



FCC Test Report

According to

47 CFR Part 22H, 24E

Equipment : FLYBOOK
Trade Name : DIALOGUE
Model Name : V51BBB
FCC ID : JYV-V51BBB
Tx Frequency Range : GSM850 : 824.2 ~ 848.8MHz
GSM1900 : 1850.2 ~1909.8 MHz
WCDMA Band V : 826.4 ~ 846.6 MHz
WCDMA Band II : 1852.4 ~1907.6 MHz
Max. ERP/EIRP Power : GSM850(GSM) : 0.32 W
GSM850(EDGE) : 0.10 W
GSM1900(GSM) : 0.44 W
GSM1900(EDGE) : 0.07 W
WCDMA Band V : 0.03 W
WCDMA Band II : 0.10 W
Emission Designator : GSM : 300KGXW
EDGE : 300KG7W
WCDMA : 4M22F9W
Applicant : Dialogue Technology Corp.
10F, No. 196, Sec.2, Jungshing Rd., Shindian City,
Taipei 231, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
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- The data shown in this test report were carried out on Aug. 21, 2008 at **Sporton International Inc. LAB.**
- Report No.: FG6O2516-09, Report Version: Rev. 01.

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Report Version: Rev. 01



Table of Contents

History of This Test Report	ii
1. General Information	1
1.1 Applicant.....	1
1.2 Manufacturer	1
1.3 Basic Description of Accessories.....	1
1.4 Feature of Equipment under Test.....	2
2. Test Configuration of Equipment under Test	3
2.1 Test Manner	3
2.2 Test Mode	3
2.3 Connection Diagram of Test System	3
2.4 Ancillary Equipment List	3
3. General Information of Test Site.....	4
3.1 Test Voltage	4
3.2 Test Compliance.....	4
3.3 Frequency Range.....	4
3.4 Test Distance.....	4
4. Test Data and Test Result	5
4.1 List of Measurements and Examinations	5
4.2 RF Output Power.....	6
4.3 ERP / EIRP Measurement.....	8
4.4 Occupied Bandwidth and Band Edge Measurement	13
4.5 Conducted Emission.....	40
4.6 Field Strength of Spurious Radiation	77
4.7 Frequency Stability (Temperature Variation)	93
4.8 Frequency Stability (Voltage Variation)	98
5. List of Measurement Equipments.....	100
6. Uncertainty Evaluation	101
Appendix A. Photographs of EUT	
Appendix B. Setup Photographs	



History of This Test Report

Report Issue Date: Aug. 22, 2008

Report No.	Description

1. General Information

1.1 Applicant

Dialogue Technology Corp.

10F, No. 196, Sec.2, Jungshing Rd., Shindian City, Taipei 231, Taiwan, R.O.C.

1.2 Manufacturer

Dialogue Technology Corp.

10F, No. 196, Sec.2, Jungshing Rd., Shindian City, Taipei 231, Taiwan, R.O.C.

1.3 Basic Description of Accessories

AC Adapter	Brand Name	DIALOGUE
	Model Name	ADP-50HH A
	Power Rating	I/P: 100-240Vac, 50-60Hz, 1.5A; O/P: 19Vdc, 2.64A
	AC Power Cord Type	1.8 meter shielded cable with ferrite core
Battery	Brand Name	DIALOGUE
	Model Name	FB-B5634
	Power Rating	11Vdc, 3400mAh
	Type	Li-ion

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.

**1.4 Feature of Equipment under Test**

Product Feature & Specification	
EUT Type :	FLYBOOK
Trade Name :	DIALOGUE
Model Name :	V51BBB
FCC ID :	JYV-V51BBB
Tx Frequency :	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz
Rx Frequency :	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna :	GSM850(GSM): 31.68 dBm GSM850(EDGE): 26.84 dBm GSM1900(GSM): 28.34 dBm GSM1900(EDGE): 25.46 dBm WCDMA Band V: 22.90 dBm WCDMA Band V(HSDPA): 22.79 dBm WCDMA Band II: 22.76 dBm WCDMA Band II(HSDPA): 22.75 dBm
Maximum ERP/EIRP :	GSM850(GSM) : 0.32 W (25.07 dBm) GSM850(EDGE) : 0.10 W (20.10 dBm) GSM1900(GSM) : 0.44 W (26.43 dBm) GSM1900(EDGE) : 0.07 W (18.25 dBm) WCDMA Band V : 0.03 W (14.03 dBm) WCDMA Band II : 0.10 W (20.00 dBm)
Antenna Type :	PIFA Antenna
Type of Modulation :	GSM / GPRS : GMSK EDGE : 8PSK WCDMA / HSDPA : QPSK
Type of Emission :	GSM : 300KGXW EDGE : 300KG7W WCDMA : 4M22F9W
EUT Stage :	Production Unit

2. Test Configuration of Equipment under Test

2.1 Test Manner

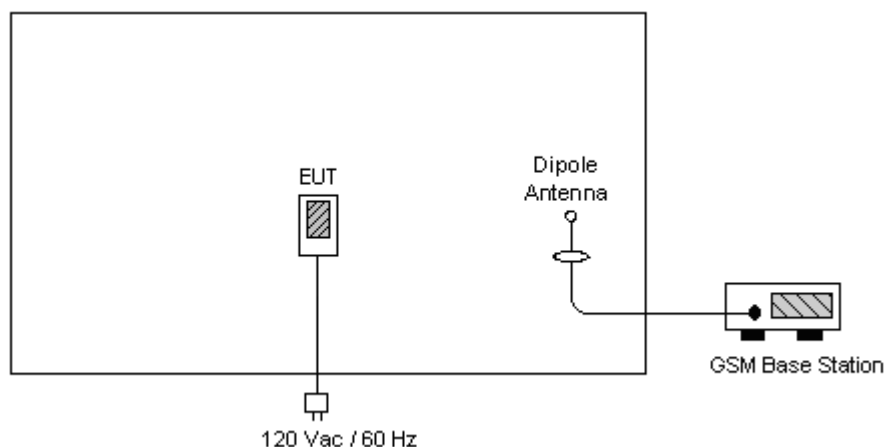
1. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
2. During all testings, EUT is in link mode with base station emulator at maximum power level.
3. Frequency range investigated: radiated emission 1000 MHz to 9000 MHz for GSM850 and WCDMA Band V; 1000MHz to 19000 MHz for GSM1900 and WCDMA Band II.

2.2 Test Mode

Application	GSM850	GSM1900
Radiated Emission	☒ Mode 1: GSM Link ☒ Mode 2: EDGE Link ☒ Mode 7: GSM Link + BT Link	☒ Mode 3: GSM Link ☒ Mode 4: EDGE Link
Conducted Measurement	☒ Mode 1: GSM Link ☒ Mode 2: EDGE Link	☒ Mode 3: GSM Link ☒ Mode 4: EDGE Link

Application	WCDMA Band V	WCDMA Band II
Radiated Emission	☒ Mode 5: WCDMA Link	☒ Mode 6: WCDMA Link
Conducted Measurement	☒ Mode 5: WCDMA Link ☒ Mode 6: HSDPA Link	☒ Mode 7: WCDMA Link ☒ Mode 8: HSDPA Link

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Code
1.	GSM Base Station	R&S	CMU200	N/A	N/A	Unshielded, 1.8m



3. General Information of Test Site

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-328-4978
Test Site No : 03CH07-HY, TH02-HY
FCC Designation No : TW1022

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

3.1 Test Voltage

AC 120V / 60Hz

3.2 Test Compliance

47 CFR Part 22H, 24E, Part 2

Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.

3.3 Frequency Range

- a. Radiation: from 1000MHz to 9000MHz for GSM850 and WCDMA Band V.
- b. Radiation: from 1000 MHz to 18000 MHz for GSM1900 and WCDMA Band II.

3.4 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.



4. Test Data and Test Result

4.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result	Section
§2.1046	RF Output Power	Passed	4.2
§22.913 §24.232	ERP / EIRP	Passed	4.3
§2.1049, §22.917, §24.238(b)	Occupied Bandwidth & Band Edge Measurement	Passed	4.4
§2.1051	Conducted Emission	Passed	4.5
§2.1053	Field Strength of Spurious Radiation	Passed	4.6
§2.1055, §22.355, §24.235	Frequency Stability vs. Temperature	Passed	4.7
§2.1055, §22.355, §24.235	Frequency Stability vs. Voltage	Passed	4.8

4.2 RF Output Power

4.2.1 Measurement Instruments

As described in chapter 5 of this test report.

4.2.2 Test Procedure

- a. The transmitter output was connected to power meter and base station.
- b. Set the EUT at maximum power through base station by using below setting
 - b.1 PCL=5 for GSM850, PCL=0 for PCS1900.
 - b.2 TPC with All Up Bits for WCDMA.
- c. Select lowest, middle, and highest channels for each band.

4.2.3 Test Setup Layout



4.2.4 Test Result

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM850 (GSM)	128	824.2 (Low)	31.68	1.47
	189	836.4 (Mid)	31.59	1.44
	251	848.8 (High)	31.44	1.39
GSM850 (EDGE)	128	824.2 (Low)	26.84	0.48
	189	836.4 (Mid)	26.76	0.47
	251	848.8 (High)	26.63	0.46
GSM1900 (GSM)	512	1850.2 (Low)	28.31	0.68
	661	1880.0 (Mid)	28.34	0.68
	810	1909.8 (High)	28.33	0.68
GSM1900 (EDGE)	512	1850.2 (Low)	25.43	0.35
	661	1880.0 (Mid)	25.43	0.35
	810	1909.8 (High)	25.46	0.35



Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
WCDMA Band V	4132	826.4 (Low)	22.90	0.19
	4182	836.4 (Mid)	22.68	0.19
	4233	846.6 (High)	22.57	0.18
WCDMA Band V (HSDPA)	4132	826.4 (Low)	22.79	0.19
	4182	836.4 (Mid)	22.64	0.18
	4233	846.6 (High)	22.57	0.18
WCDMA Band II	9262	1852.4 (Low)	22.76	0.19
	9400	1880.0 (Mid)	22.65	0.18
	9538	1907.6 (High)	22.30	0.17
WCDMA Band II (HSDPA)	9262	1852.4 (Low)	22.75	0.19
	9400	1880.0 (Mid)	22.62	0.18
	9538	1907.6 (High)	22.31	0.17

4.3 ERP / EIRP Measurement

Equivalent isotropic radiated power measurements by substitution method according to ANSI/TIA/EIA-603-C.

4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

- a. The EUT was placed on a tutntable with 1.0 meter height in an fully anechoic chamber.
- b. The EUT was set 1.2 meters from the receiving antenna which was mounted on the antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiated power.
- d. The height of the receiving antenna is also kept at 1.0M height.
- e. Taking the record of maximum ERP/EIRP.
- f. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
- g. The conducted power at the terminal of the dipole antenna is measured.
- h. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
- i. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

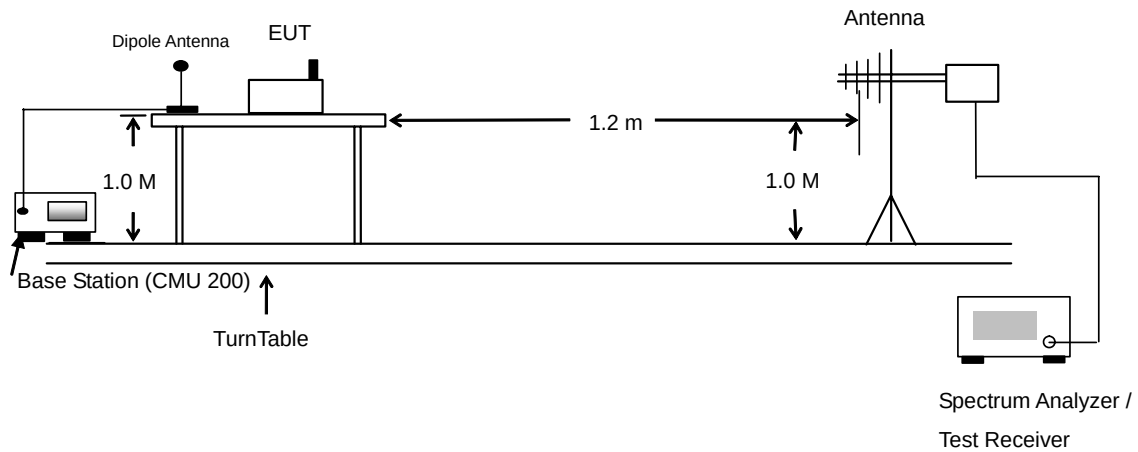
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in Spectrum Analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

4.3.3 Test Setup Layout of ERP/EIRP



**4.3.4 Test Result**

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-25.02	-48.12	0.00	-1.08	22.02	0.16
836.40	-23.89	-48.28	0.00	-0.93	23.46	0.22
848.80	-23.60	-48.35	0.00	-0.76	23.99	0.25
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-24.95	-47.97	0.00	-1.08	21.94	0.16
836.40	-22.69	-48.01	0.00	-0.93	24.39	0.27
848.80	-22.22	-48.05	0.00	-0.76	25.07	0.32

GSM850 (EDGE) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-27.67	-48.12	0.00	-1.08	19.37	0.09
836.40	-28.27	-48.28	0.00	-0.93	19.08	0.08
848.80	-28.70	-48.35	0.00	-0.76	18.89	0.08
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-29.59	-47.97	0.00	-1.08	17.30	0.05
836.40	-27.79	-48.01	0.00	-0.93	19.29	0.08
848.80	-27.19	-48.05	0.00	-0.76	20.10	0.10



GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-28.62	-51.88	0.00	1.96	25.22	0.33
1880.00	-30.34	-52.99	0.00	2.00	24.65	0.29
1909.80	-31.41	-54.28	0.00	1.98	24.85	0.31
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-28.72	-52.13	0.00	1.96	25.37	0.34
1880.00	-29.61	-53.17	0.00	2.00	25.56	0.36
1909.80	-29.68	-54.13	0.00	1.98	26.43	0.44

GSM1900 (EDGE) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-38.05	-51.88	0.00	1.96	15.79	0.04
1880.00	-38.95	-52.99	0.00	2.00	16.04	0.04
1909.80	-40.17	-54.28	0.00	1.98	16.09	0.04
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-37.40	-52.13	0.00	1.96	16.69	0.05
1880.00	-38.71	-53.17	0.00	2.00	16.46	0.04
1909.80	-37.86	-54.13	0.00	1.98	18.25	0.07



WCDMA Band V Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-33.80	-48.12	0.00	-1.08	13.24	0.02
836.40	-34.42	-48.28	0.00	-0.93	12.93	0.02
846.60	-35.52	-48.35	0.00	-0.76	12.07	0.02
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
826.40	-32.86	-47.97	0.00	-1.08	14.03	0.03
836.40	-33.59	-48.01	0.00	-0.93	13.49	0.02
846.60	-33.26	-48.05	0.00	-0.76	14.03	0.03

WCDMA Band II Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-33.87	-51.88	0.00	1.96	19.97	0.10
1880.00	-35.88	-52.99	0.00	2.00	19.11	0.08
1907.60	-38.29	-54.28	0.00	1.98	17.97	0.06
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1852.40	-34.11	-52.13	0.00	1.96	19.98	0.10
1880.00	-35.17	-53.17	0.00	2.00	20.00	0.10
1907.60	-36.34	-54.13	0.00	1.98	19.77	0.09

4.4 Occupied Bandwidth and Band Edge Measurement

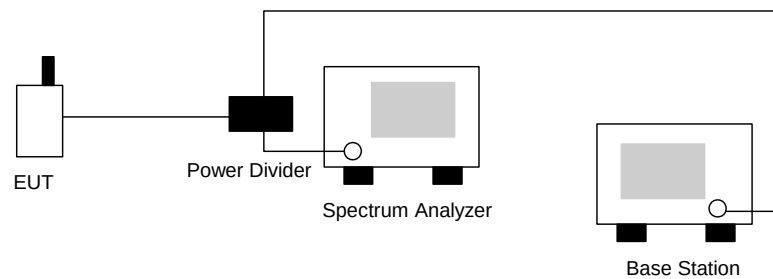
4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

4.4.2 Test Procedure

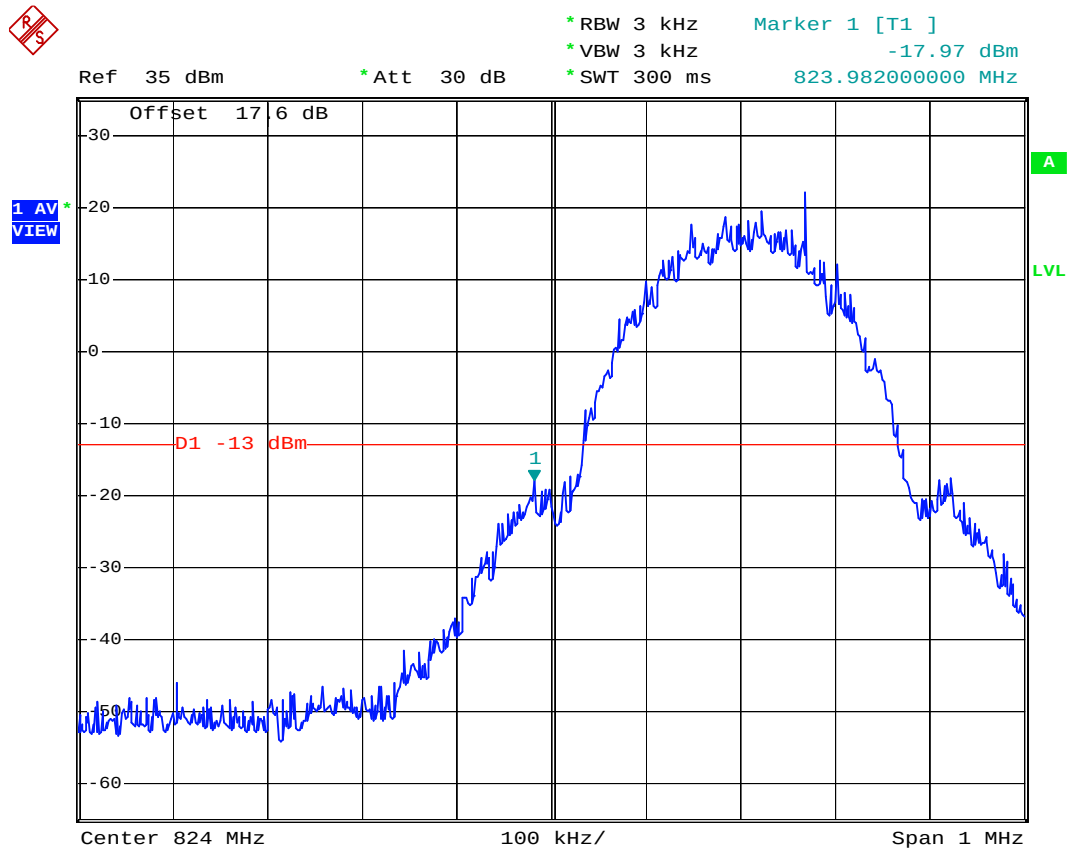
- a. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- b. The 99% occupied bandwidth of middle channel for the highest and lowest RF powers were measured.
- c. The bandedge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.

