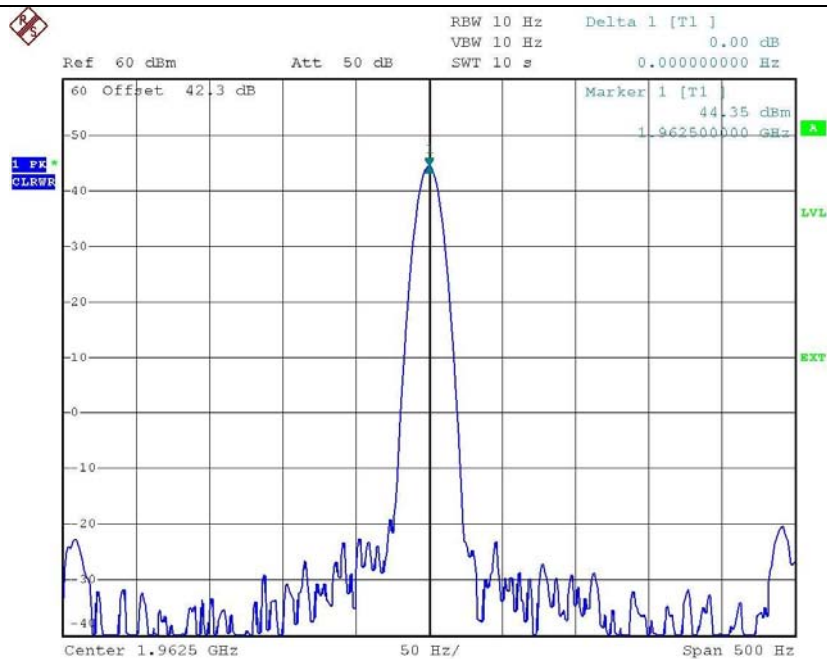
Temperature
30°C



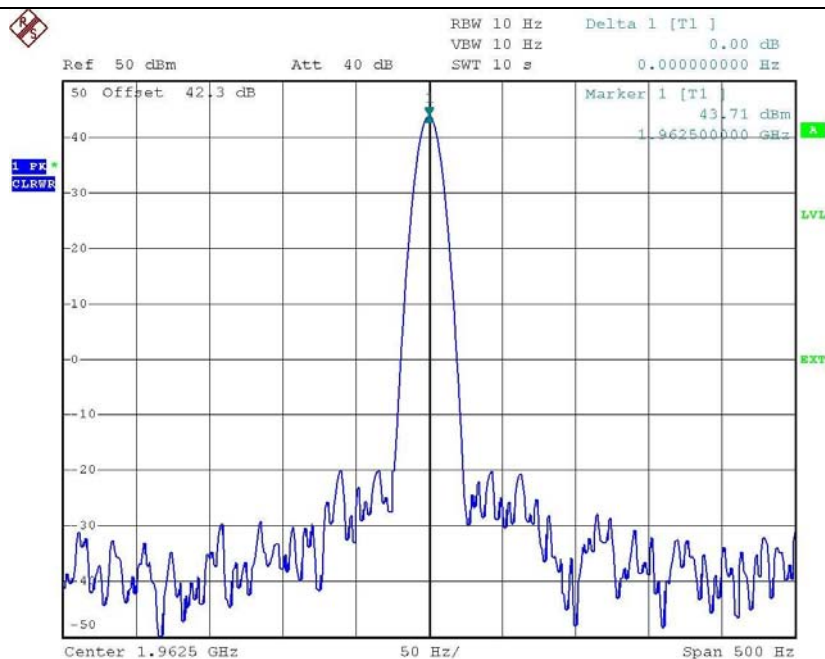
Temperature
40°C



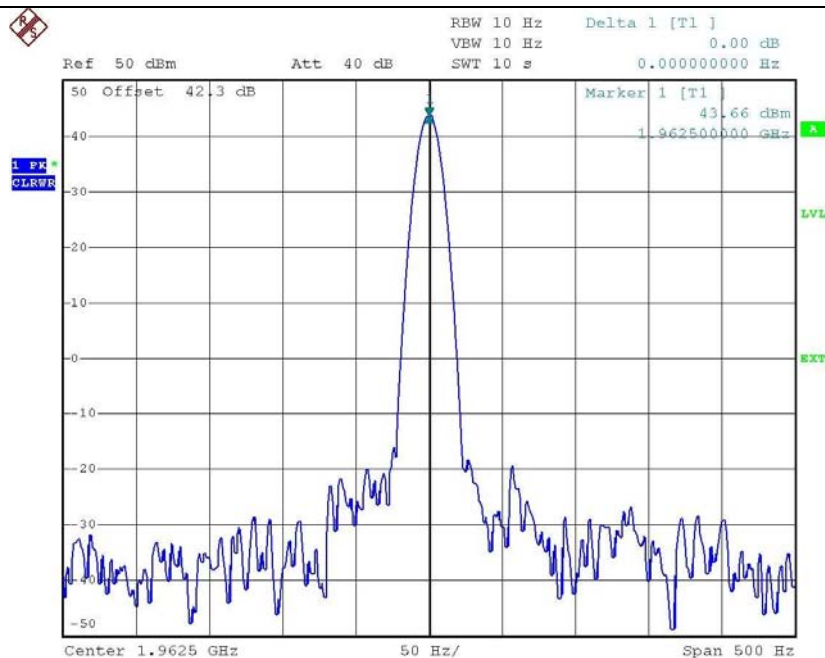
Temperature
50°C



**Voltage
85V**

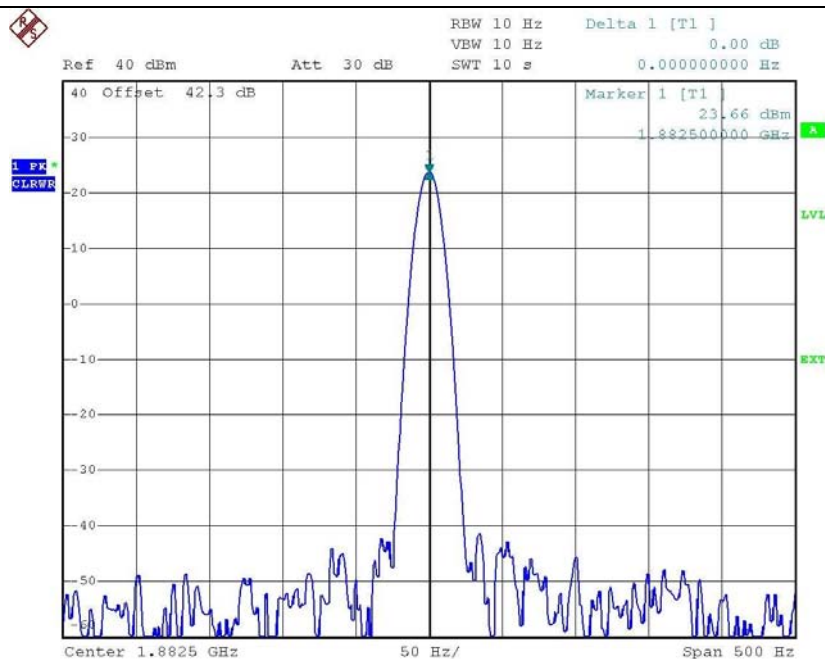


**Voltage
115V**

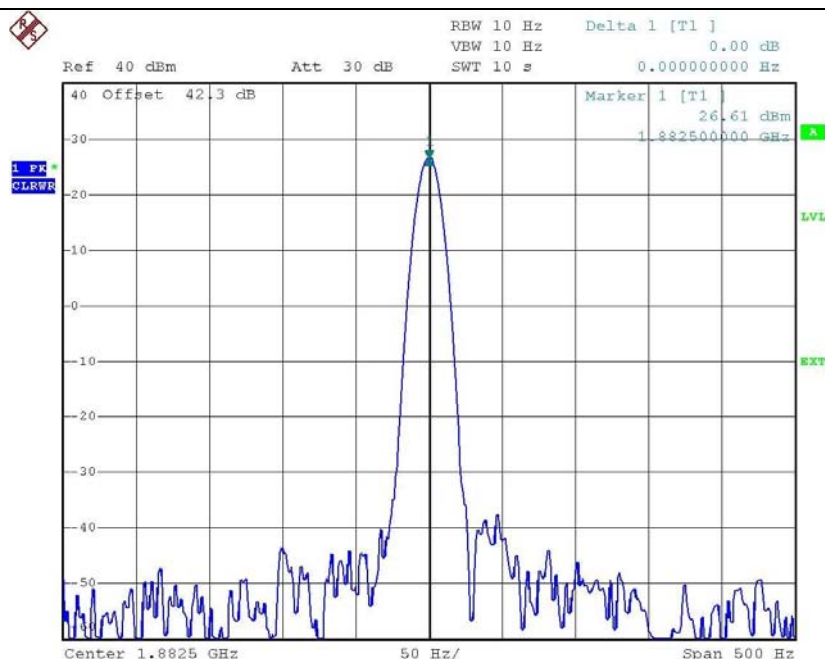


6.7.2 [MID Frequency: 1882.5MHz] Up link