4.4.3 Test Setup Layout



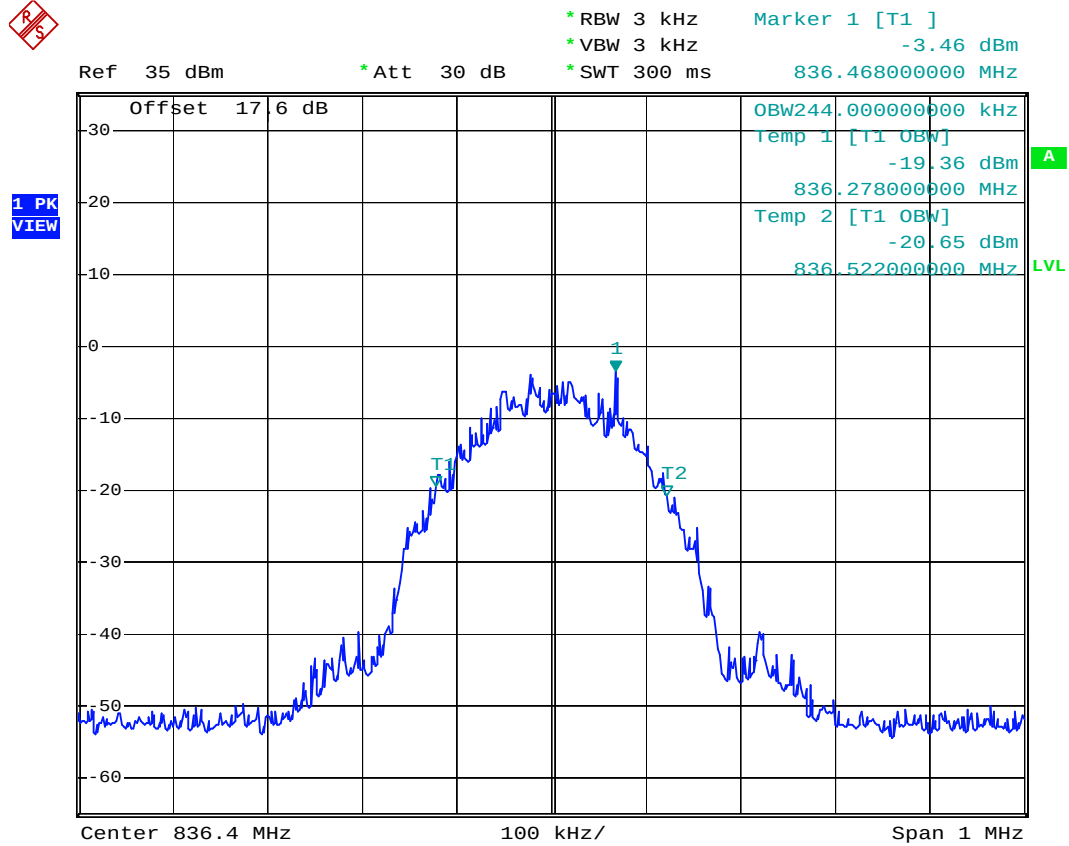
**4.4.4 Test Result**

- Mode 1
- Test Mode : GSM850 (GSM) CH128 Lower Band Edge
- Power State : High



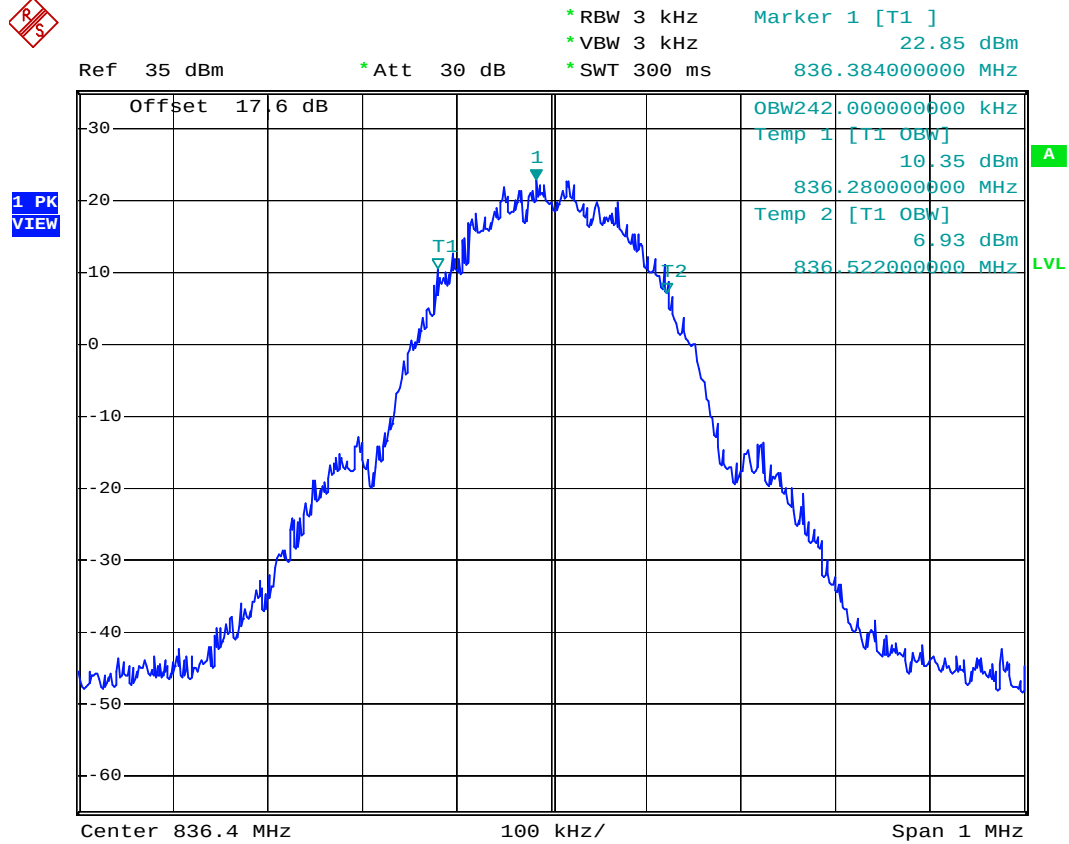


- Test Mode : GSM850 (GSM) CH189 99% Occupied Bandwidth
- Power State : Low



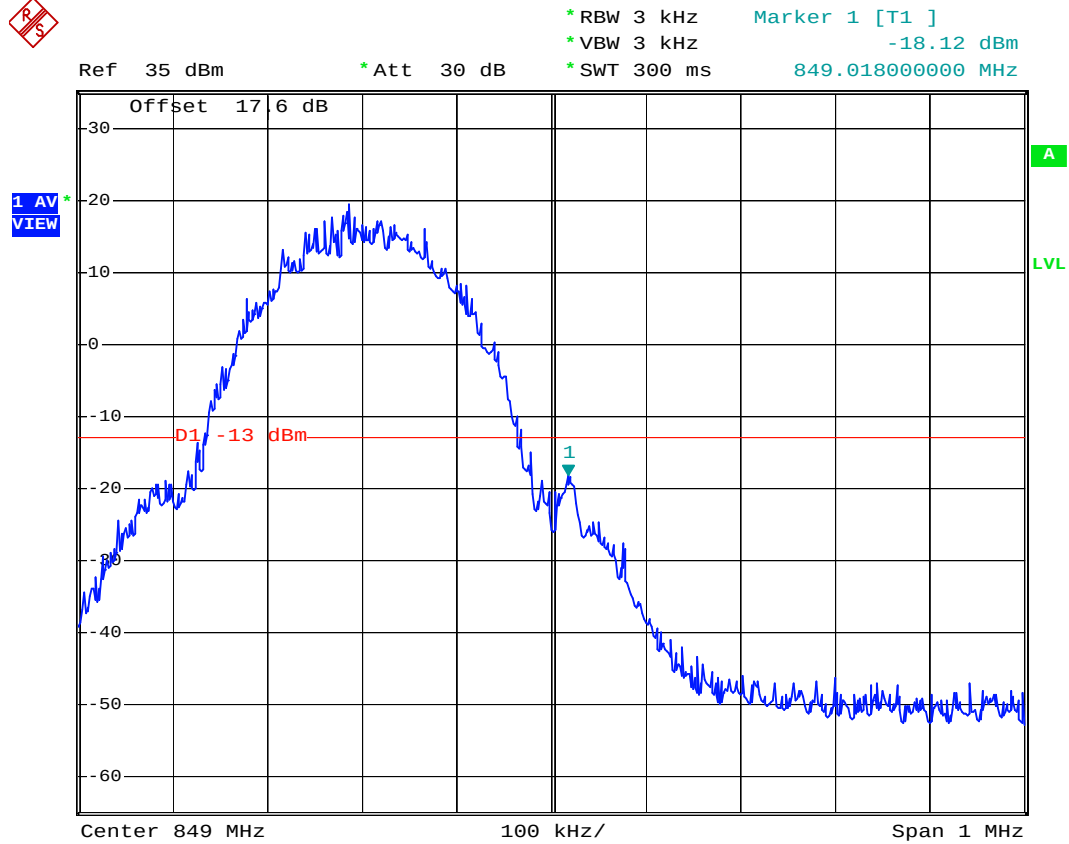


- Test Mode : GSM850 (GSM) CH189 99% Occupied Bandwidth
- Power State : High





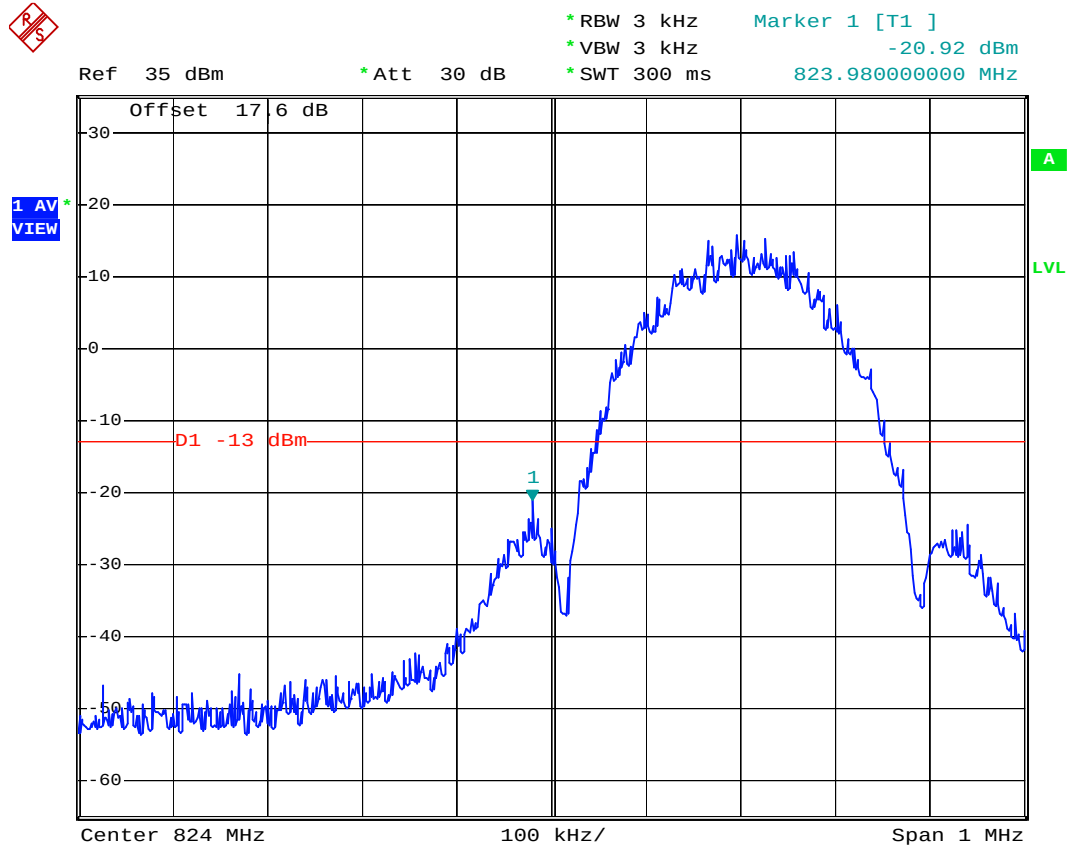
- Test Mode : GSM850 (GSM) CH251 Higher Band Edge
- Power State : High



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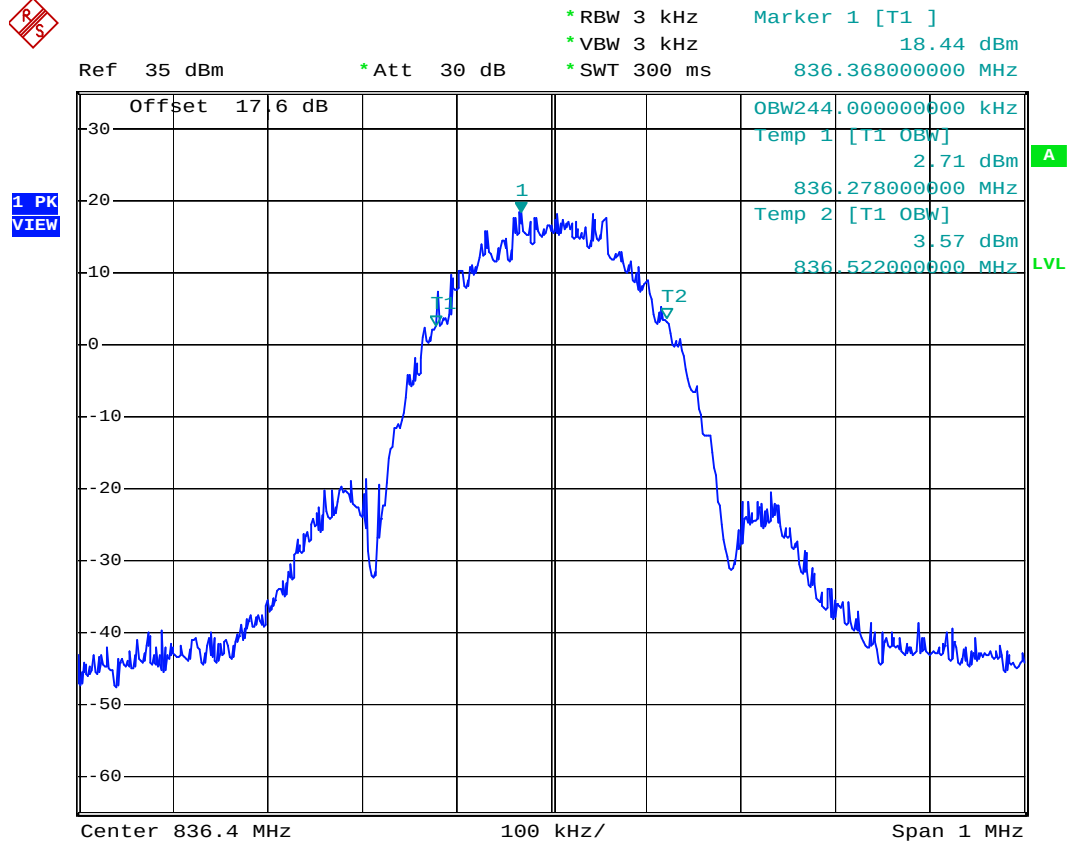