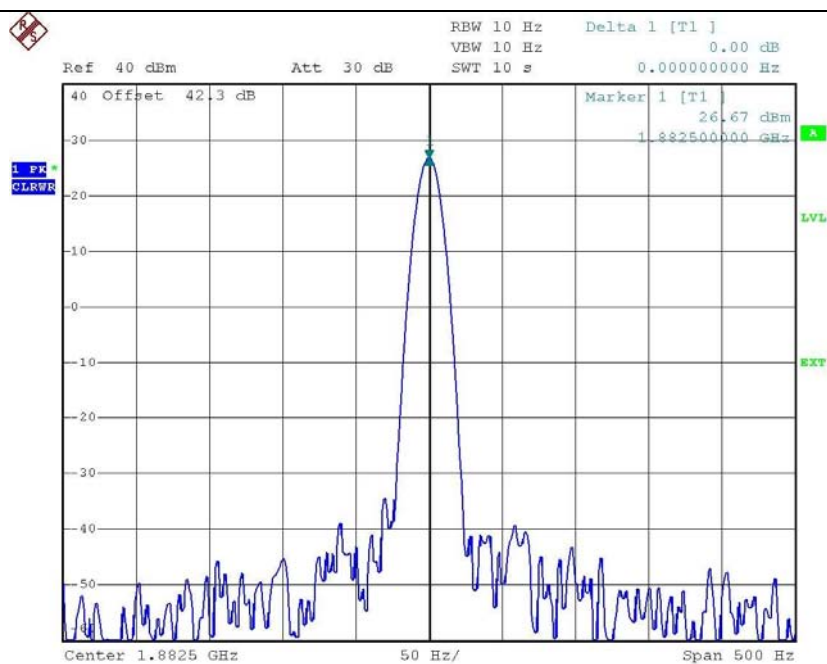
Temperature
-20℃



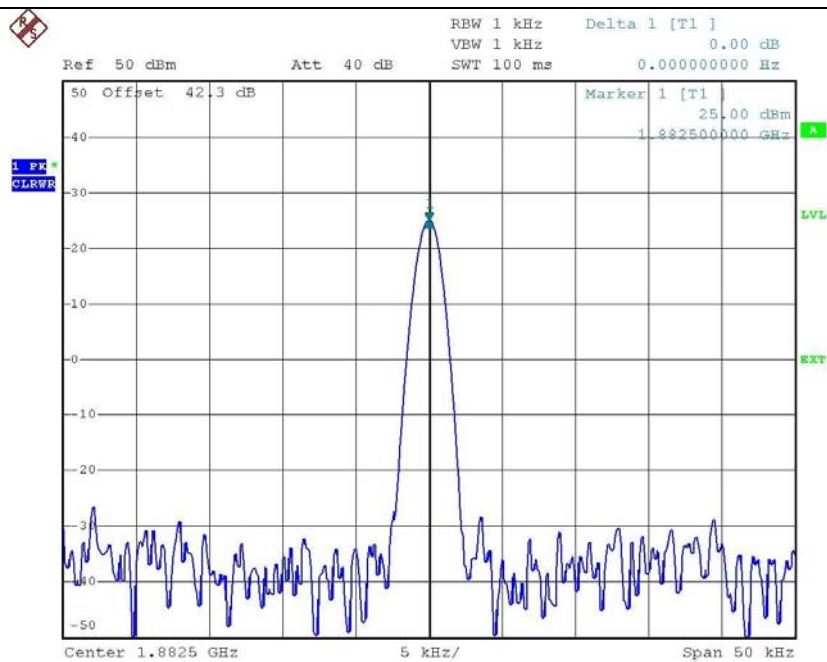
Temperature
-10℃



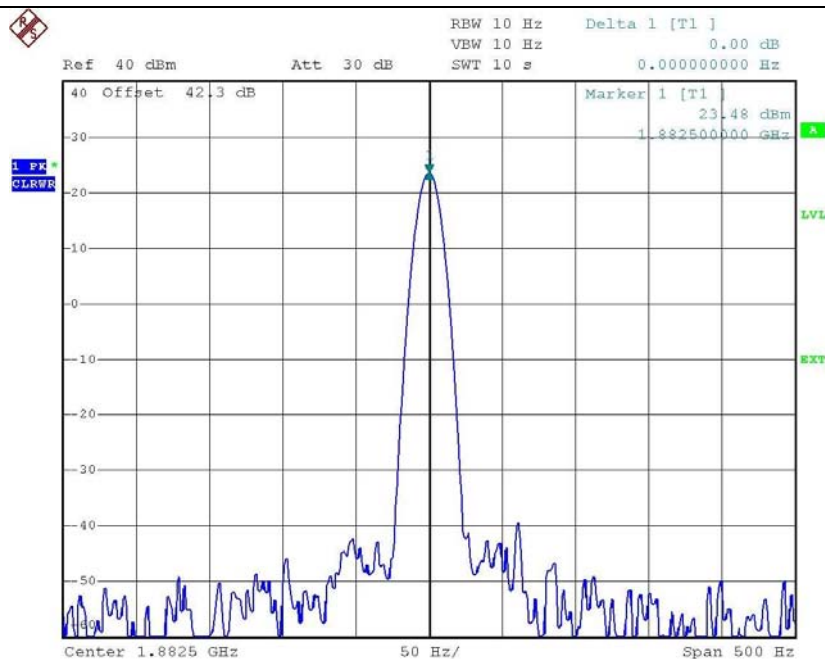
Temperature
0°C



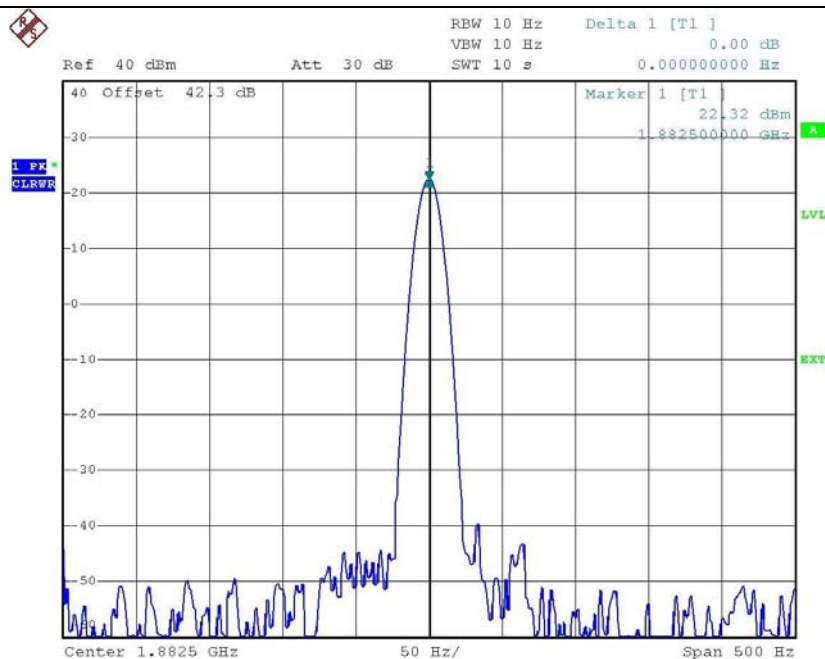
Temperature
10°C



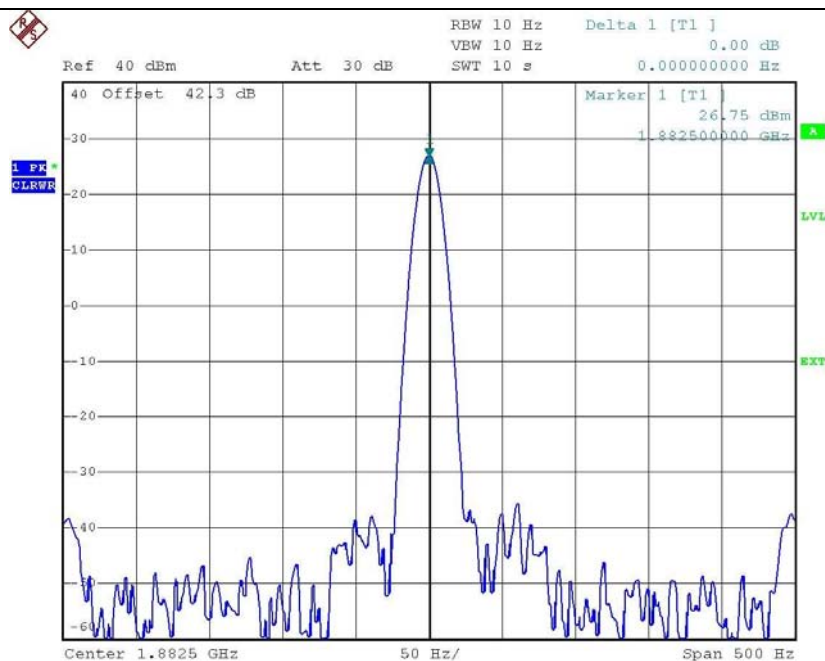
Temperature
20°C



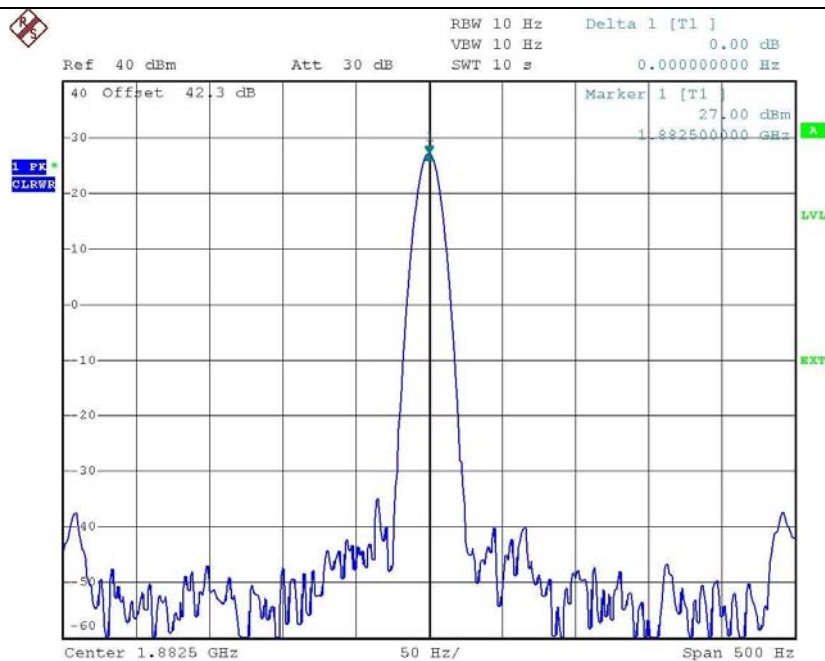
Temperature