- Mode 2
- Test Mode : GSM850 (EDGE) CH128 Lower Band Edge
- Power State : High



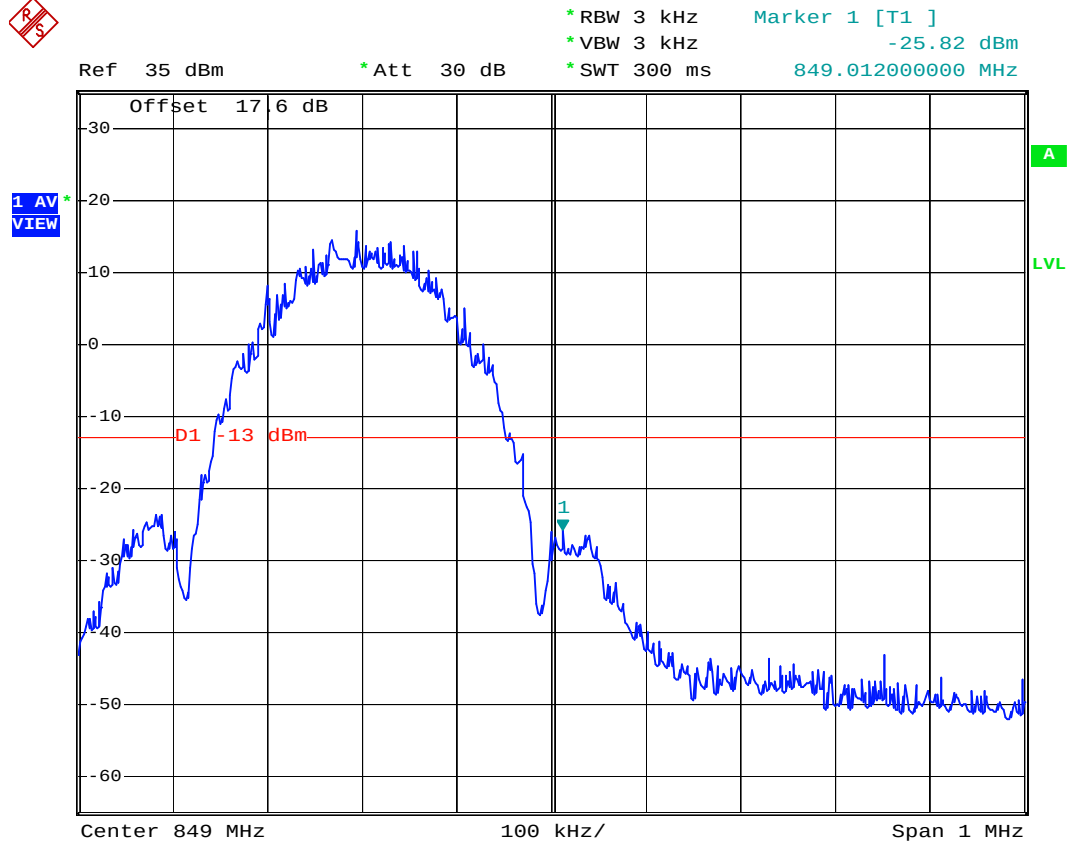


- Test Mode : GSM850 (EDGE) CH189 99% Occupied Bandwidth
- Power State : High



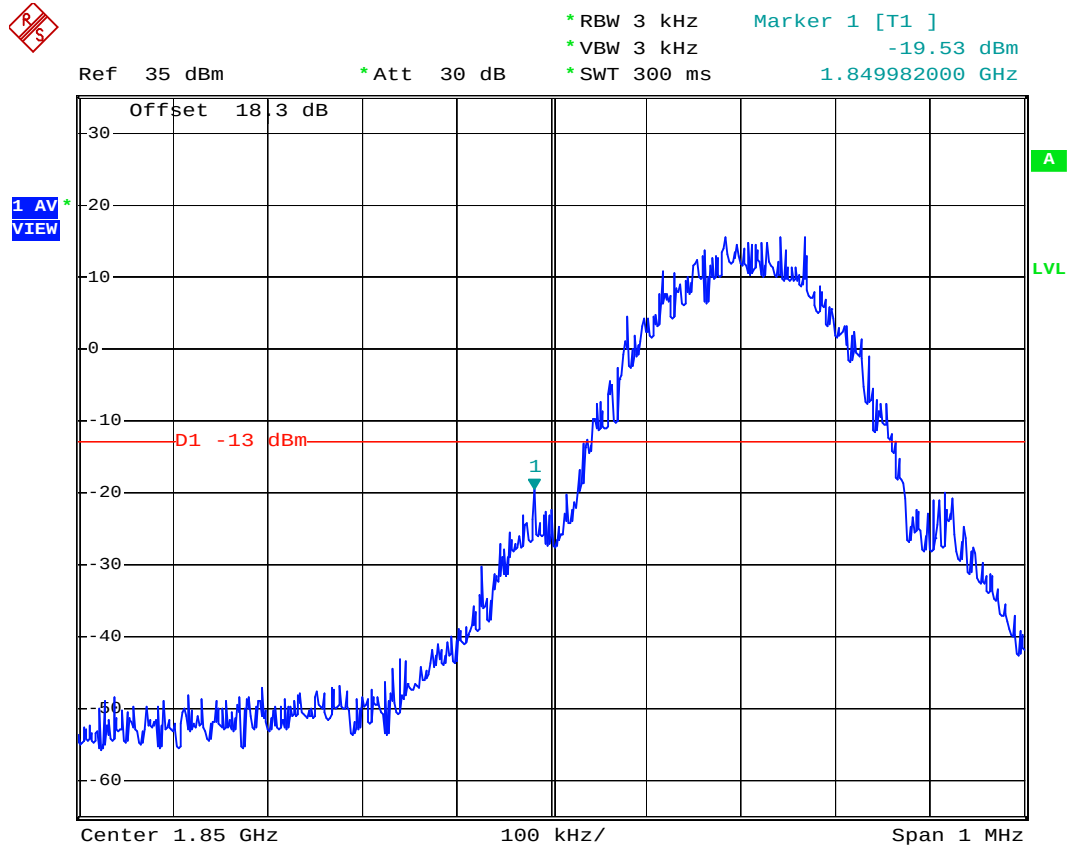


- Test Mode : GSM850 (EDGE) CH251 Higher Band Edge
- Power State : High



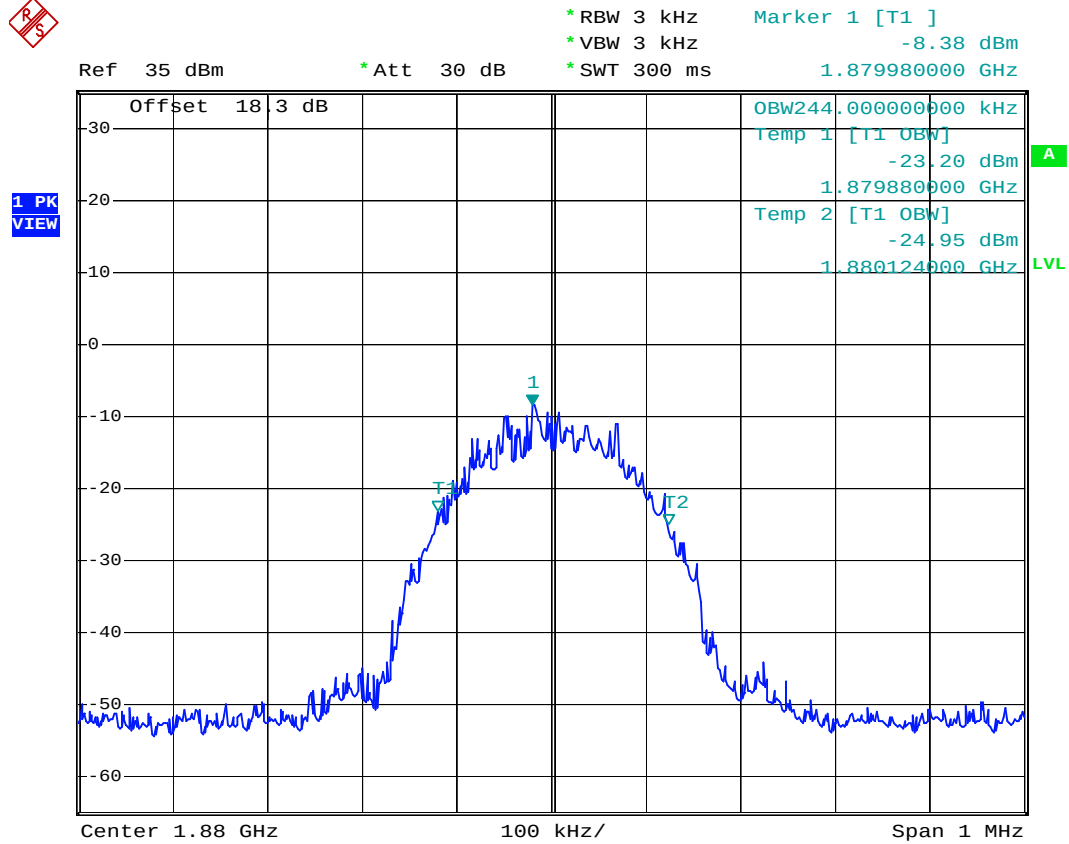


- Mode 3
- Test Mode : PCS1900 (GSM) CH512 Lower Band Edge
- Power State : High



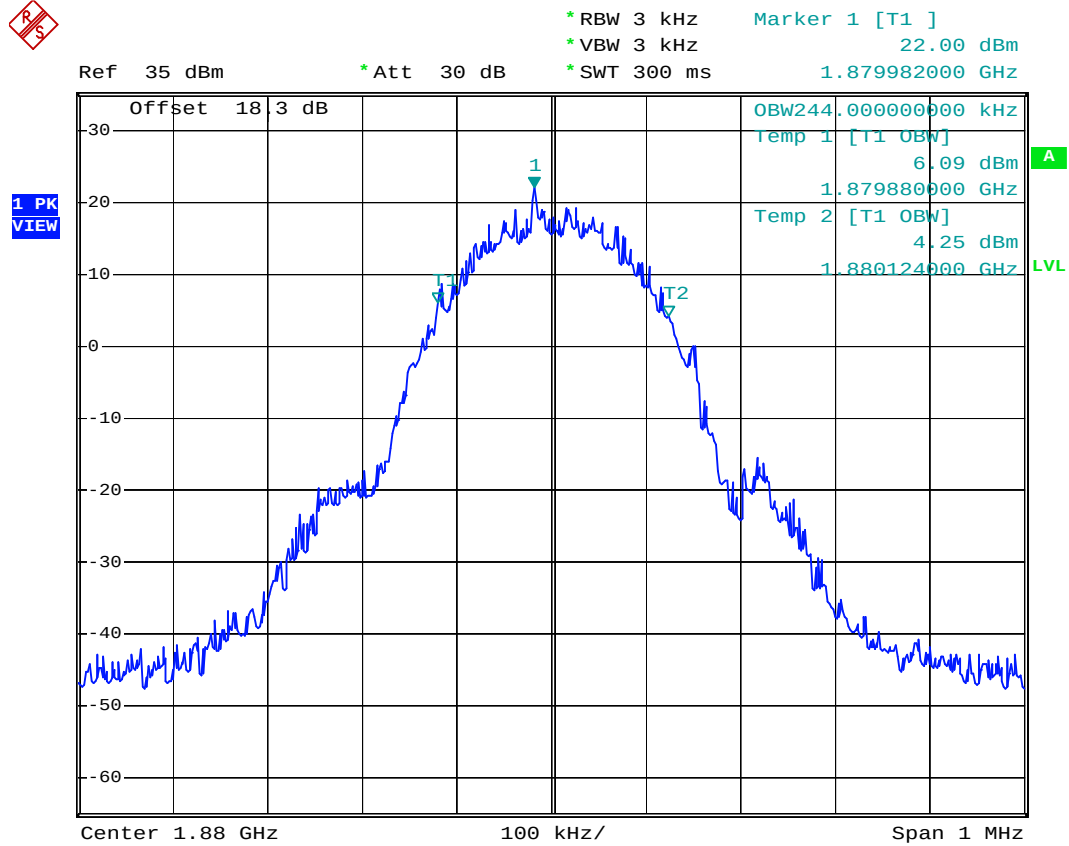


- Test Mode : PCS1900 (GSM) CH661 99% Occupied Bandwidth
- Power State : Low



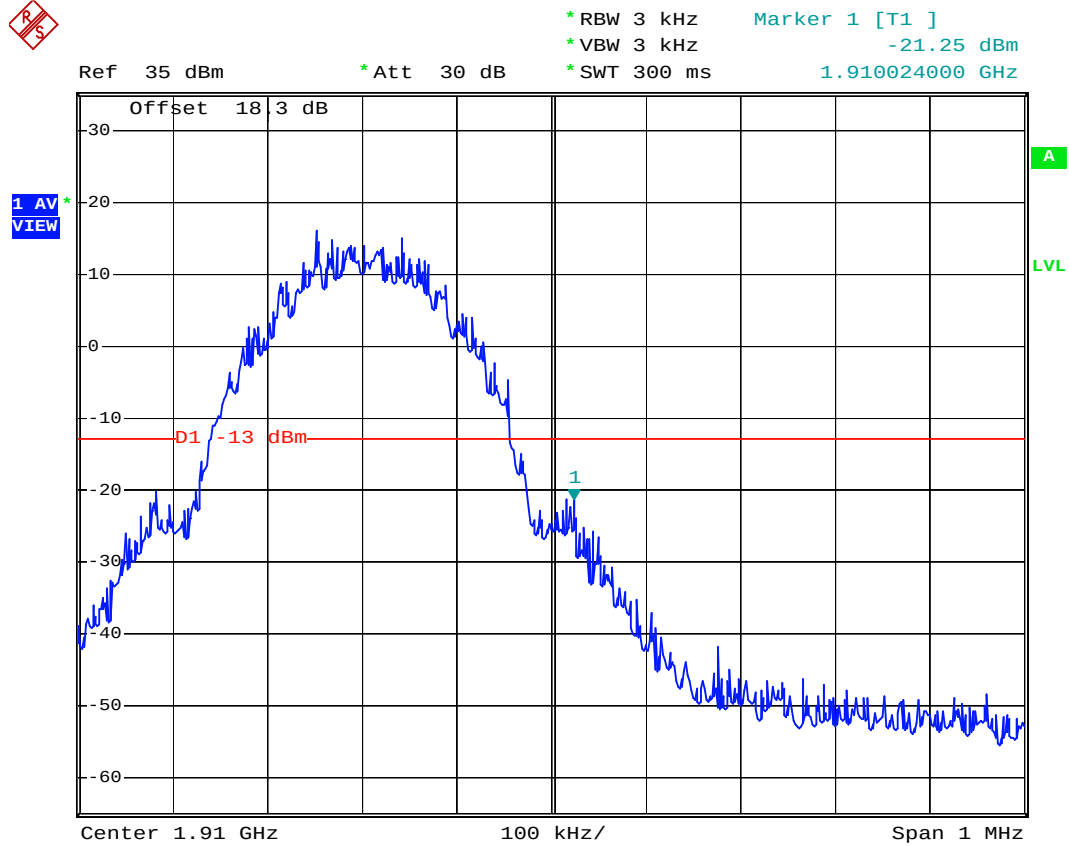


- Test Mode : PCS1900 (GSM) CH661 99% Occupied Bandwidth
- Power State : High



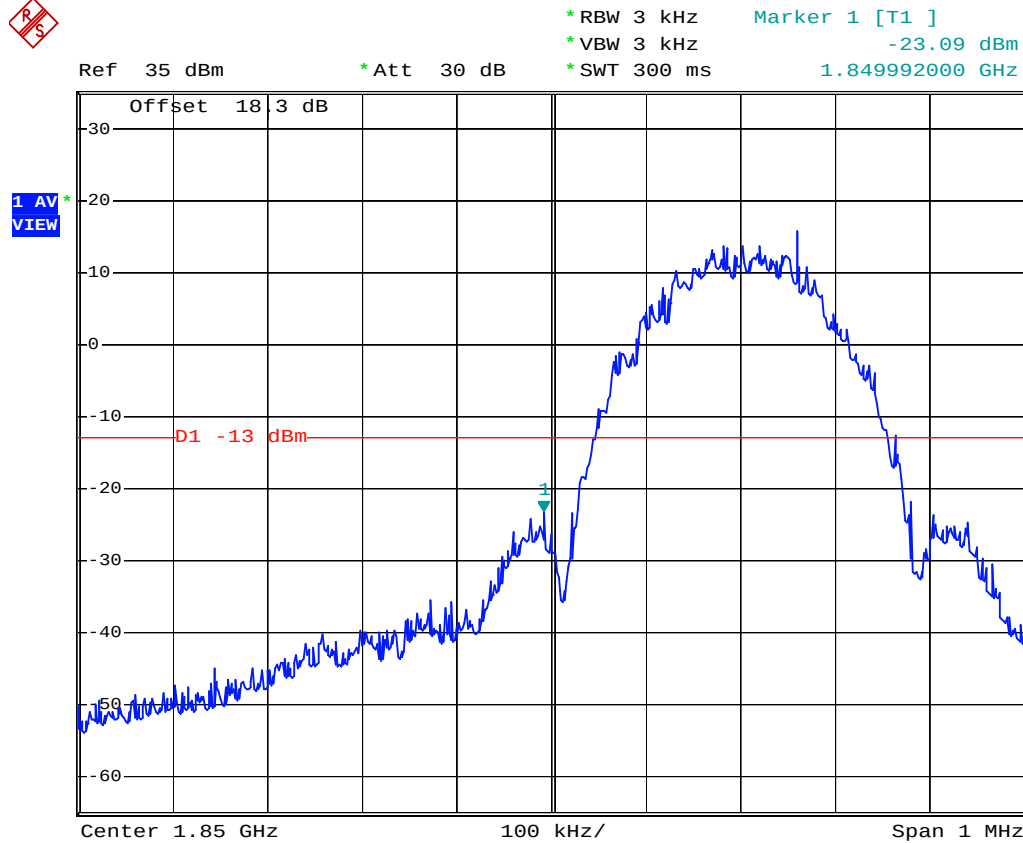


- Test Mode : PCS1900 (GSM) CH810 Higher Band Edge
- Power State : High



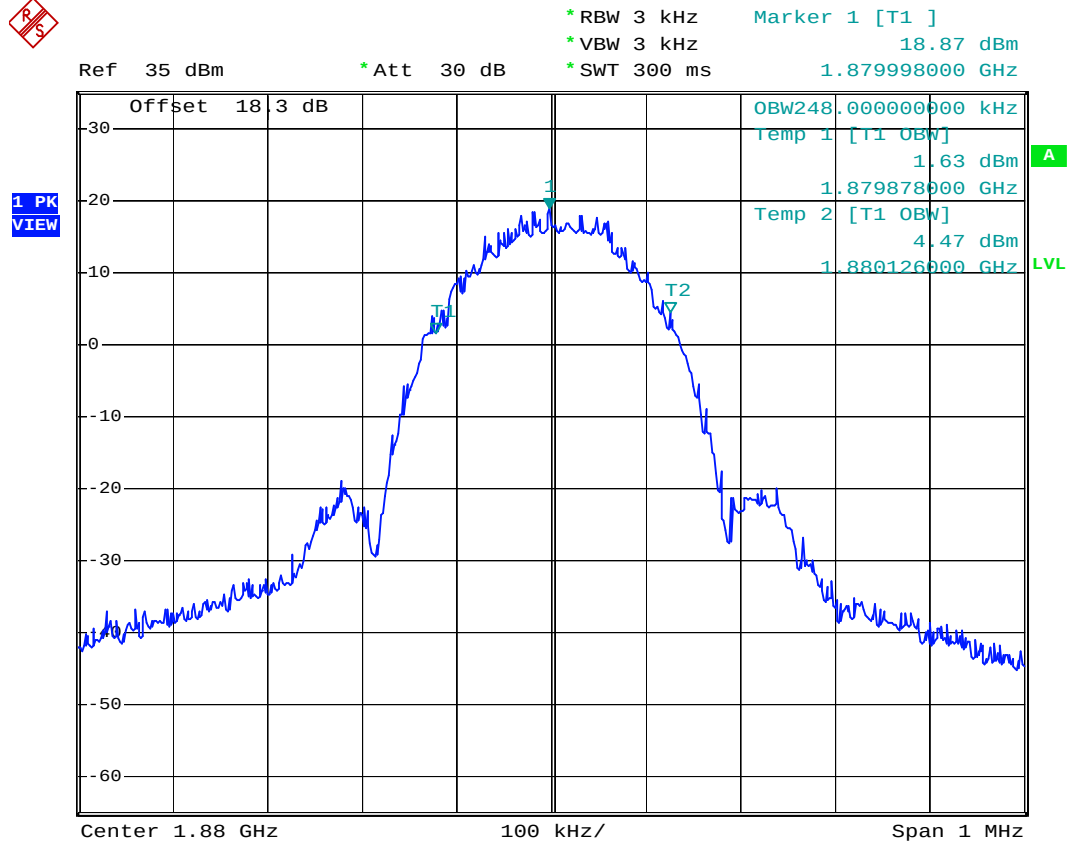


- Mode 4
- Test Mode : PCS1900 (EDGE) CH512 Lower Band Edge
- Power State : High



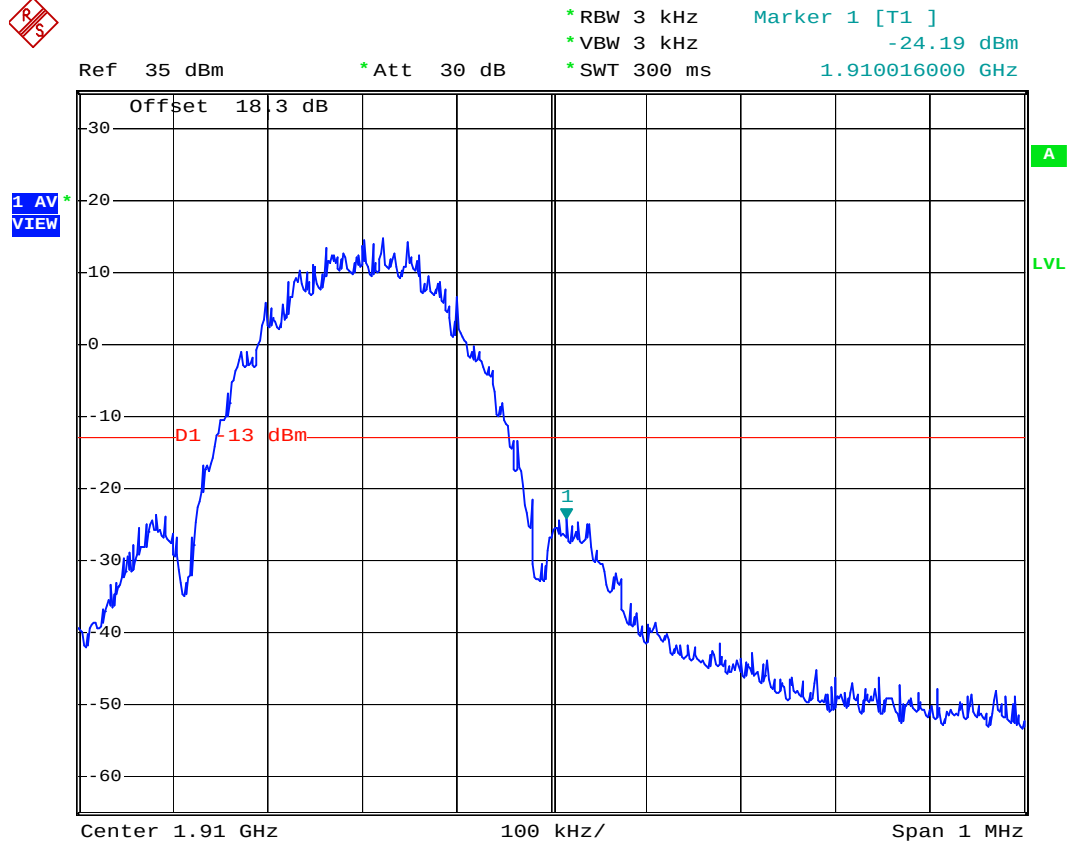


- Test Mode : PCS1900(EDGE) CH661 99% Occupied Bandwidth
- Power State : High



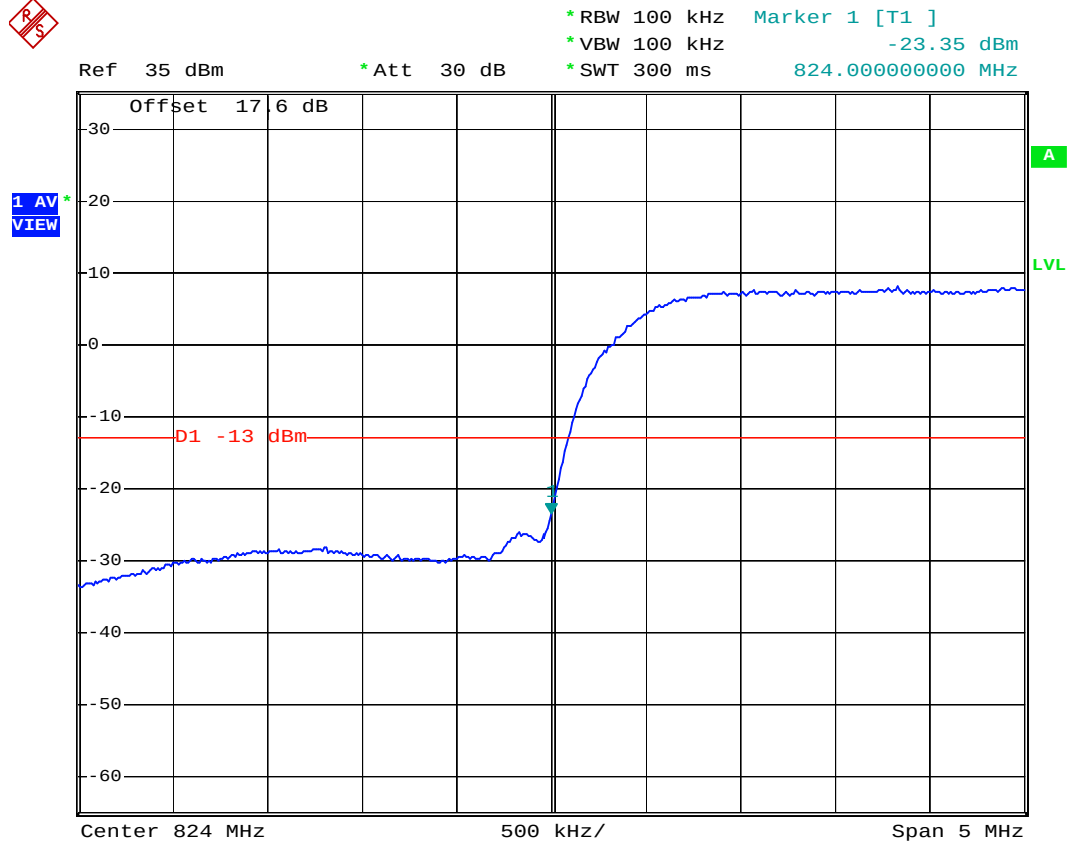


- Test Mode : PCS1900(EDGE) CH810 Higher Band Edge
- Power State : High



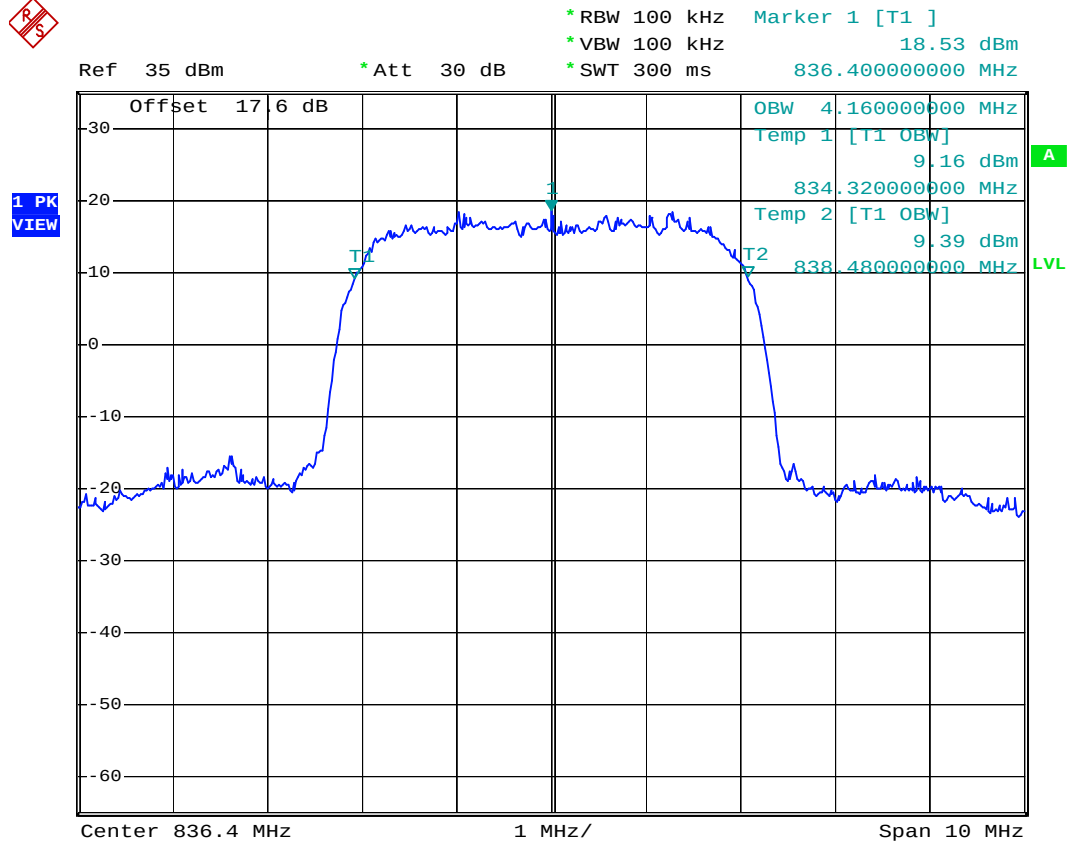


- Mode 5
- Test Mode : WCDMA Band V CH4132 Lower Band Edge
- Power State : High



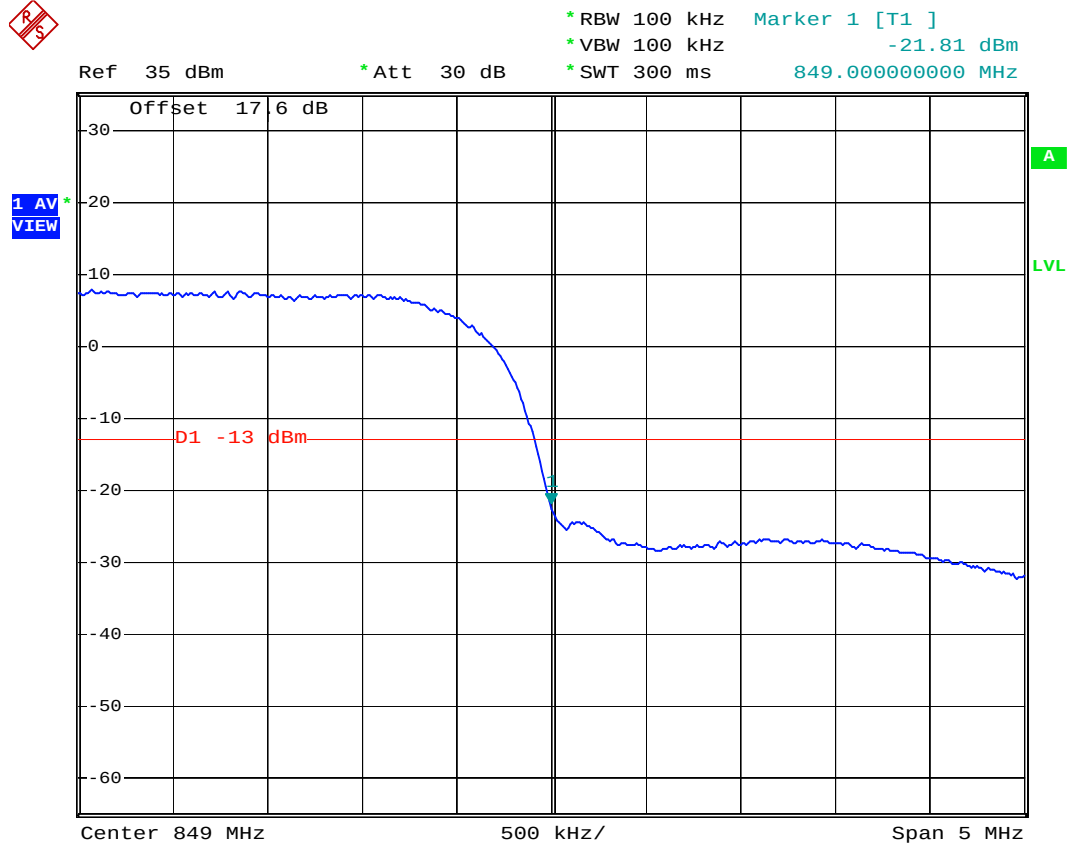


- Test Mode : WCDMA Band V CH4182 99% Occupied Bandwidth
- Power State : High



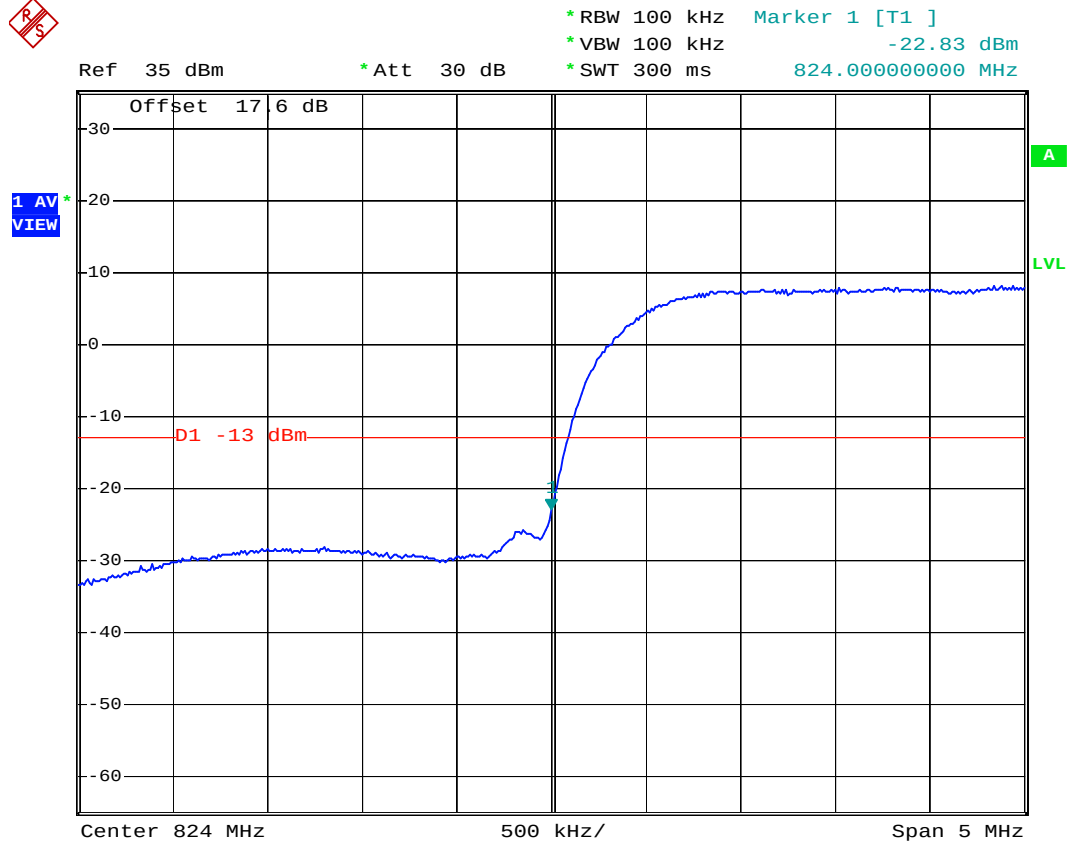


- Test Mode : WCDMA Band V CH4233 Higher Band Edge
- Power State : High



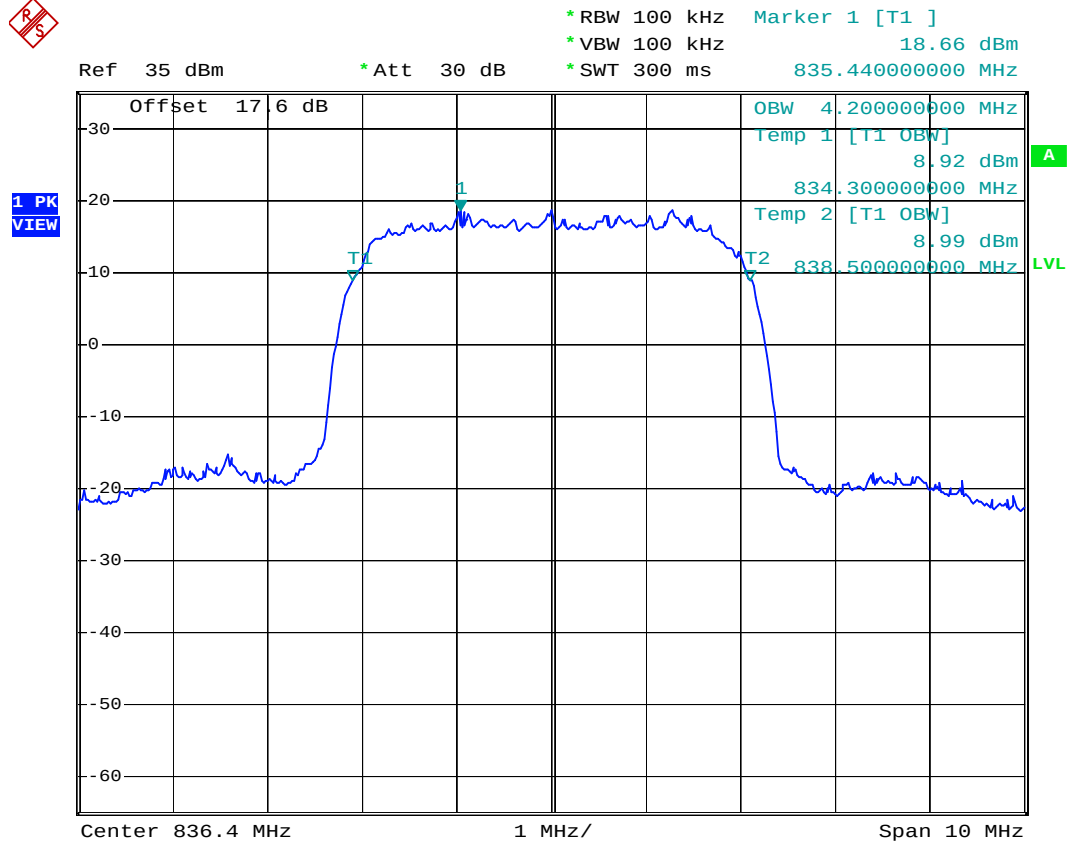


- Mode 6
- Test Mode : WCDMA Band V (HSDPA) CH4132 Lower Band Edge
- Power State : High



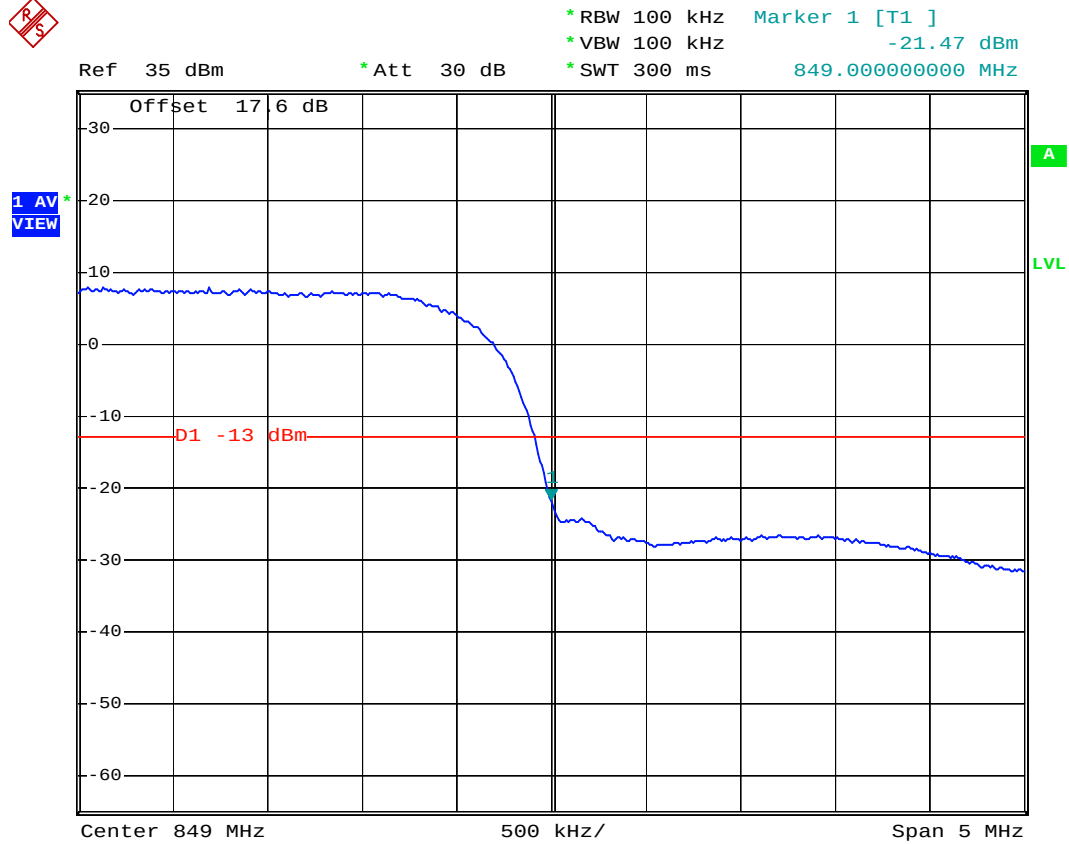


- Test Mode : WCDMA Band V (HSDPA) CH4182 99% Occupied Bandwidth
- Power State : High



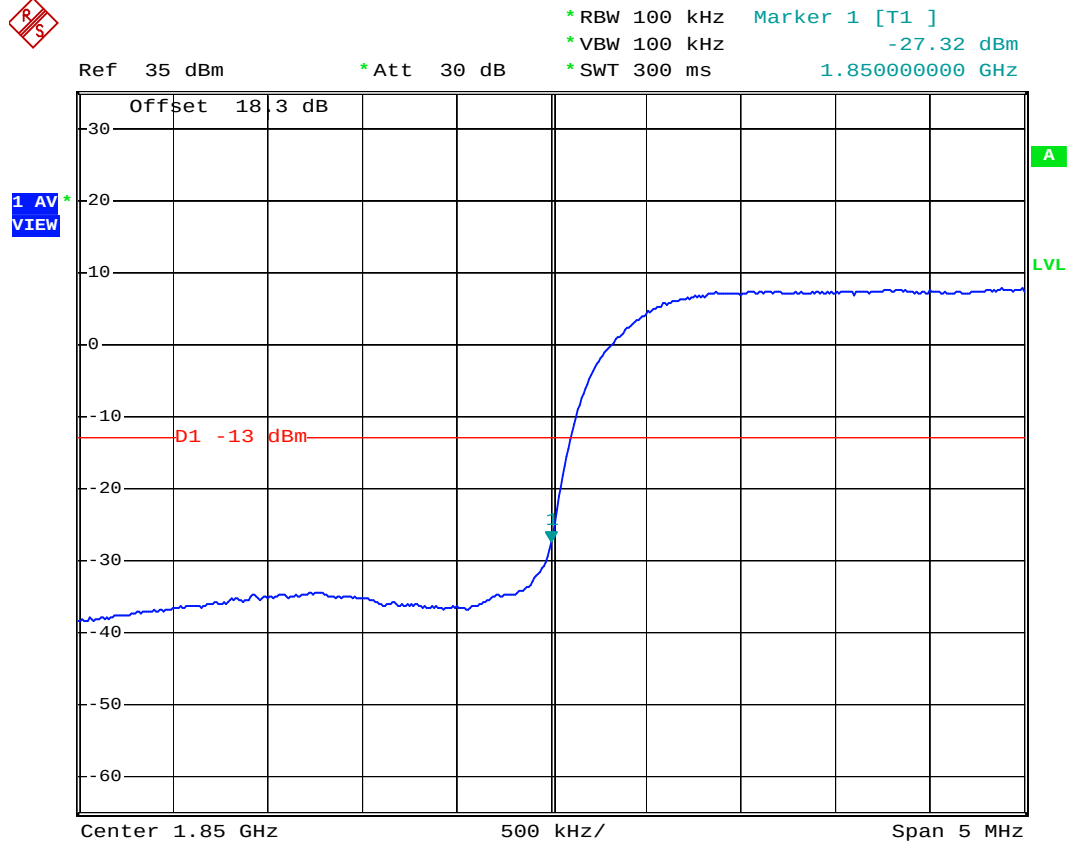


- Test Mode : WCDMA Band V (HSDPA) CH4233 Higher Band Edge
- Power State : High



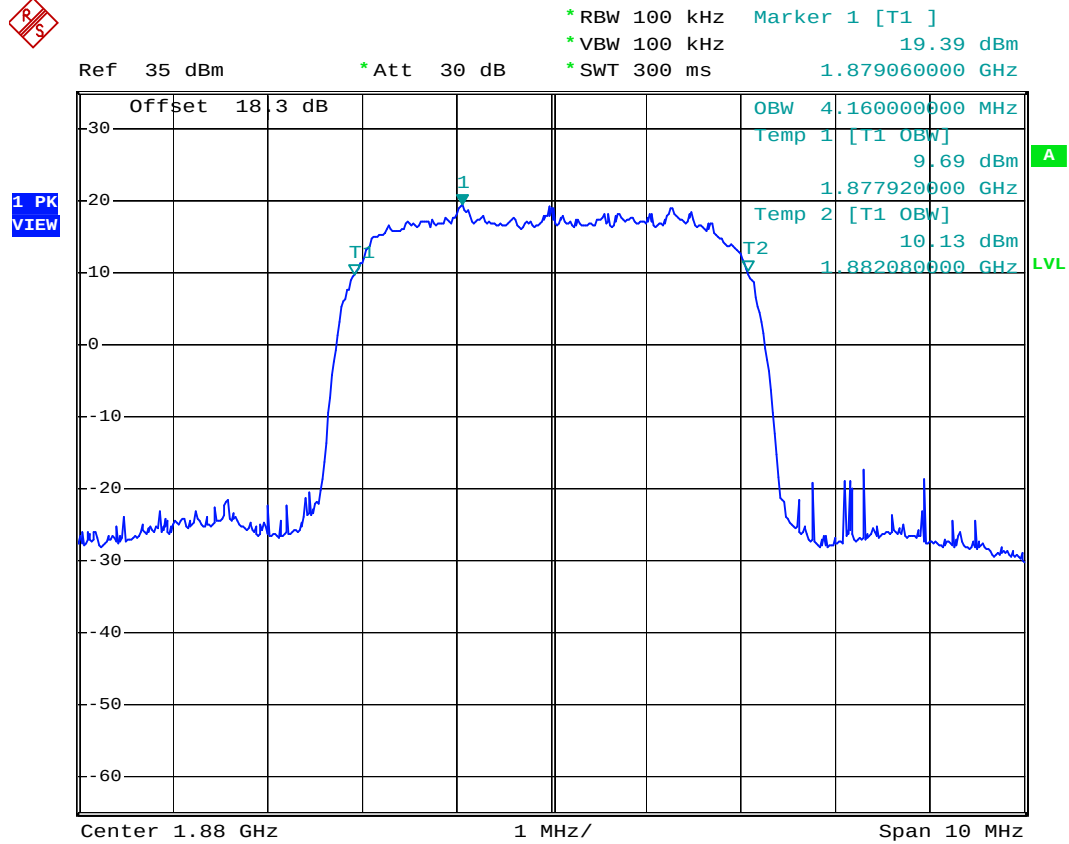


- Mode 7
- Test Mode : WCDMA Band II CH9262 Lower Band Edge
- Power State : High



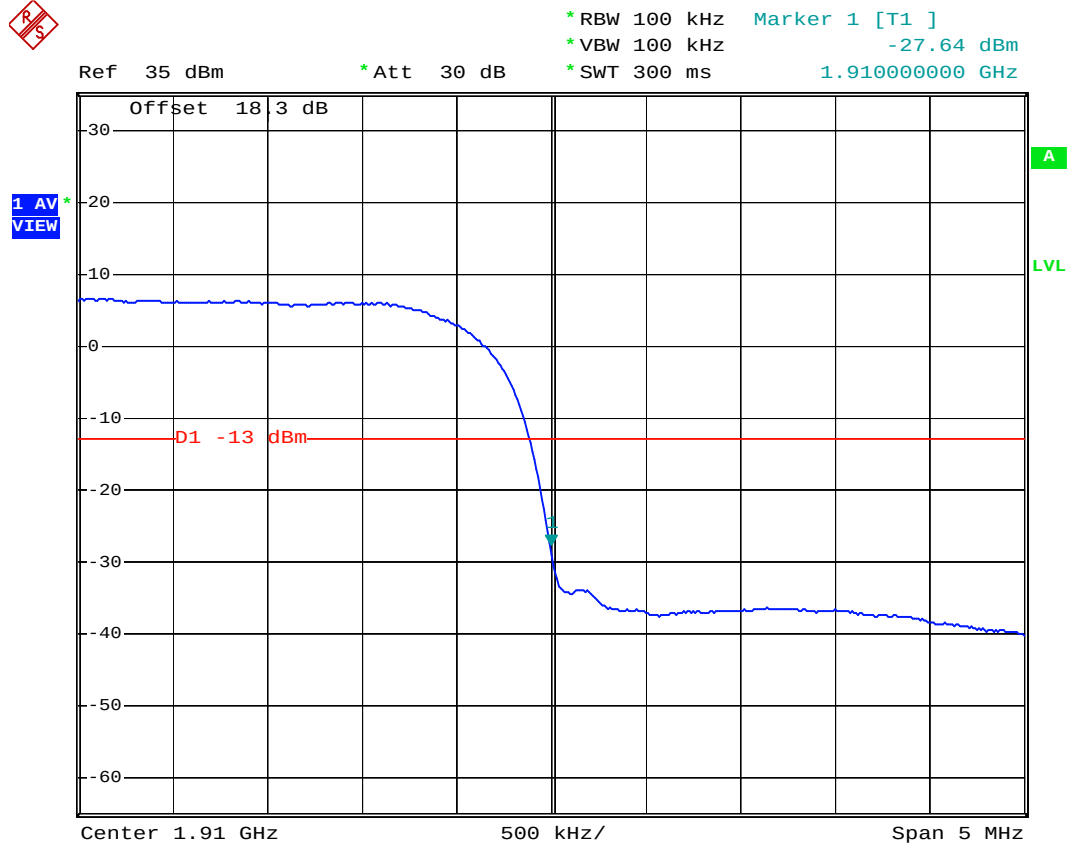


- Test Mode : WCDMA Band II CH9400 99% Occupied Bandwidth
- Power State : High



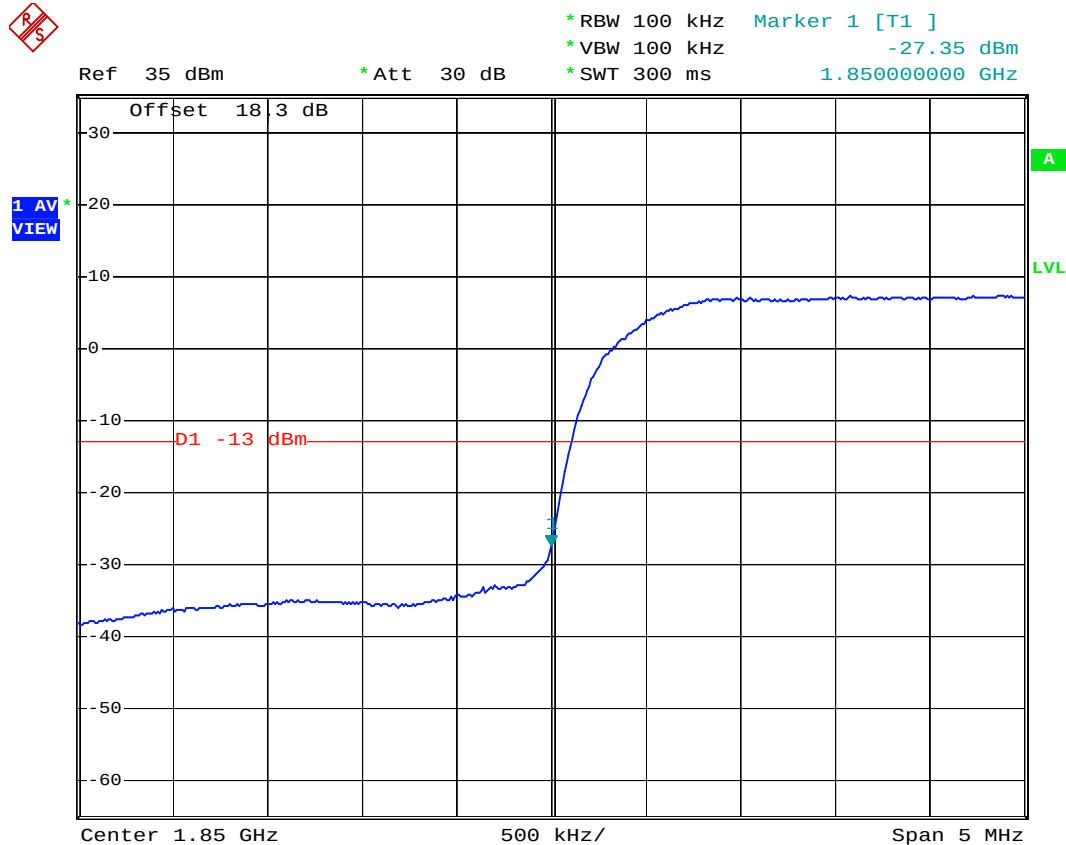


- Test Mode : WCDMA Band II CH9538 Higher Band Edge
- Power State : High



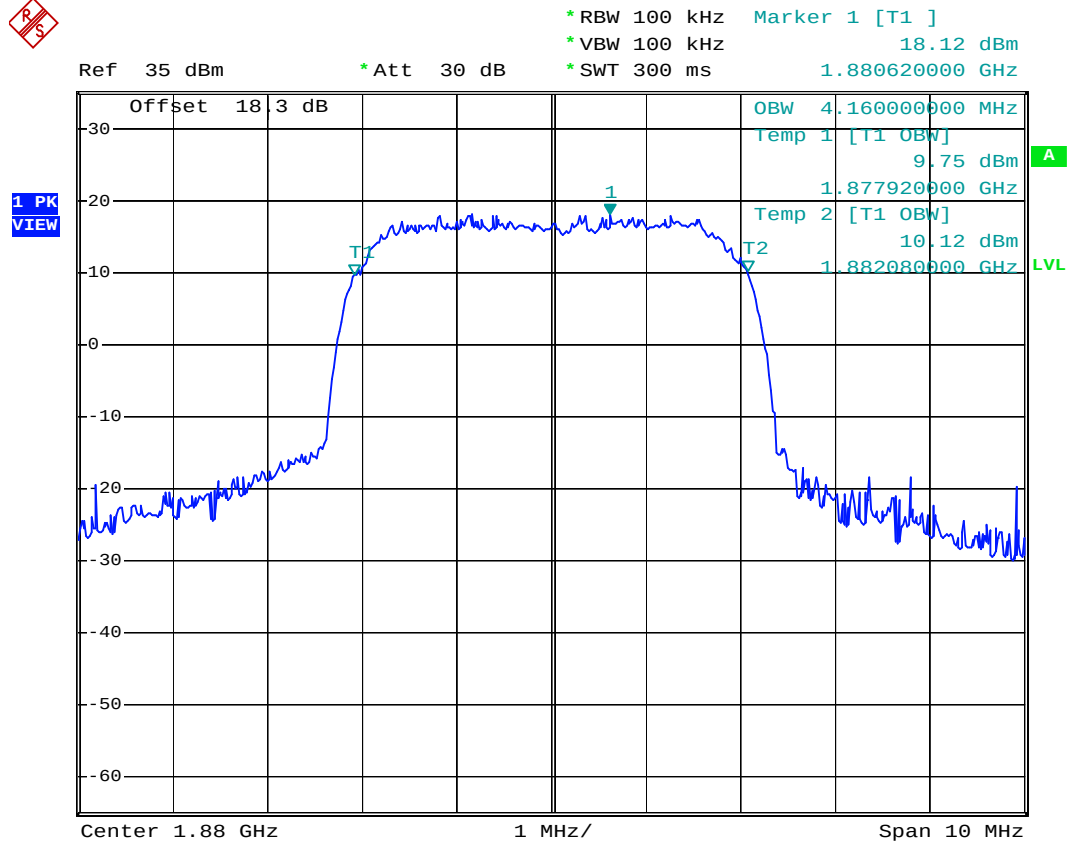


- Mode 8
- Test Mode : WCDMA Band II (HSDPA) CH9262 Lower Band Edge
- Power State : High



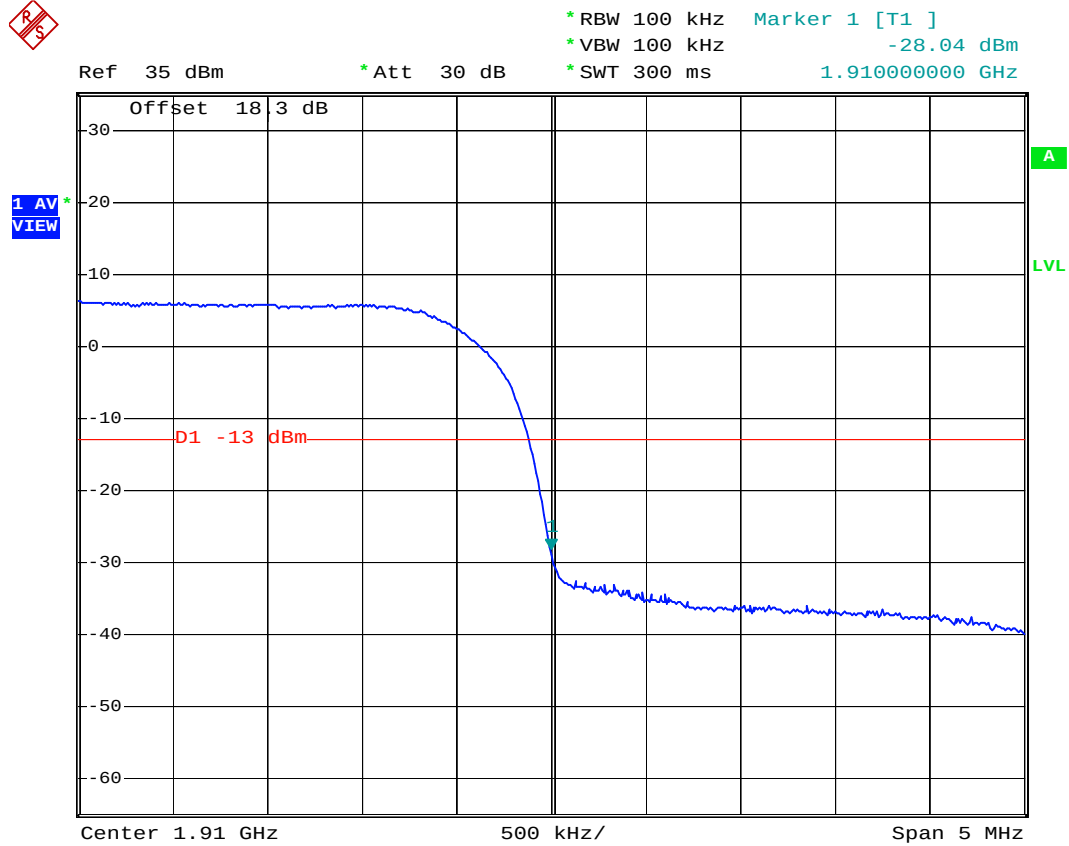


- Test Mode : WCDMA Band II (HSDPA) CH9400 99% Occupied Bandwidth
- Power State : High





- Test Mode : WCDMA Band II (HSDPA) CH9538 Higher Band Edge
- Power State : High



4.5 Conducted Emission

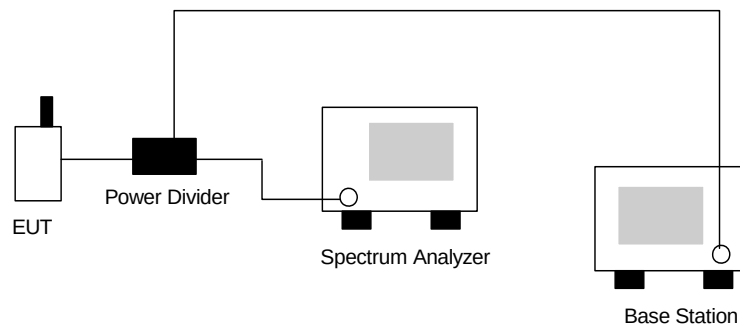
4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

4.5.2 Test Procedure

- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- The middle channel for the highest RF power within the transmitting frequency was measured.
- The conducted spurious emission for the whole frequency range was taken.