30°C



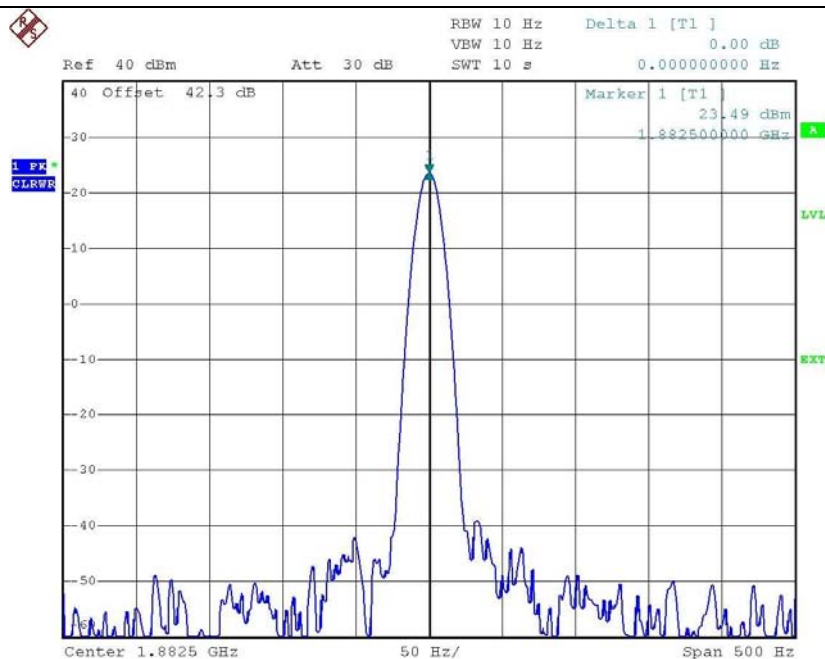
Temperature
40°C



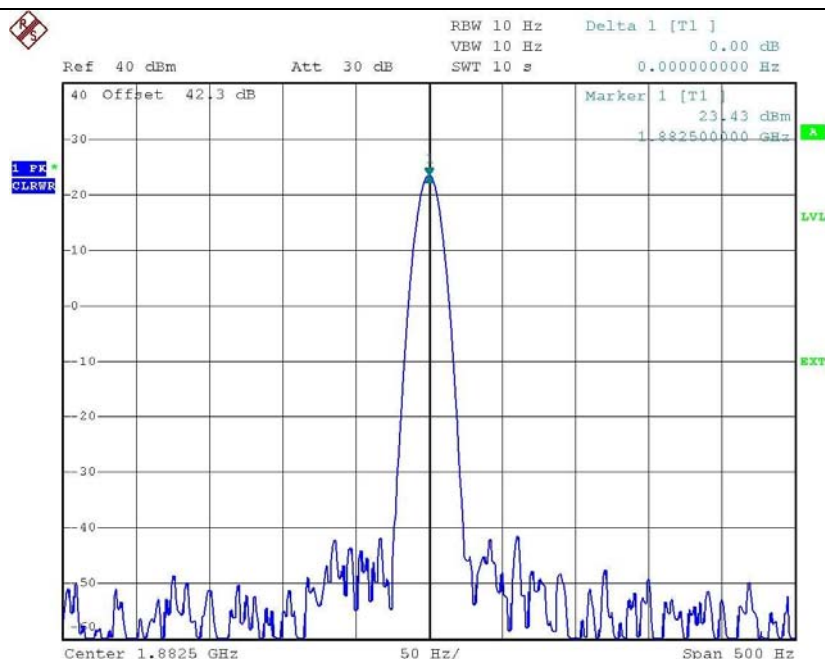
Temperature
50°C



**Voltage
85V**



**Voltage
115V**



7. TEST EQUIPMENTS LIST

	EQUIPMENT	MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
1	Receiver	ESVS30	Rohde & Schwarz	832854/010	07/25/09
2	Spectrum analyzer	FSP7	Rohde & Schwarz	100001	10/30/09