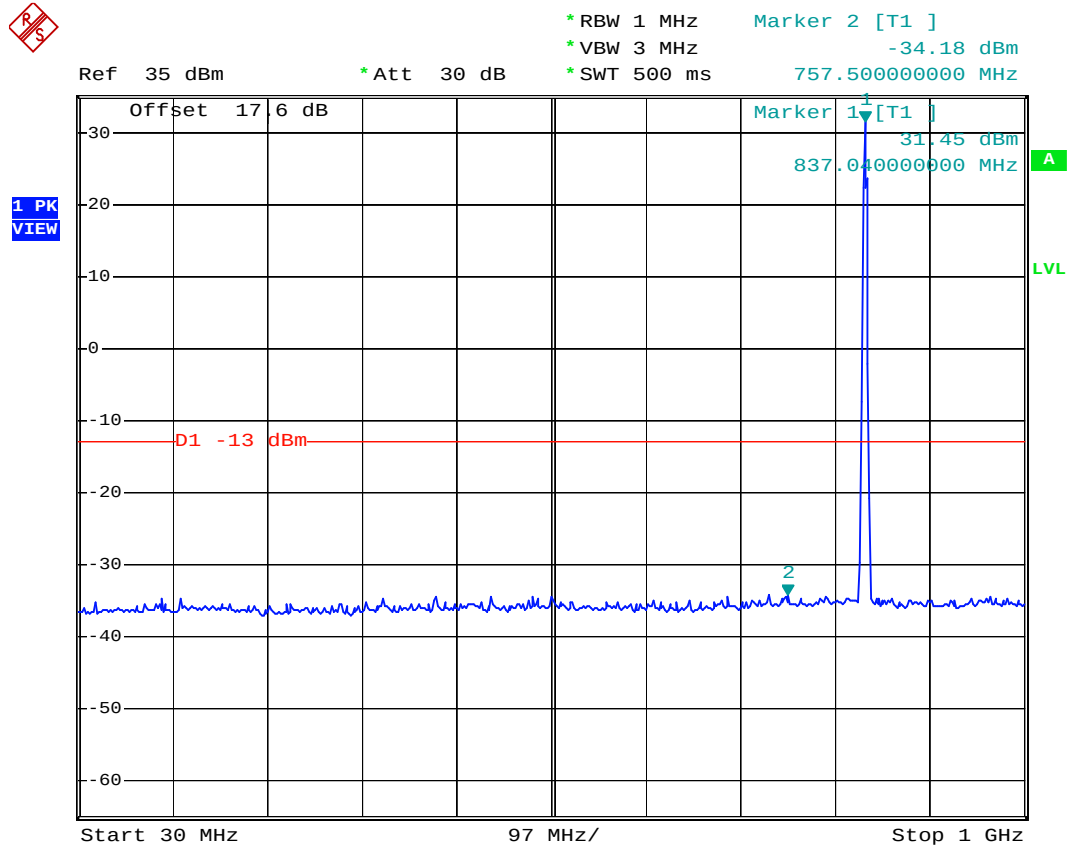
4.5.3 Test Setup Layout





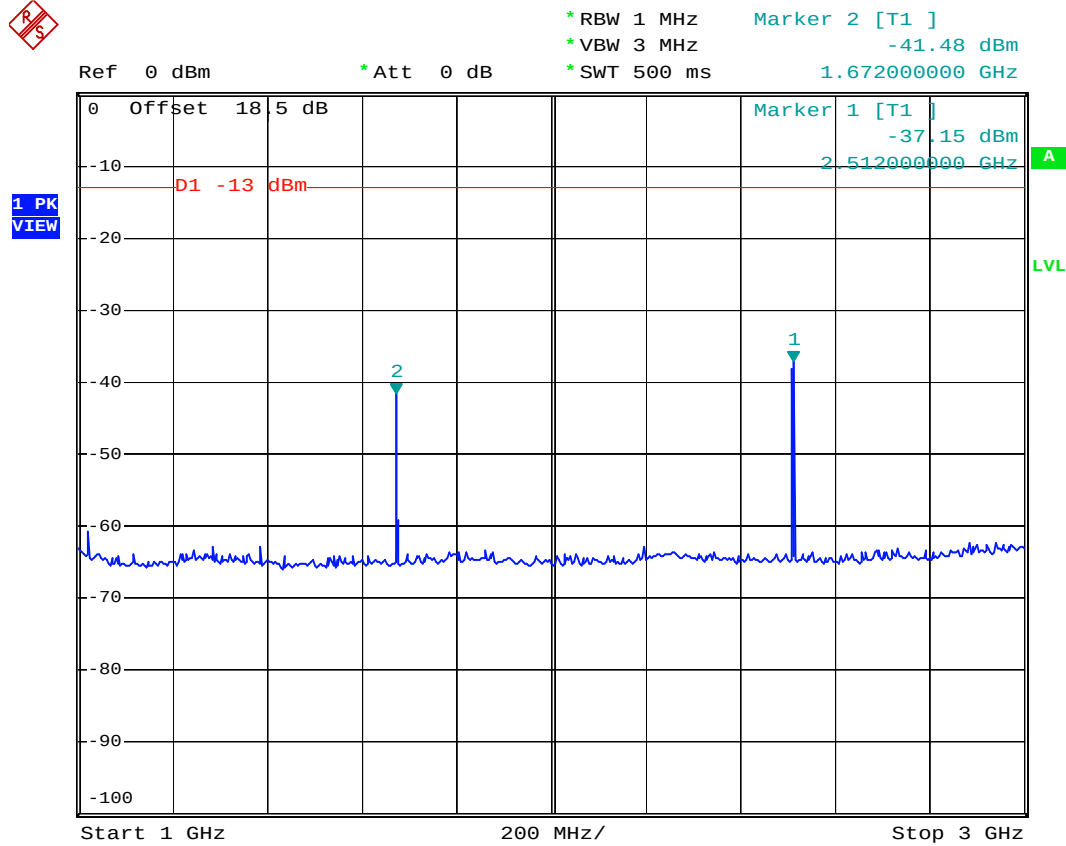
4 Test Result

- Mode 1
- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 30M-1G



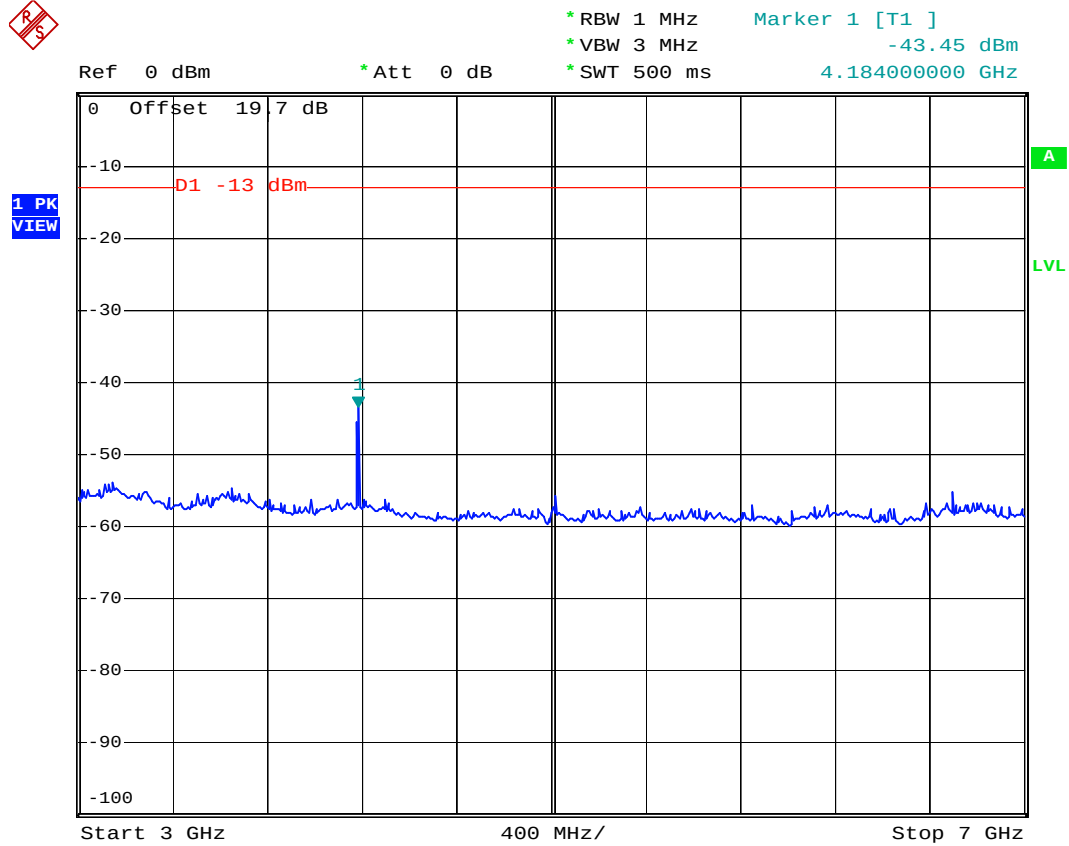


- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 1G-3G



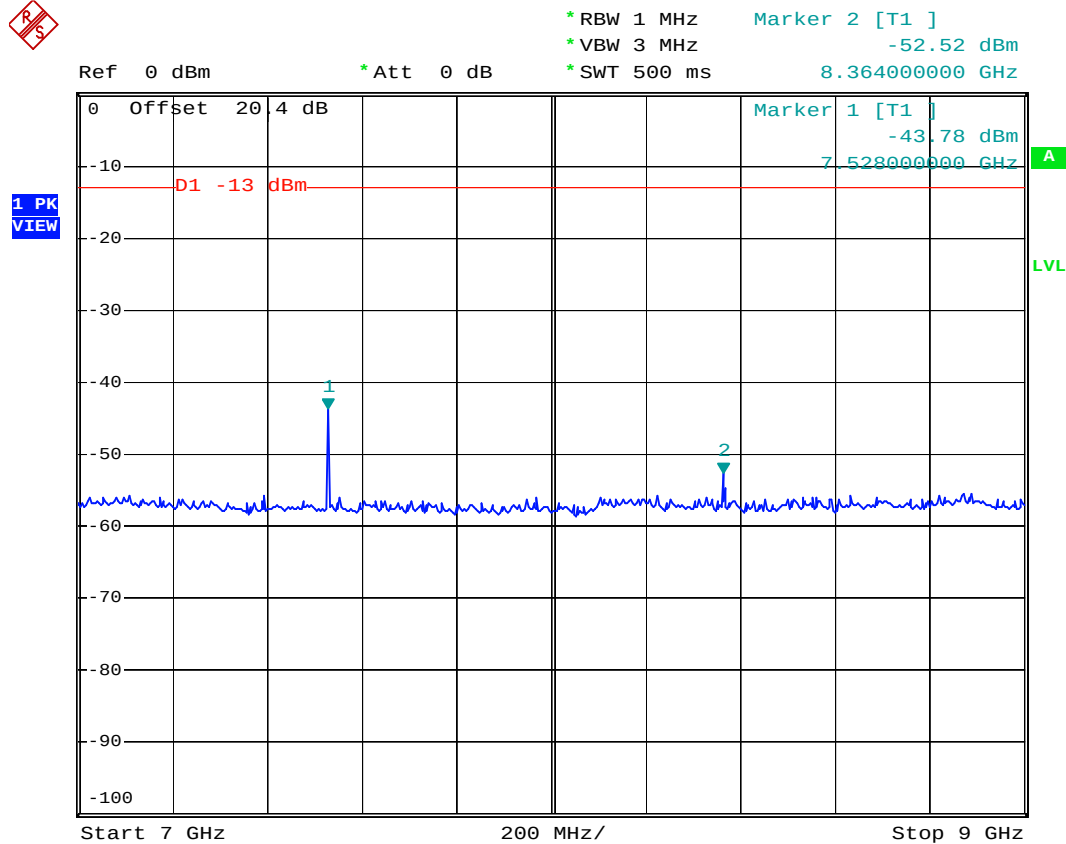


- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 3G-7G



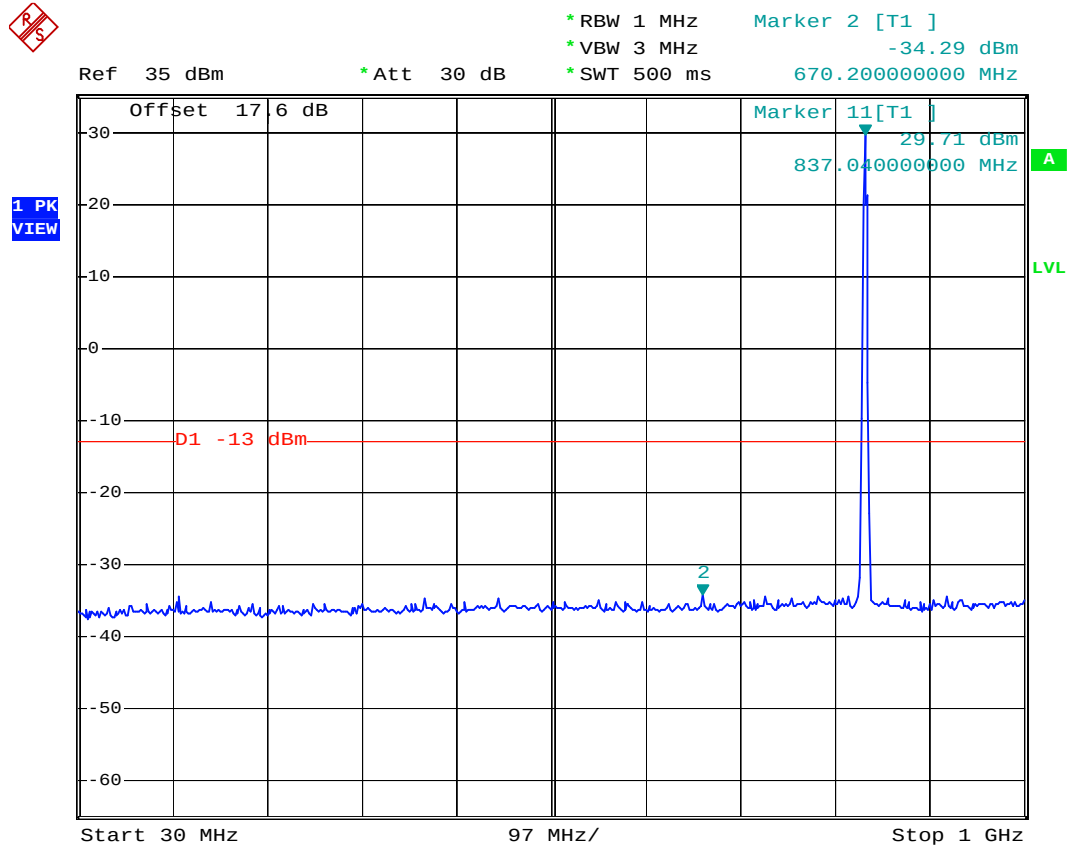


- Test Mode : GSM850 (GSM) CH189
- Frequency Range : 7G-9G



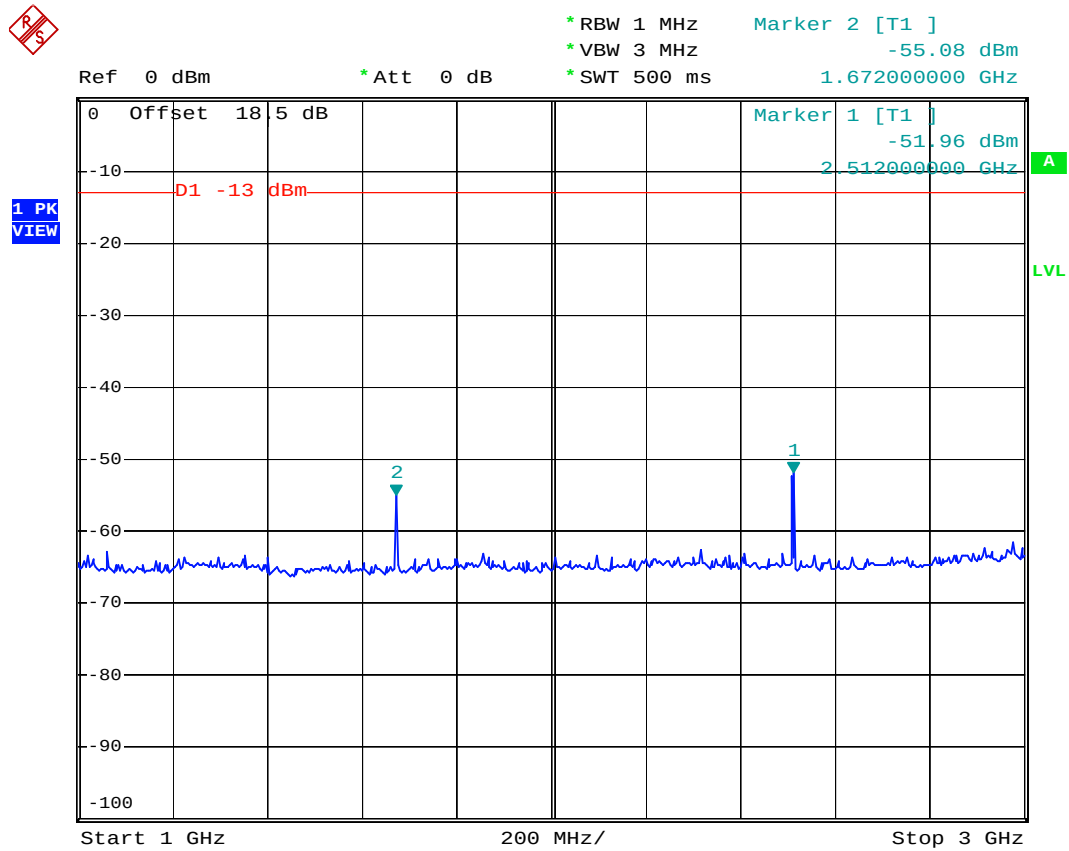


- Mode 2
- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 30M-1G



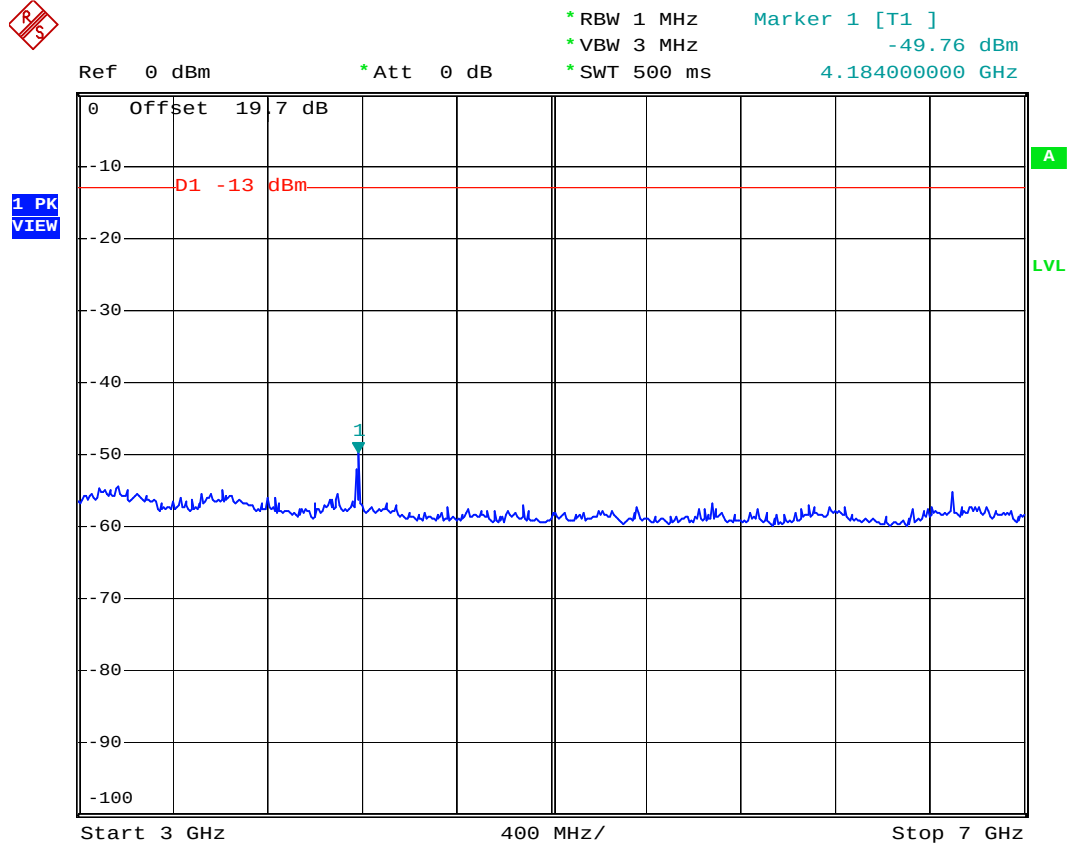


- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 1G-3G



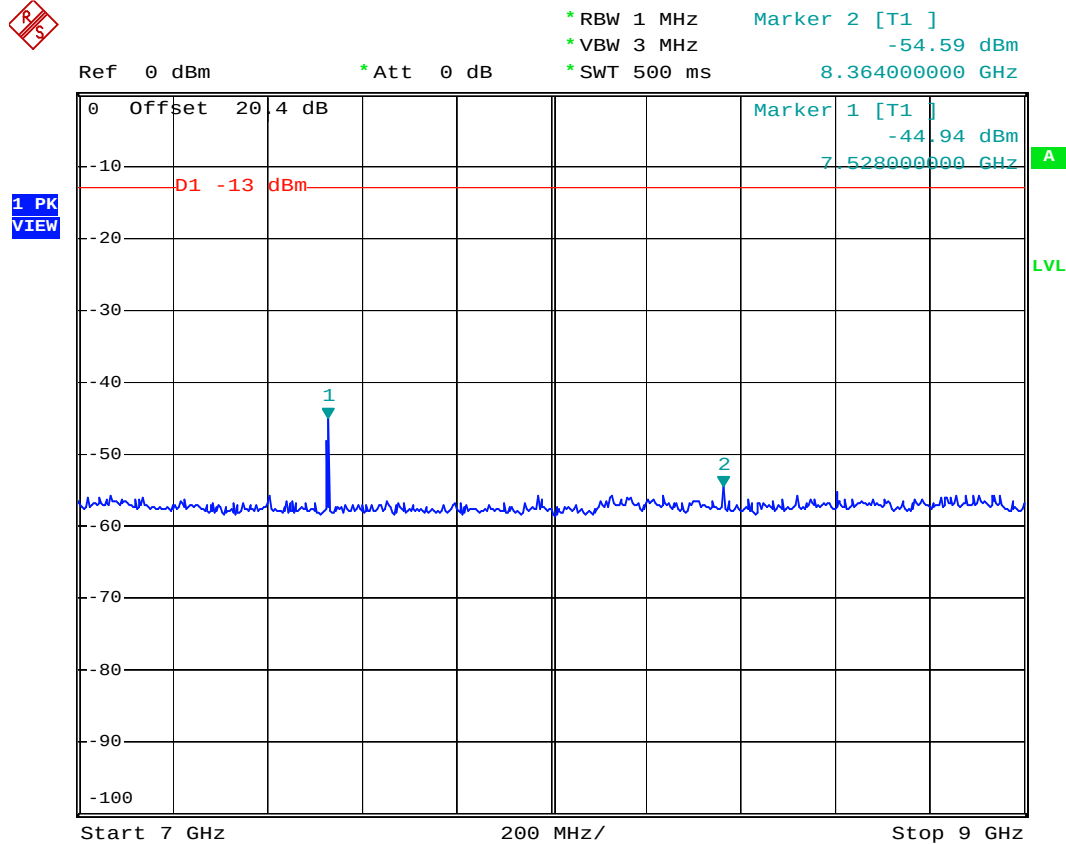


- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 3G-7G



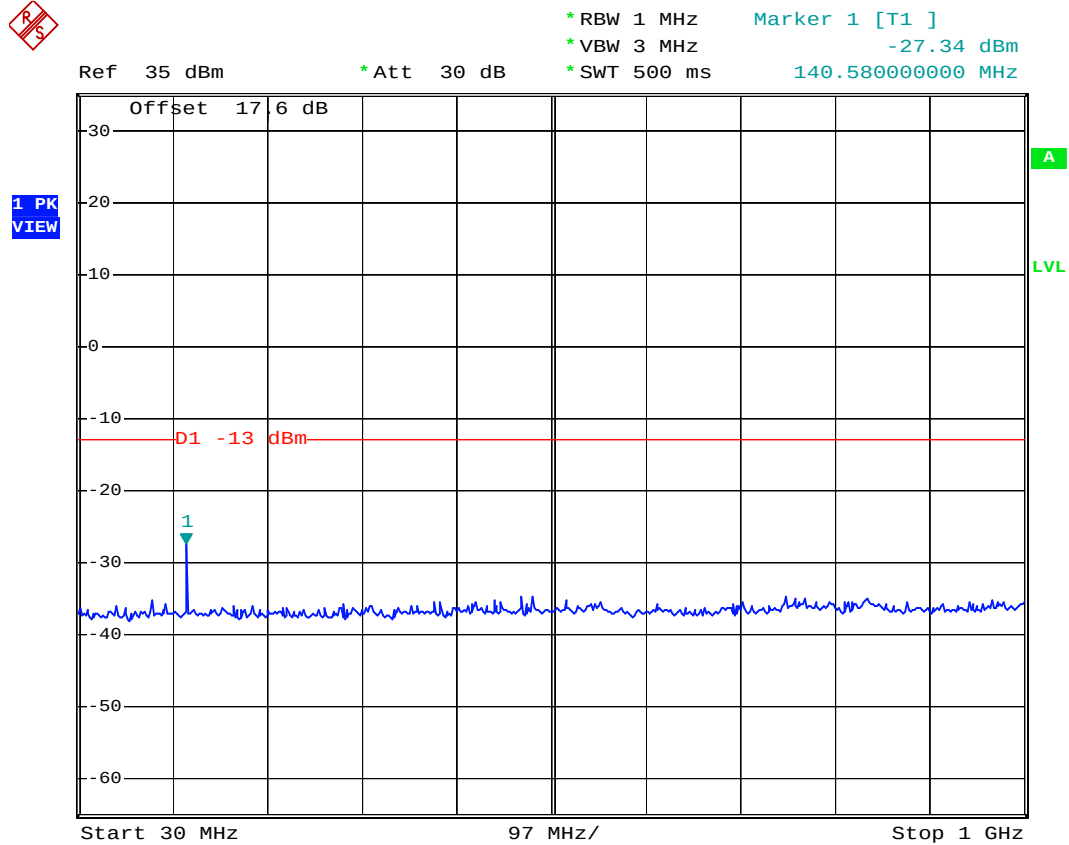


- Test Mode : GSM850 (EDGE) CH189
- Frequency Range : 7G-9G

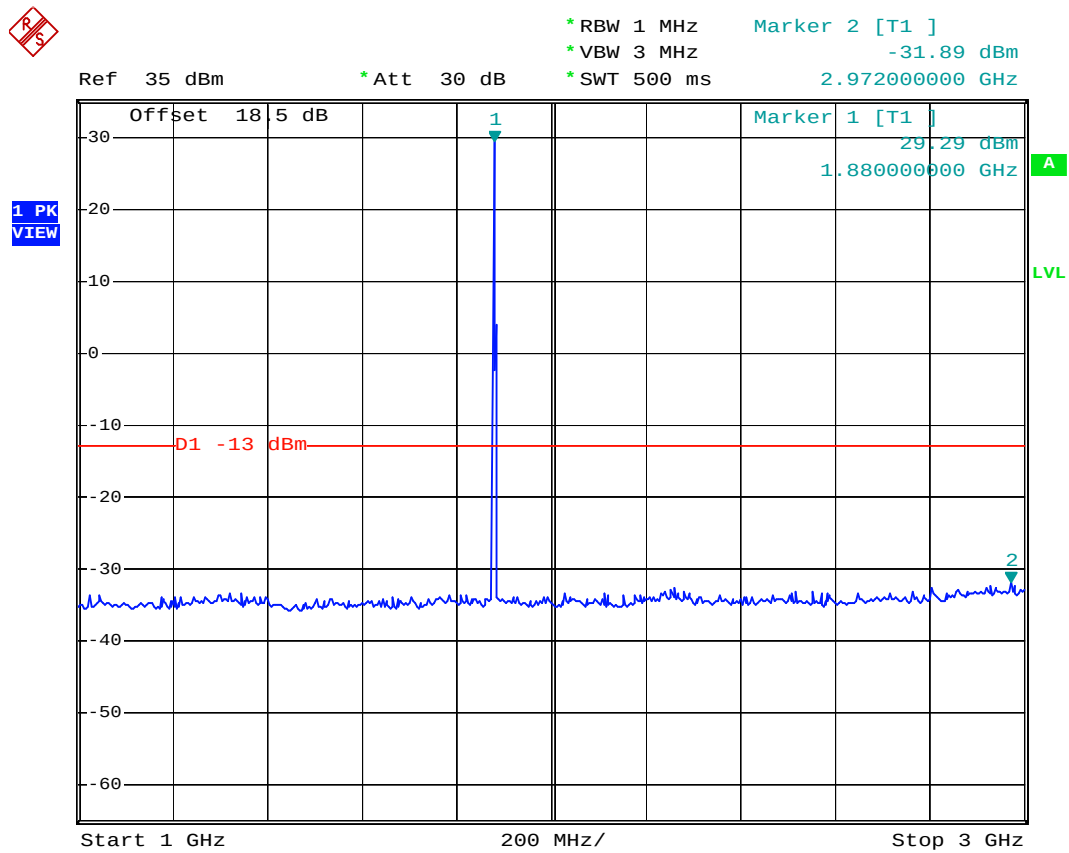




- Mode 3
- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 30M-1G

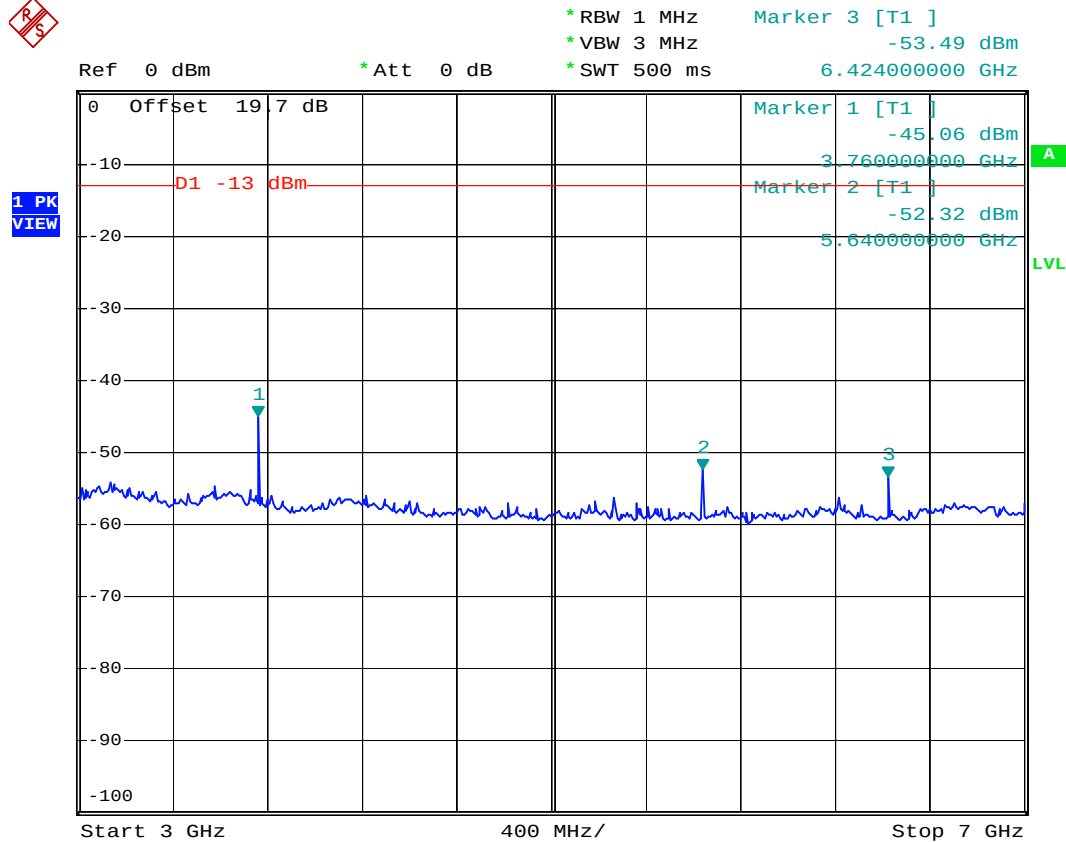


- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 1G-3G



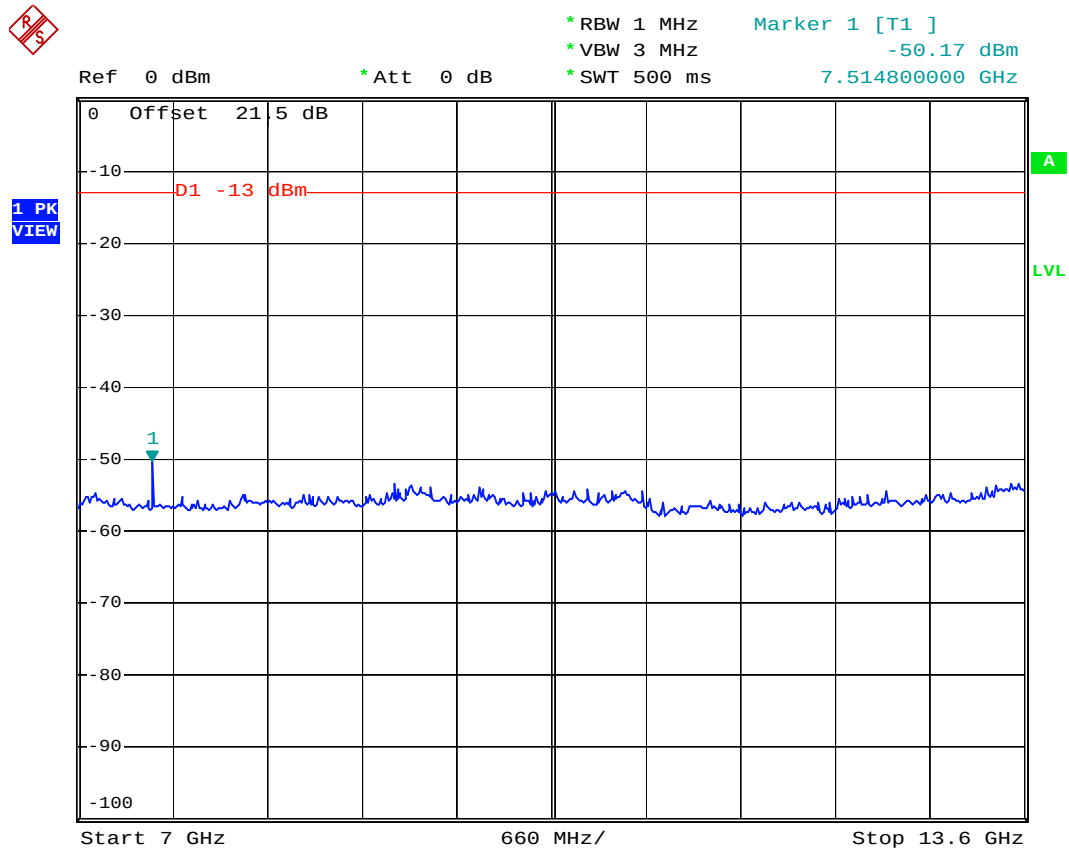


- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 3G-7G



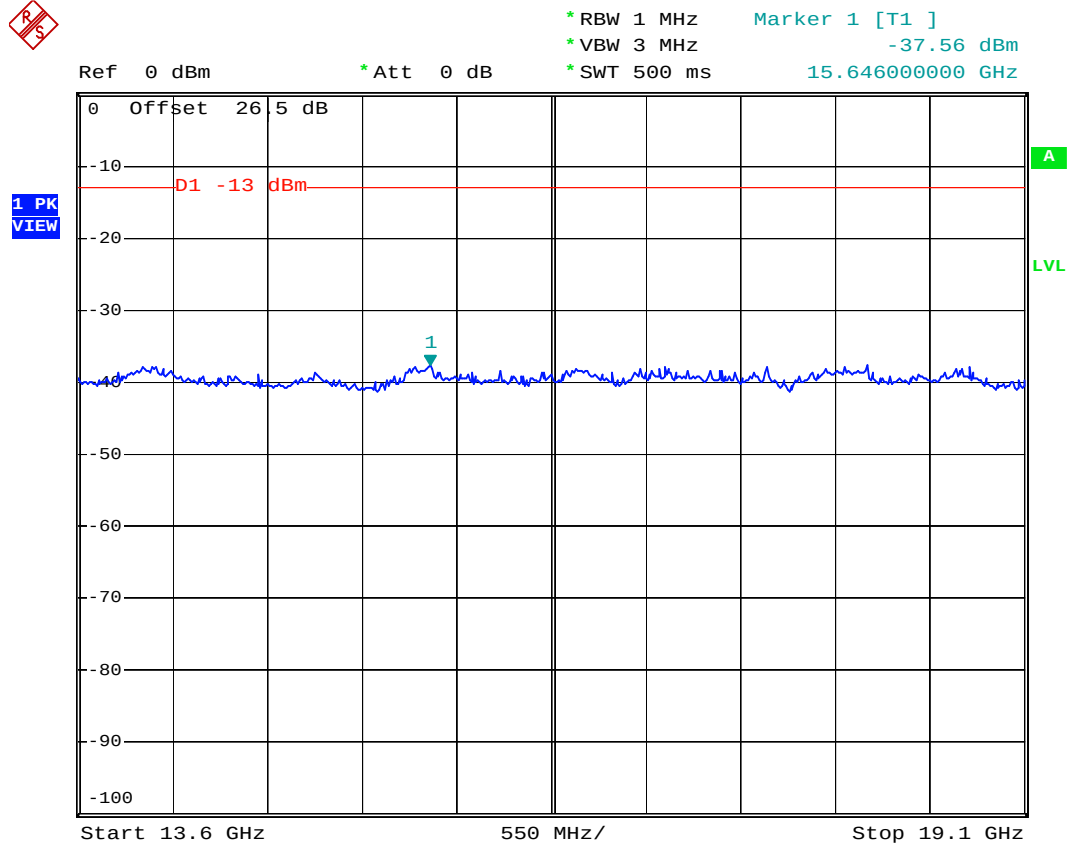


- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 7G-13.6G



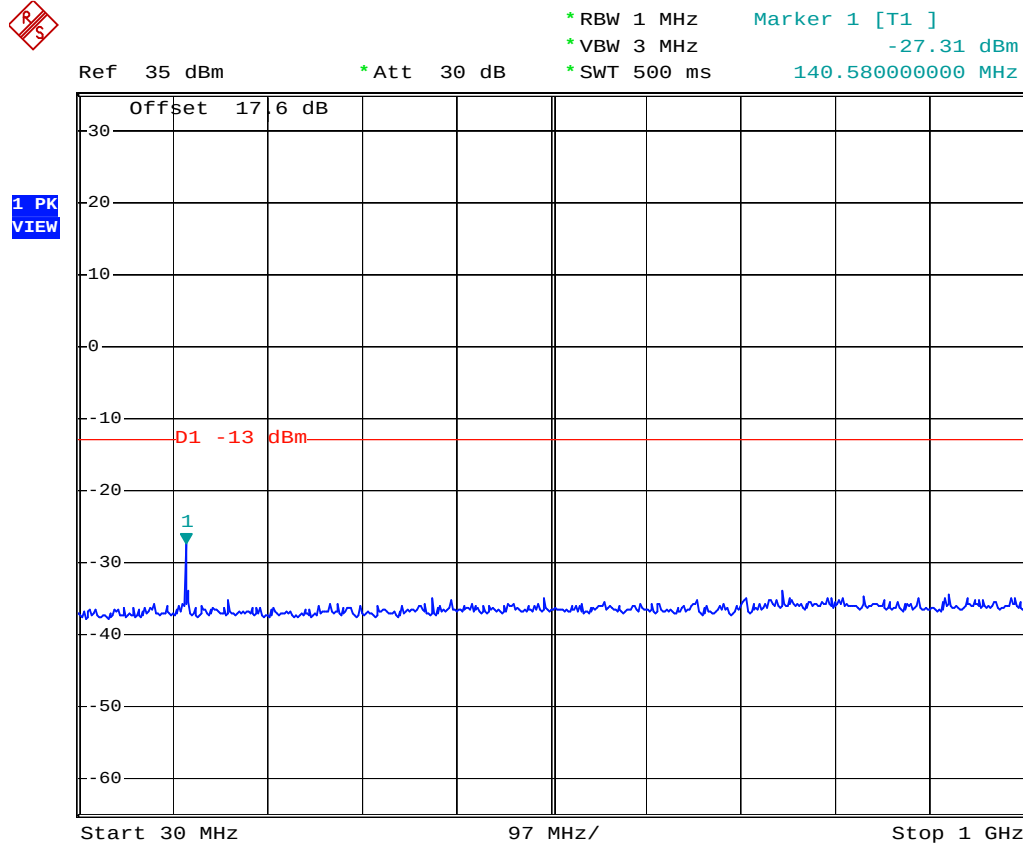


- Test Mode : PCS1900 (GSM) CH661
- Frequency Range : 13.6G-19.1G



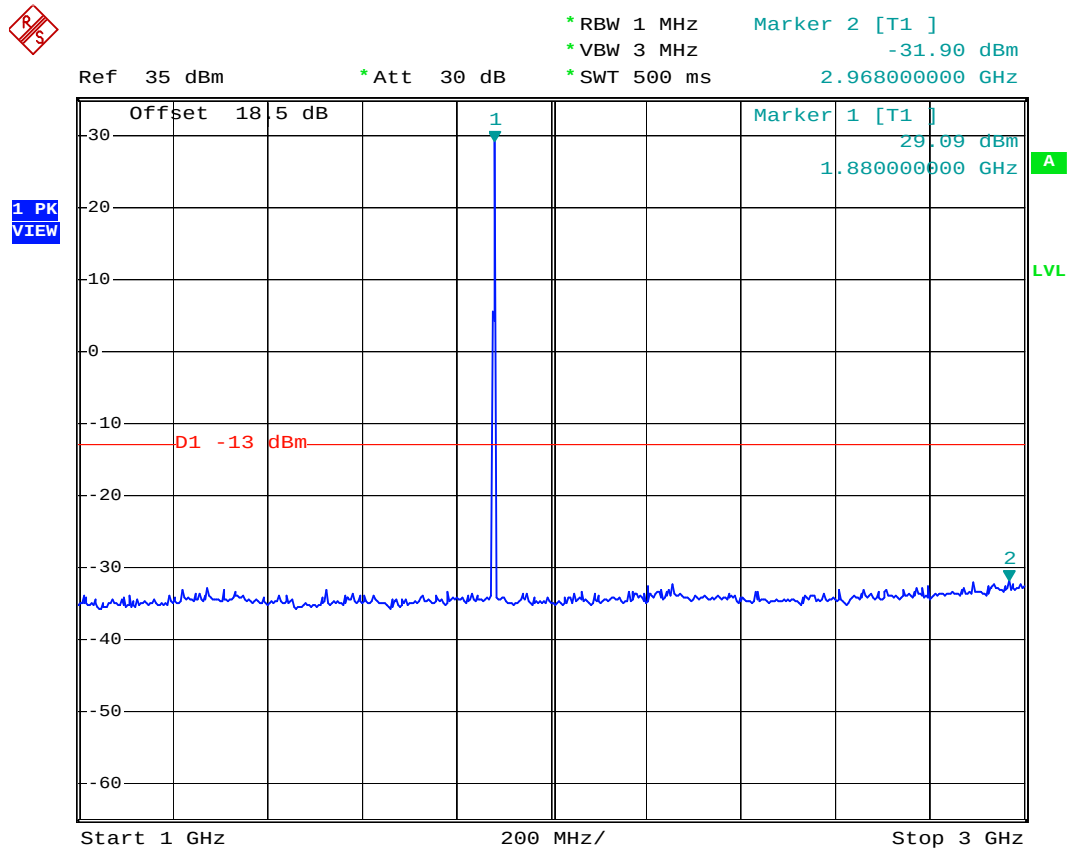


- Mode 4
- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 30M-1G



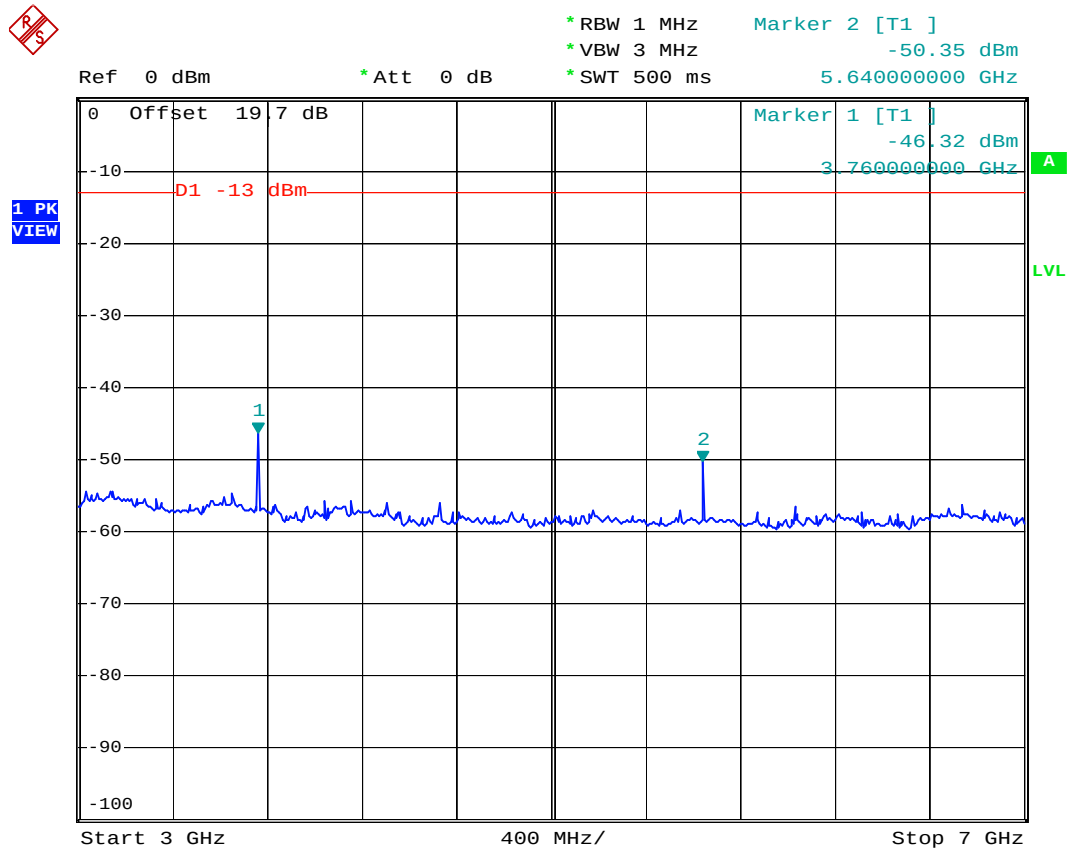


- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 1G-3G



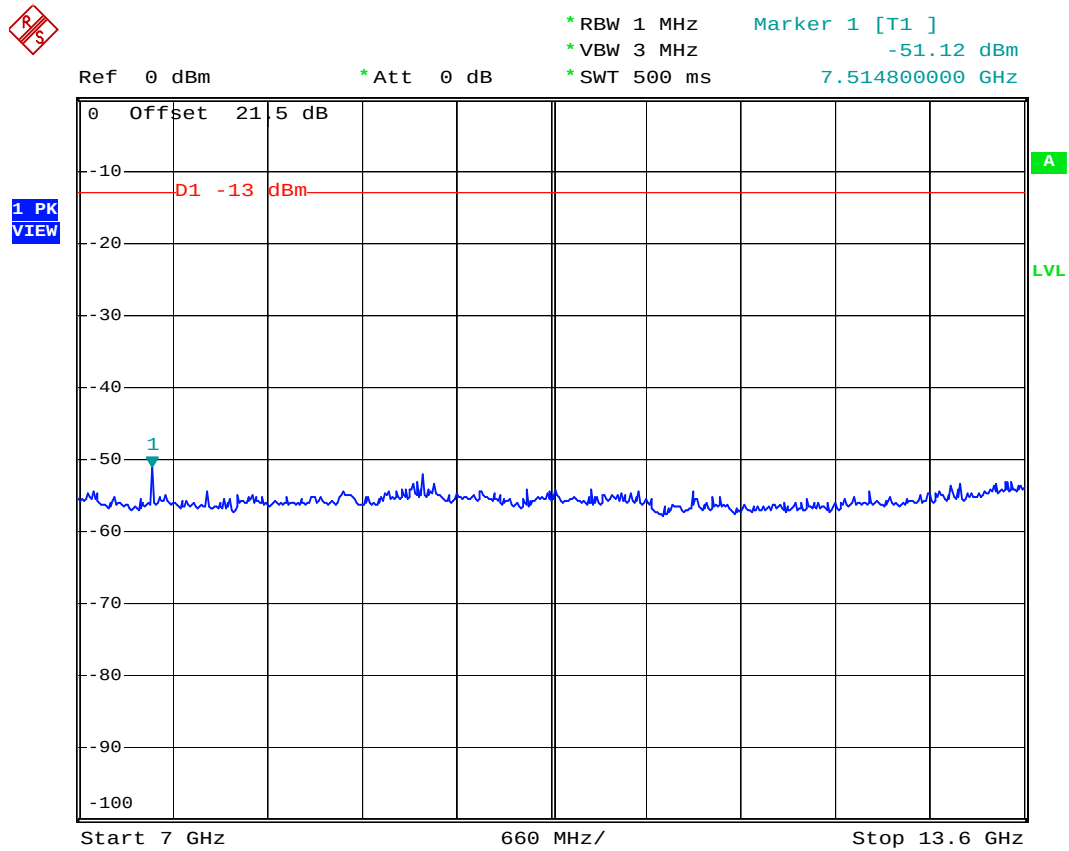


- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 3G-7G



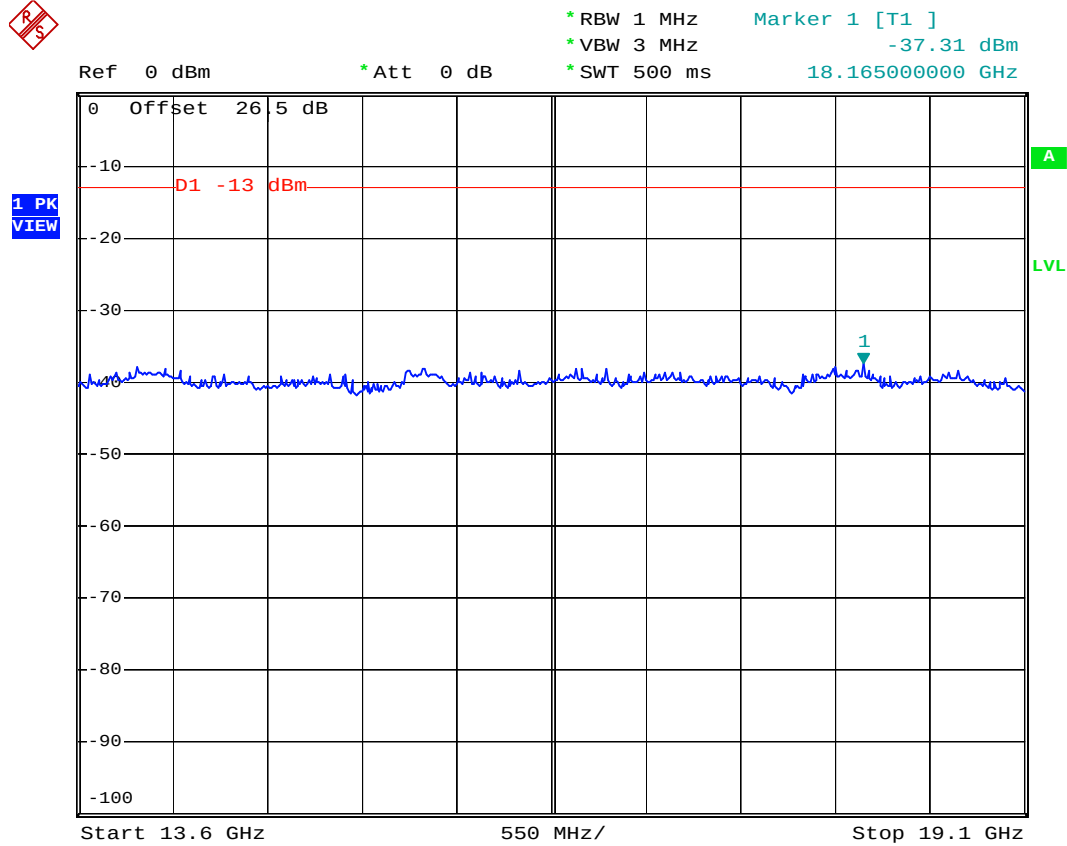


- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 7G-13.6G