4	Spectrum analyzer	N9020A	Agilent	US46220101	10/07/09
3	Signal Generator	E4432B	Agilent	US40053157	07/08/09
4	Signal Generator	N5182A	Agilent	MY46240037	10/02/09
5	Signal Generator	GT9000	Gigatronics	9604010	10/30/09
6	Frequency Counter	R5372	Advantest	41855204	10/29/09
7	Power Meter	E4418A	Agilent	GB38272621	10/29/09
8	Power Sensor	E9301B	Agilent	US40010238	10/29/09
9	Power supply	1001P	California Instrument	8137	N/A
10	Attenuator	RFA500NMF30	RES-NET	9522	10/30/09
11	50W Termination	6515.19.A	SUHNER	N/A	N/A
12	Shield Room (7m x 4m x 3m)	N/A	SJEMC	0003	N/A
13	Turn Table	OSC-30	N/A	BWS-01	N/A
14	Antenna Mast	JAC-3	Dail EMC	N/A	N/A
15	Temperature & Humidity chanber	EN-GLMP-3000	Enex	MY41018053	03/21/09
16	Bilog Antenna	VULB9160	Schwarzbeck	VULB9160-3122	01/24/10
17	Bilog Antenna	VULB9161	Schwarzbeck	VULB9161-4067	11/19/09
18	Bilog Antenna	VULB9161	Schwarzbeck	VULB9161-4068	12/11/09
19	Horn Antenna	BBHA 9120 D	Schwarzbeck	BBHA 9120 D 234	03/15/09
20	Horn Antenna	BBHA 9120 D	Schwarzbeck	BBHA 9120 D 517	12/18/10