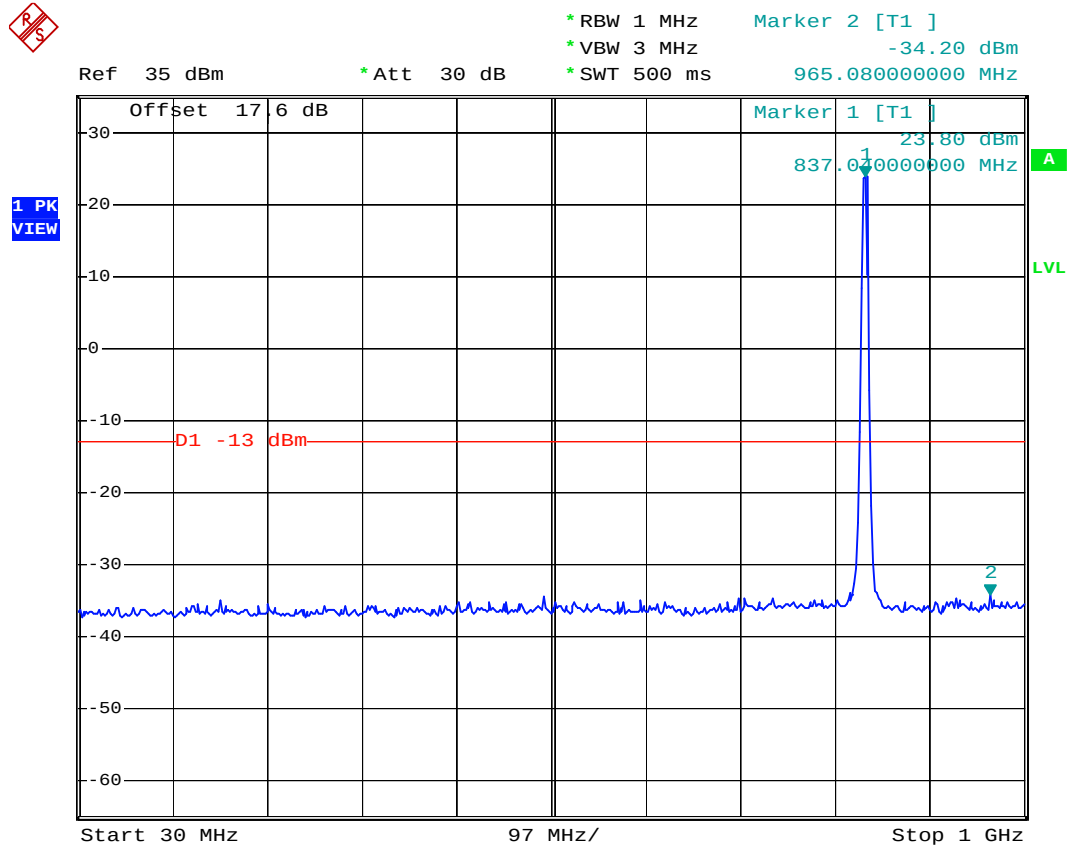


- Test Mode : PCS1900 (EDGE) CH661
- Frequency Range : 13.6G-19.1G



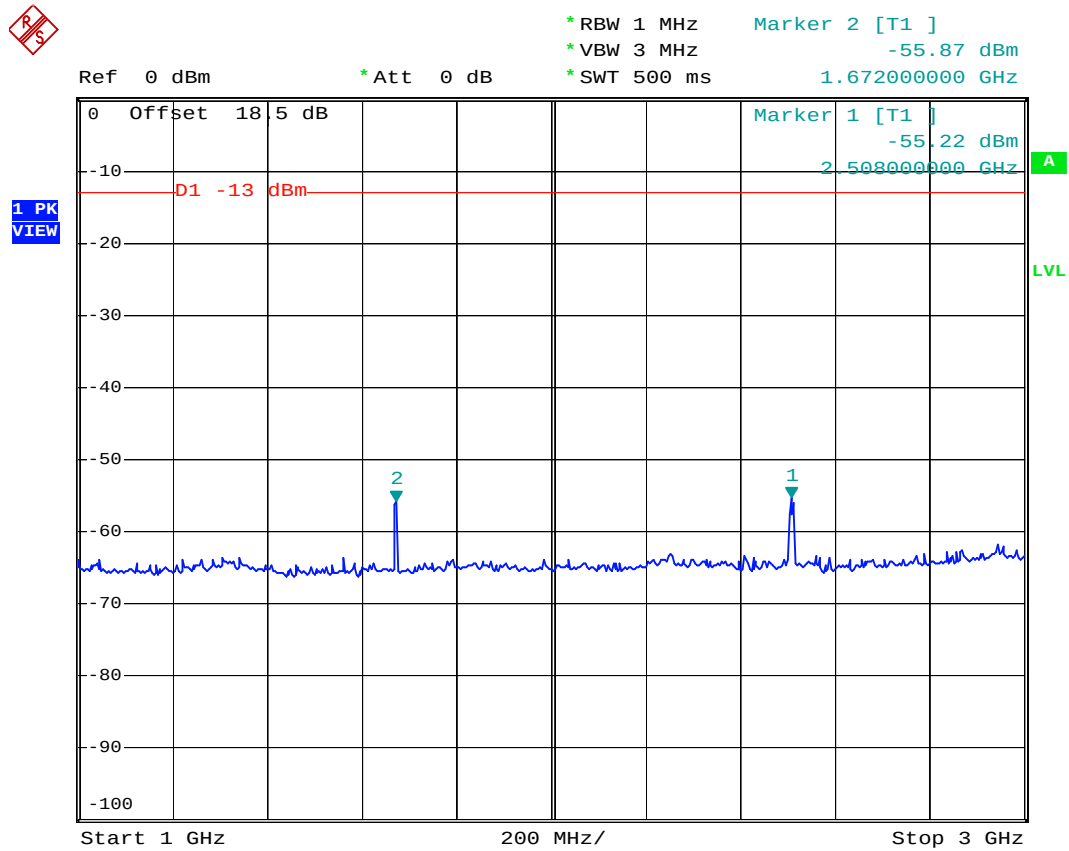


- Mode 5
- Test Mode : WCDMA Band V CH4182
- Frequency Range : 30M-1G



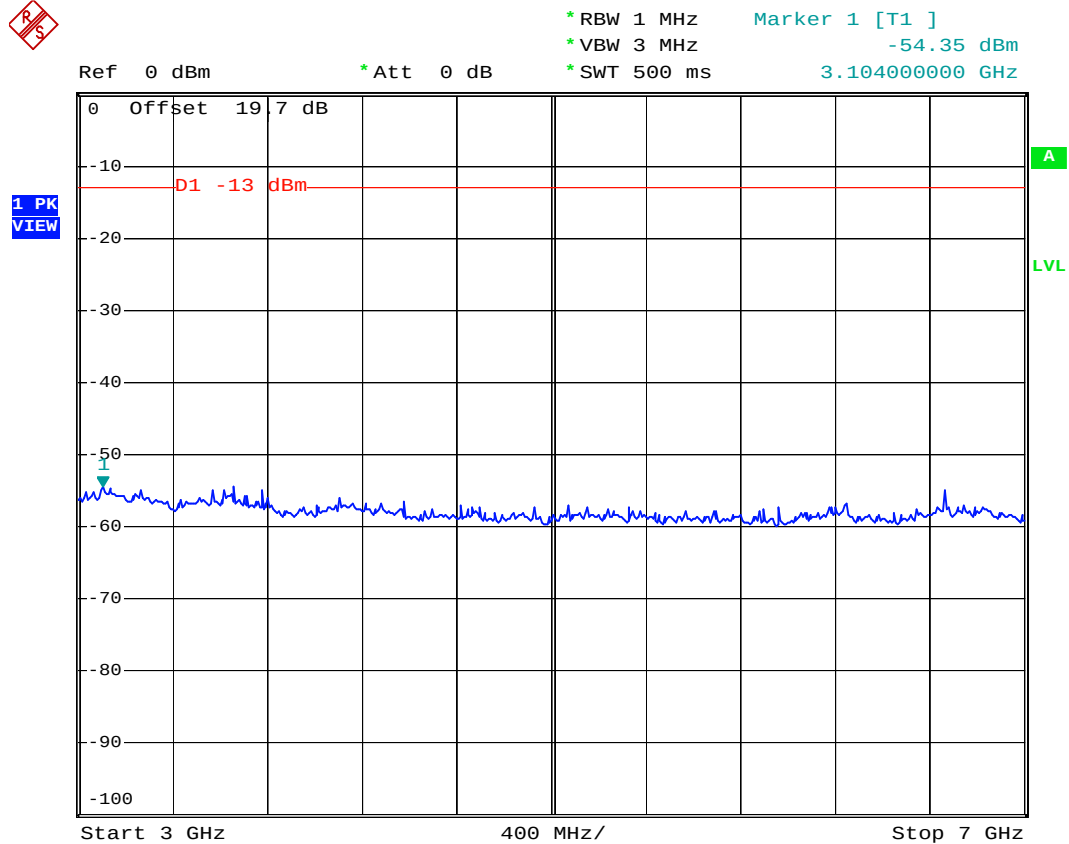


- Test Mode : WCDMA Band V CH4182
- Frequency Range : 1G-3G



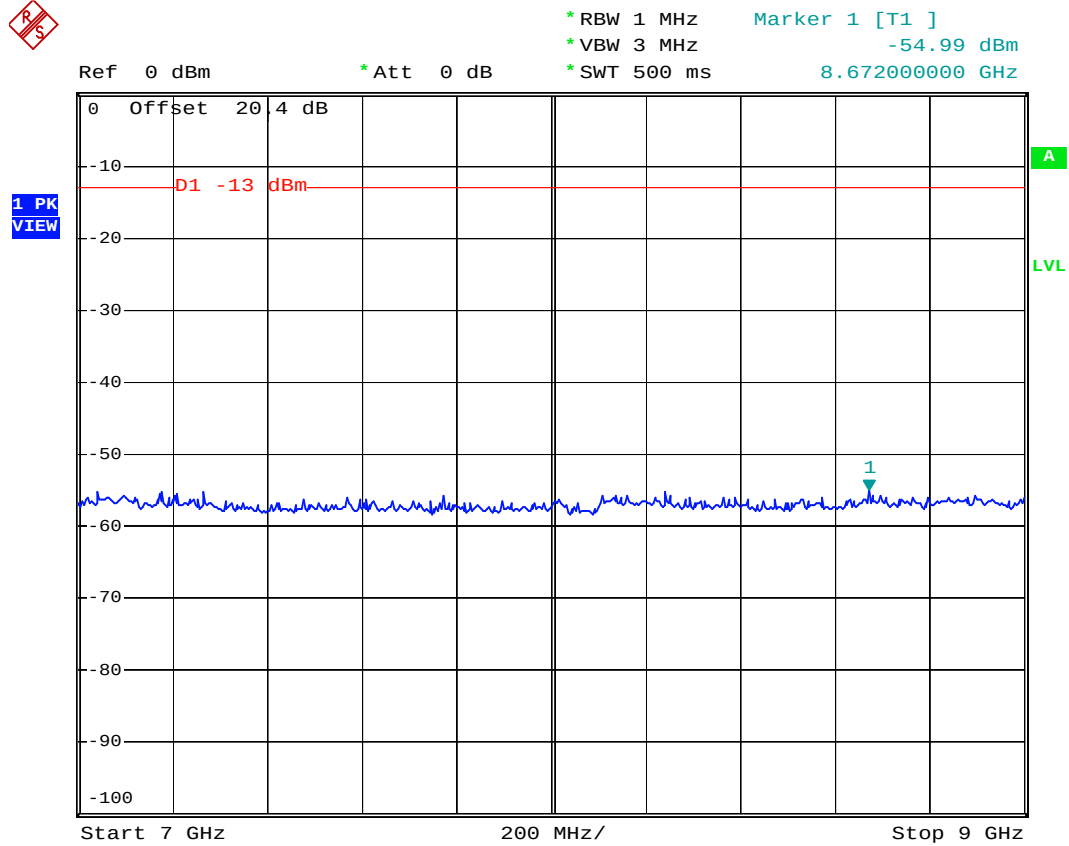


- Test Mode : WCDMA Band V CH4182
- Frequency Range : 3G-7G



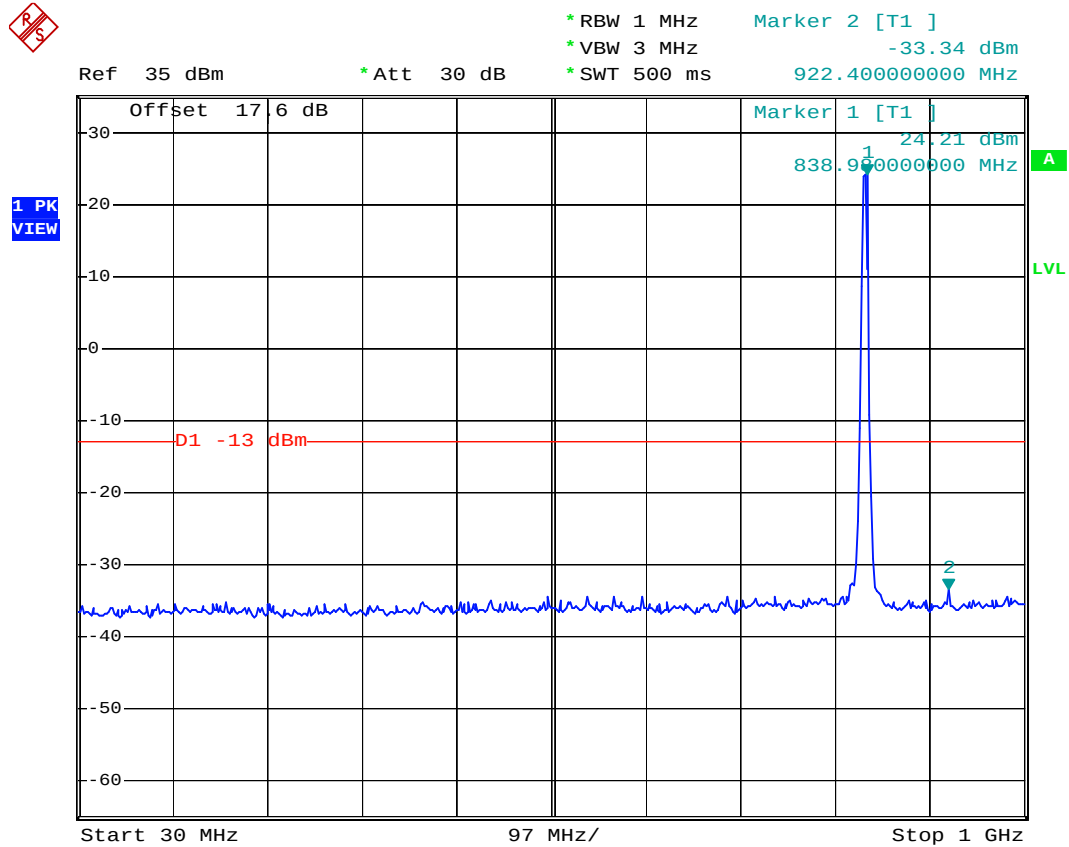


- Test Mode : WCDMA Band V CH4182
- Frequency Range : 7G-9G



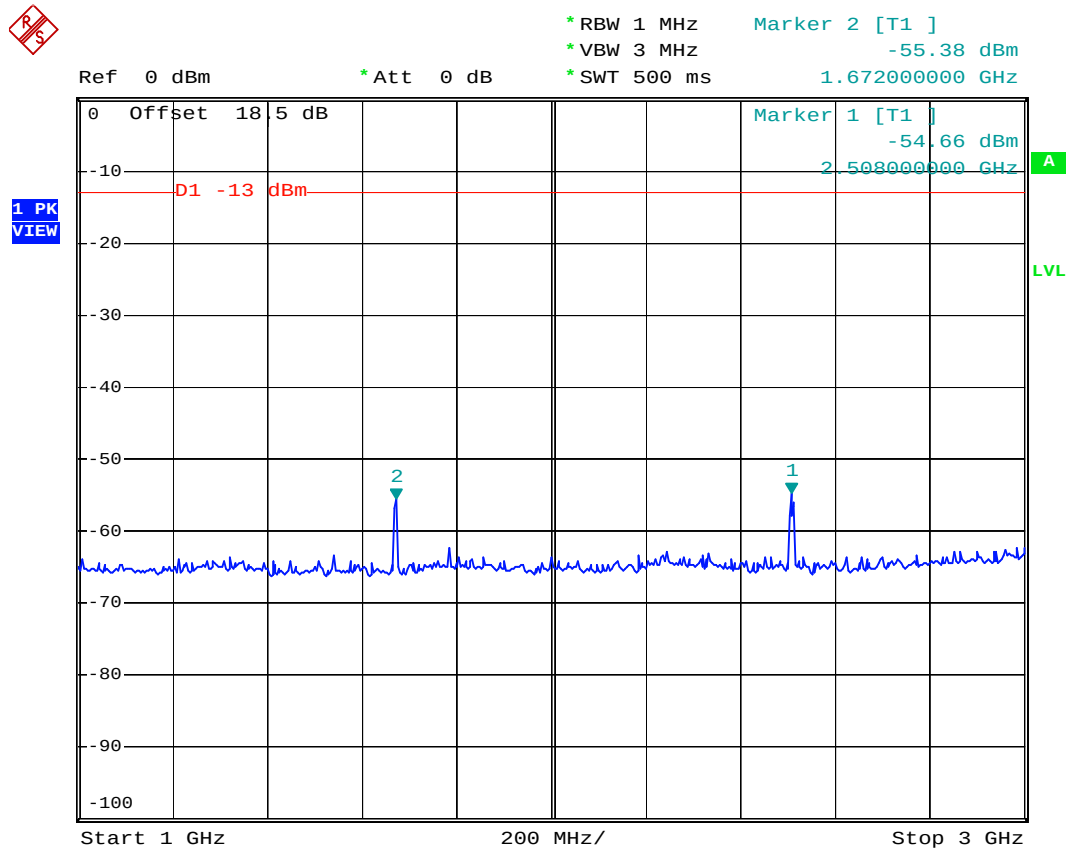


- Mode 6
- Test Mode : WCDMA Band V (HSDPA) CH4182
- Frequency Range : 30M-1G



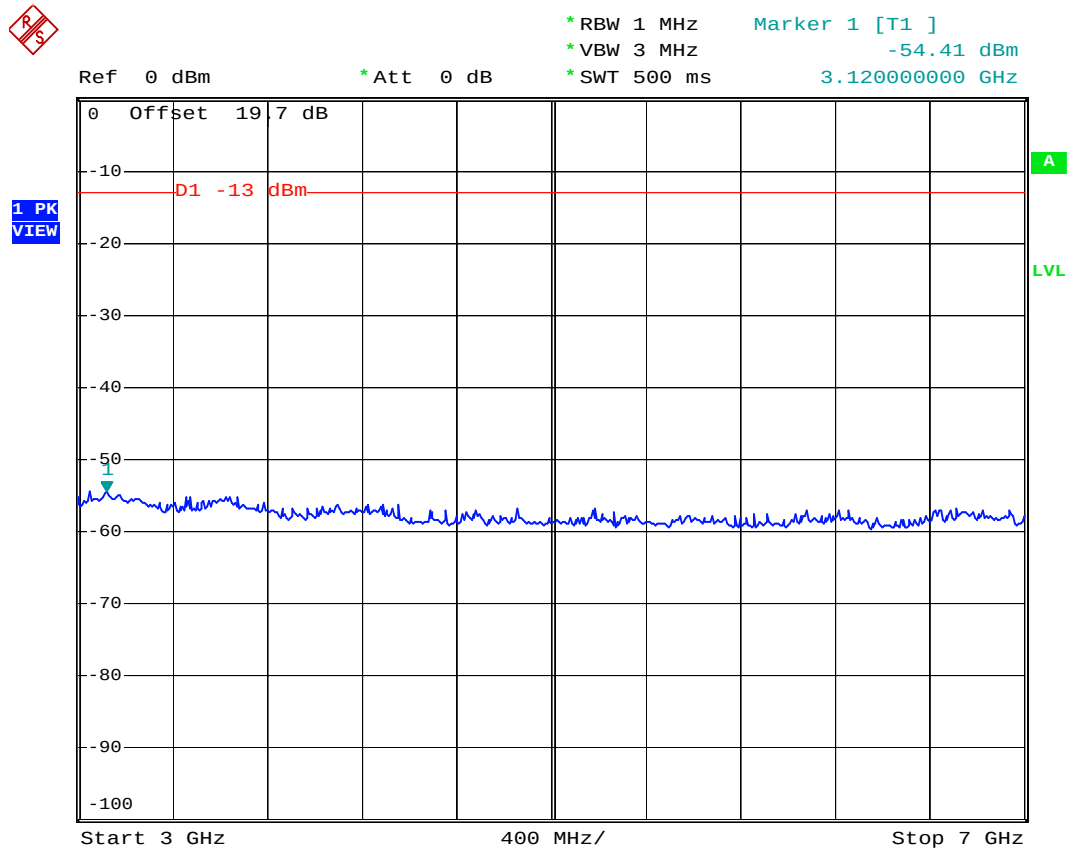


- Test Mode : WCDMA Band V (HSDPA) CH4182
- Frequency Range : 1G-3G



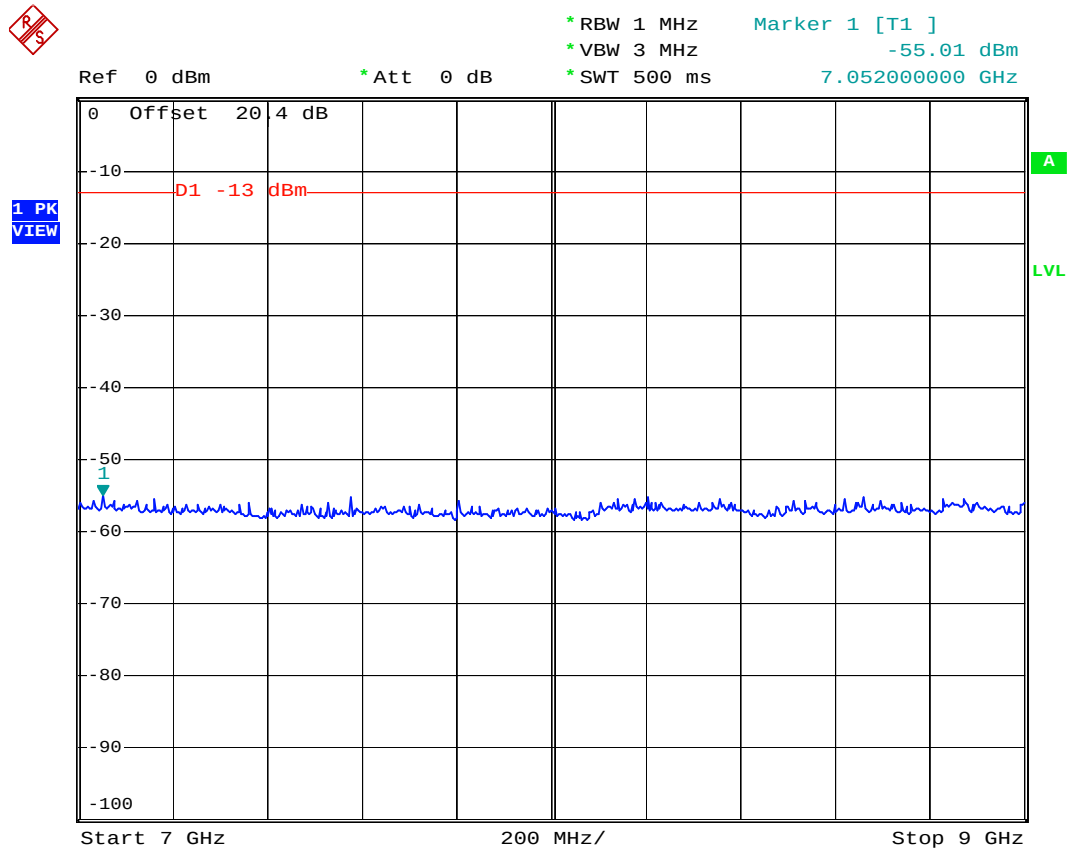


- Test Mode : WCDMA Band V (HSDPA) CH4182
- Frequency Range : 3G-7G



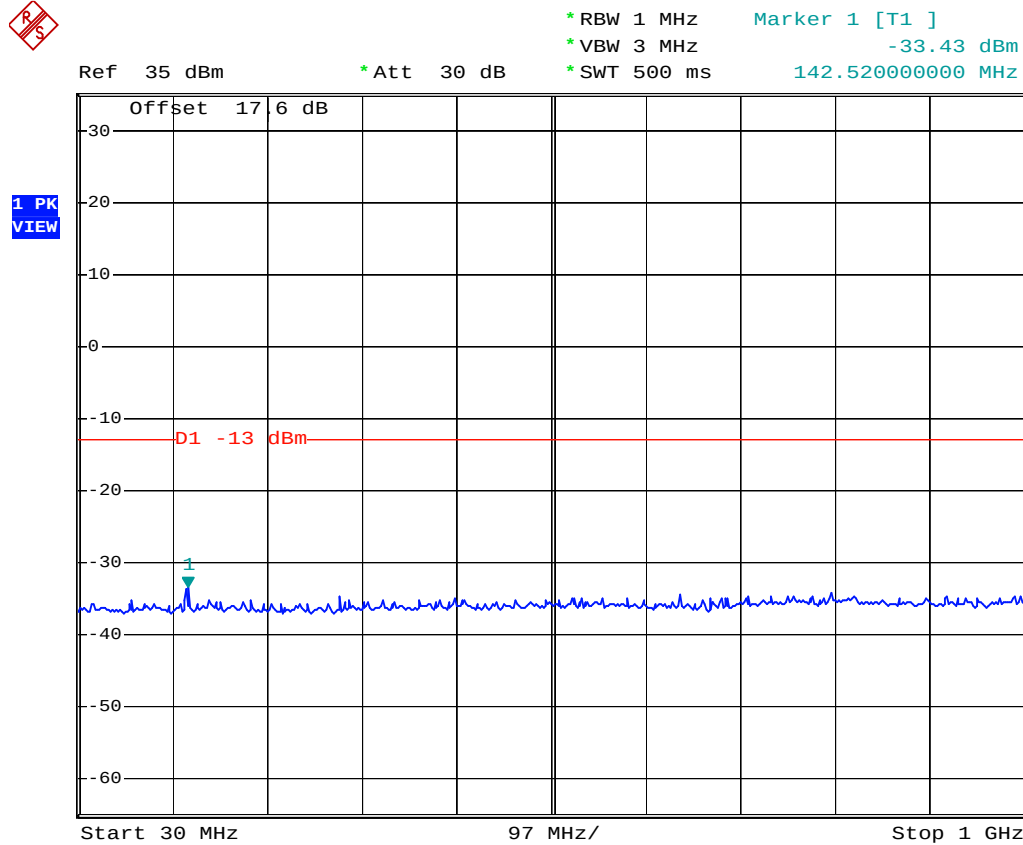


- Test Mode : WCDMA Band V (HSDPA) CH4182
- Frequency Range : 7G-9G



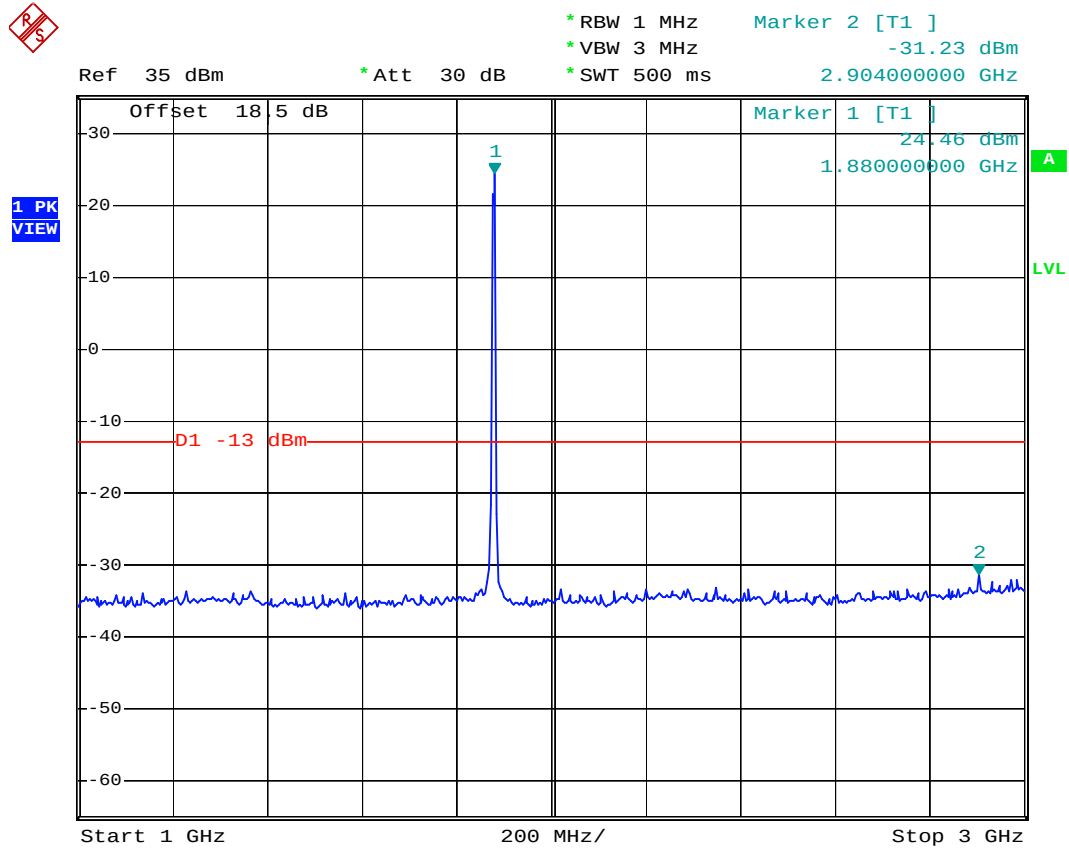


- Mode 7
- Test Mode : WCDMA Band II CH9400
- Frequency Range : 30M-1G



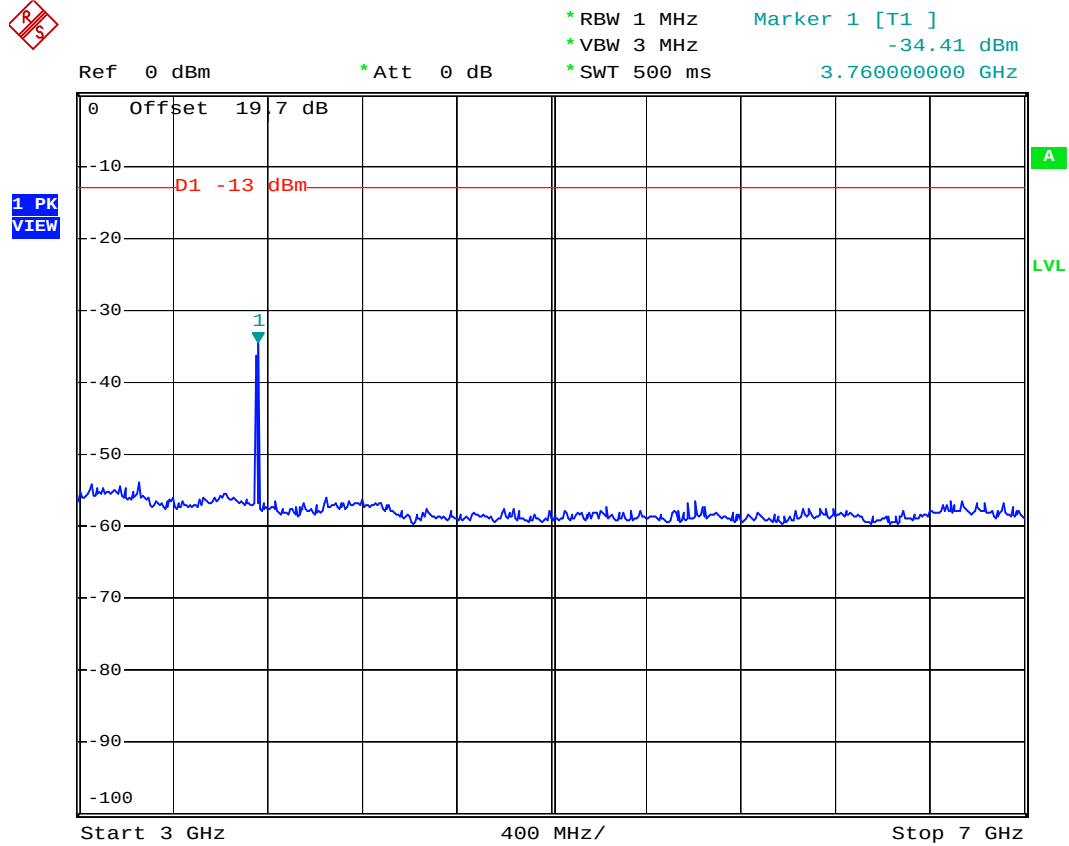


- Test Mode : WCDMA Band II CH9400
- Frequency Range : 1G-3G



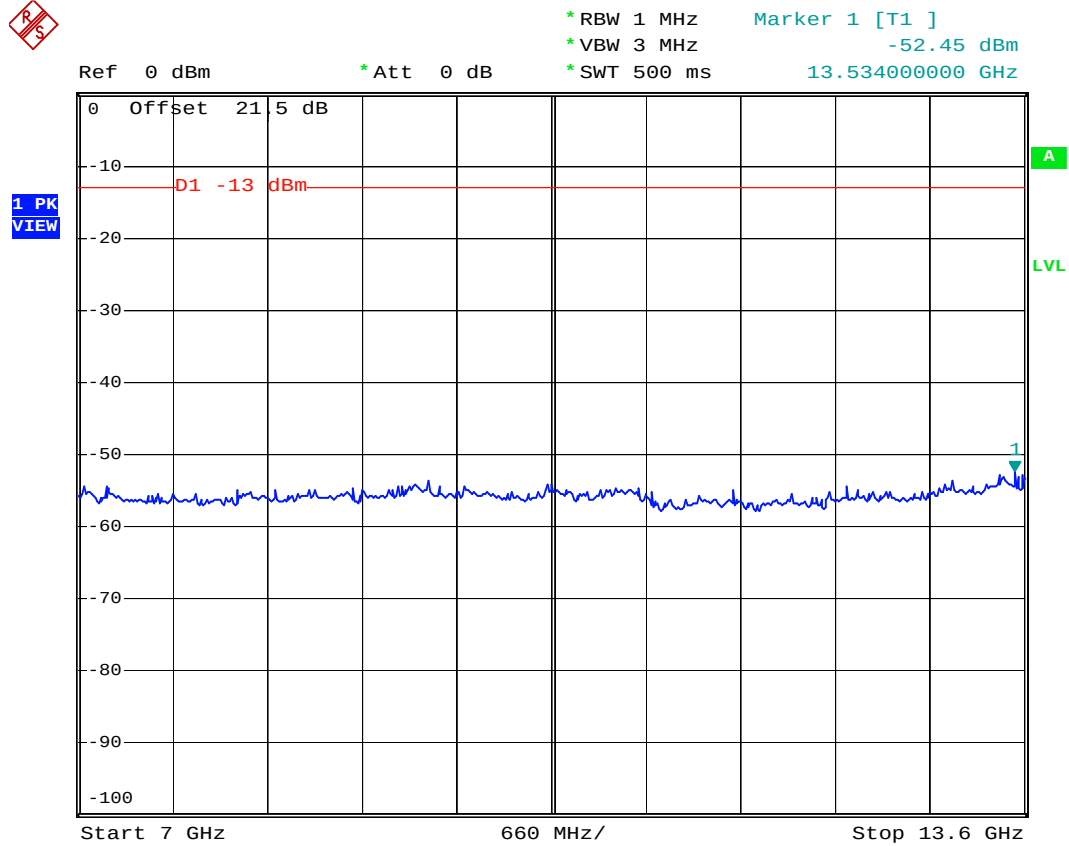


- Test Mode : WCDMA Band II CH9400
- Frequency Range : 3G-7G



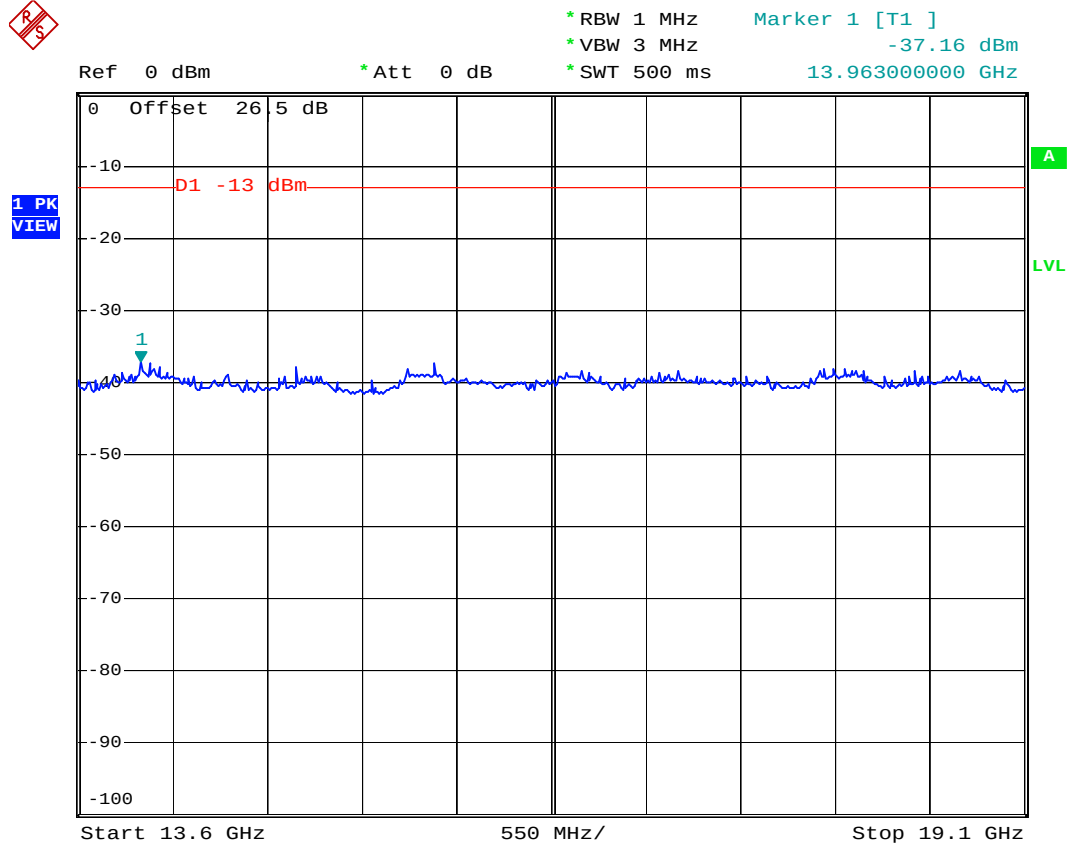


- Test Mode : WCDMA Band II CH9400
- Frequency Range : 7G-13.6G



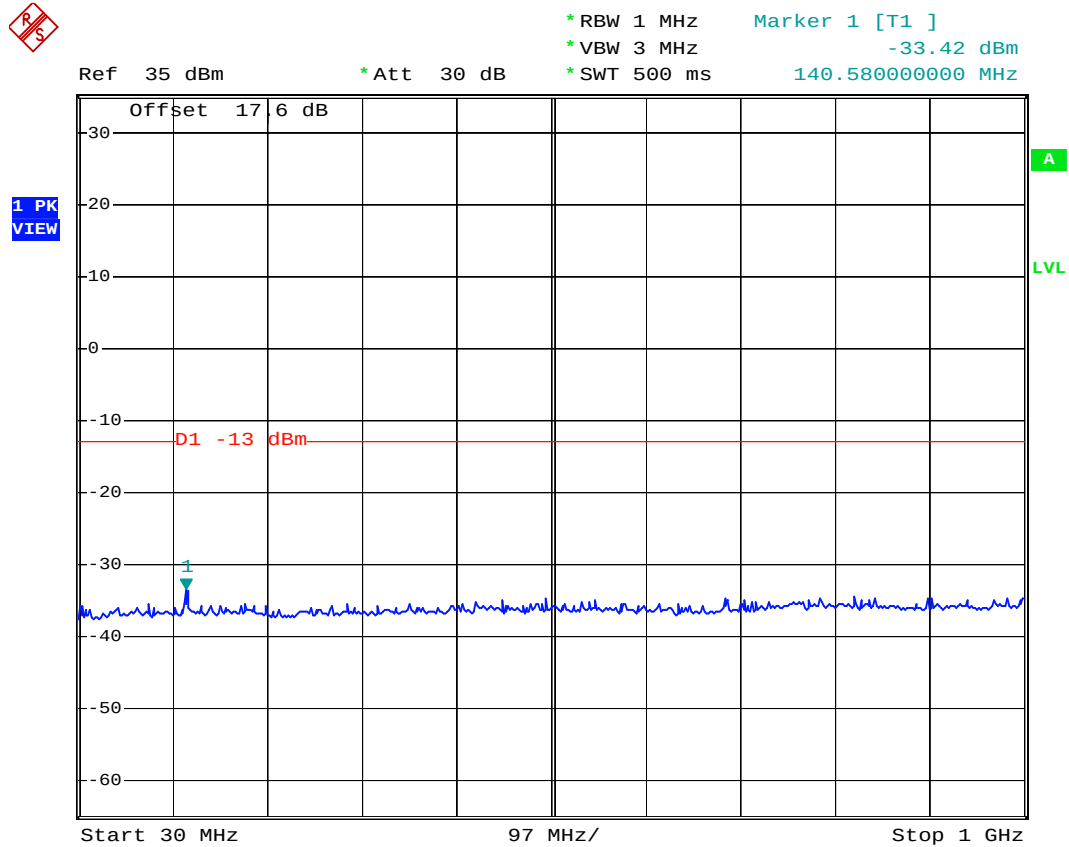


- Test Mode : WCDMA Band II CH9400
- Frequency Range : 13.6G-19.1G



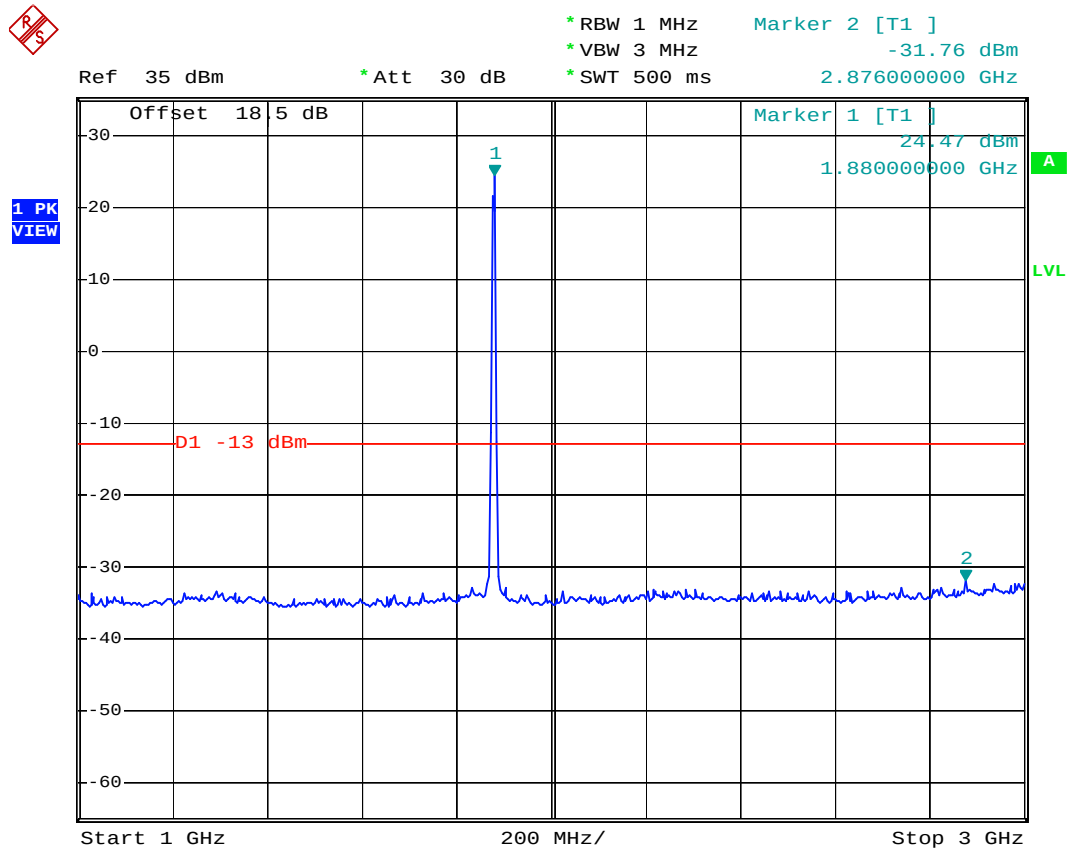


- Mode 8
- Test Mode : WCDMA Band II (HSDPA) CH9400
- Frequency Range : 30M-1G



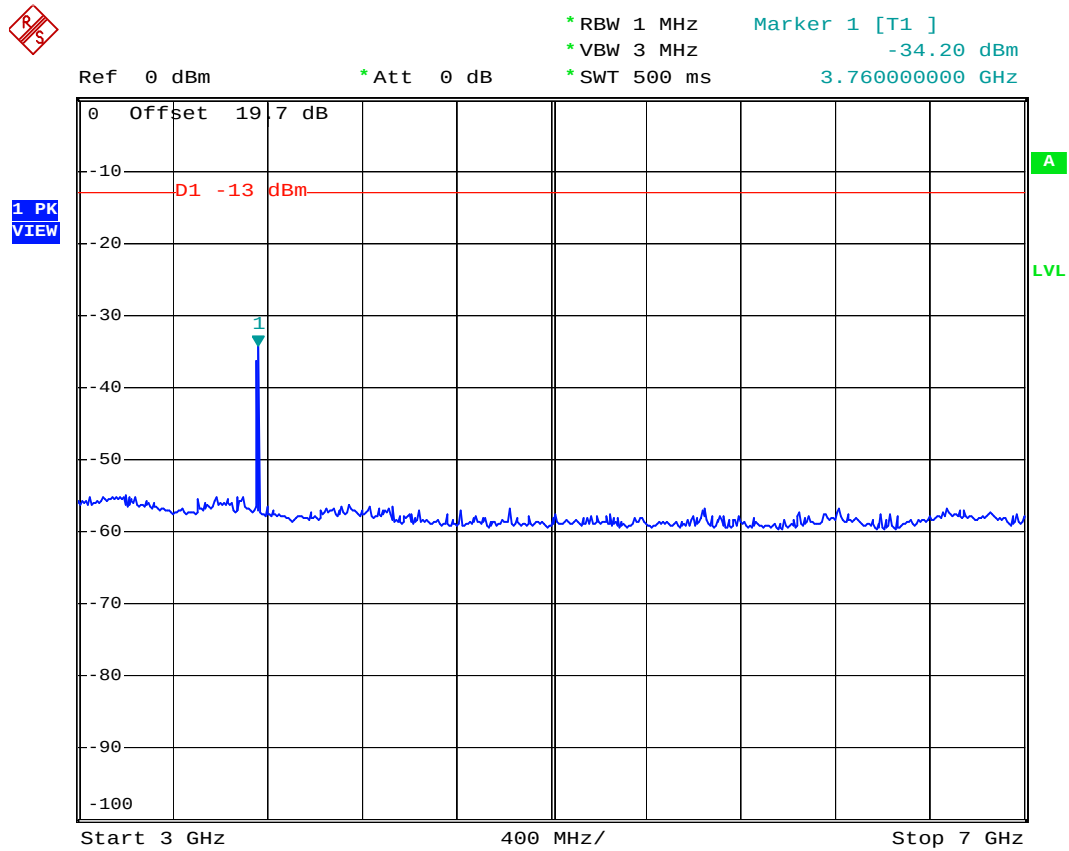


- Test Mode : WCDMA Band II (HSDPA) CH9400
- Frequency Range : 1G-3G



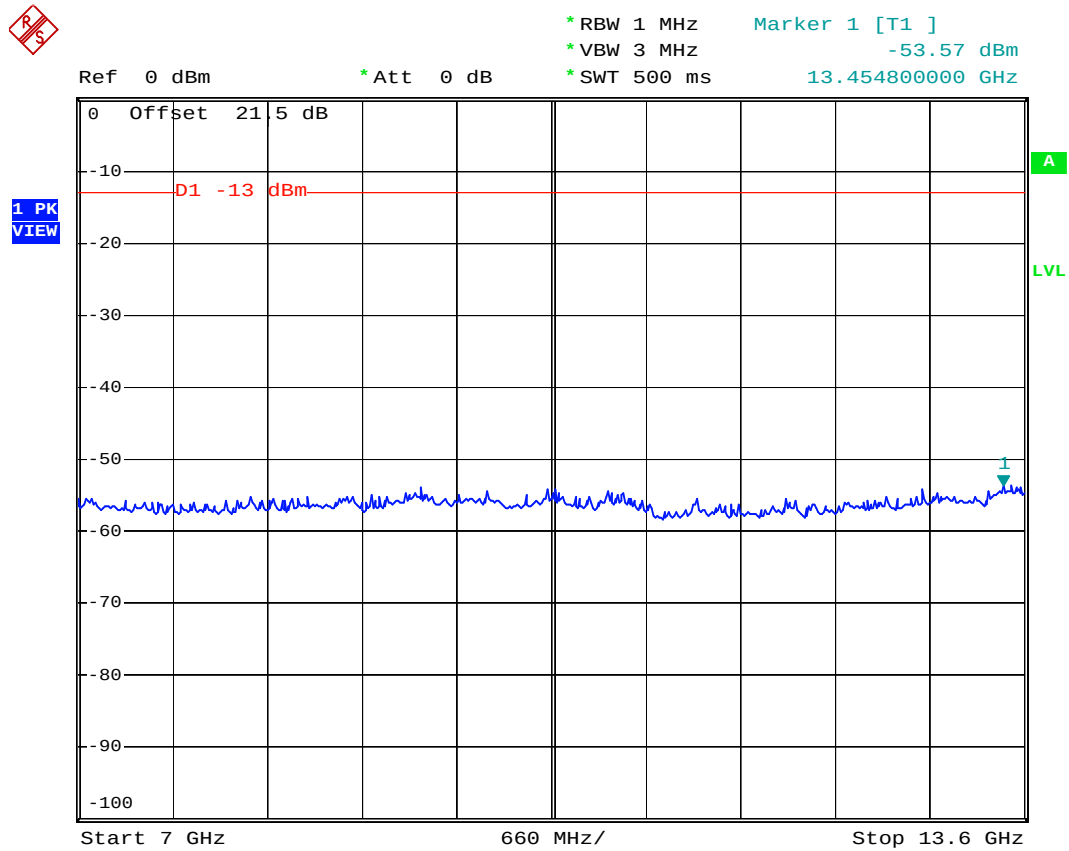


- Test Mode : WCDMA Band II (HSDPA) CH9400
- Frequency Range : 3G-7G



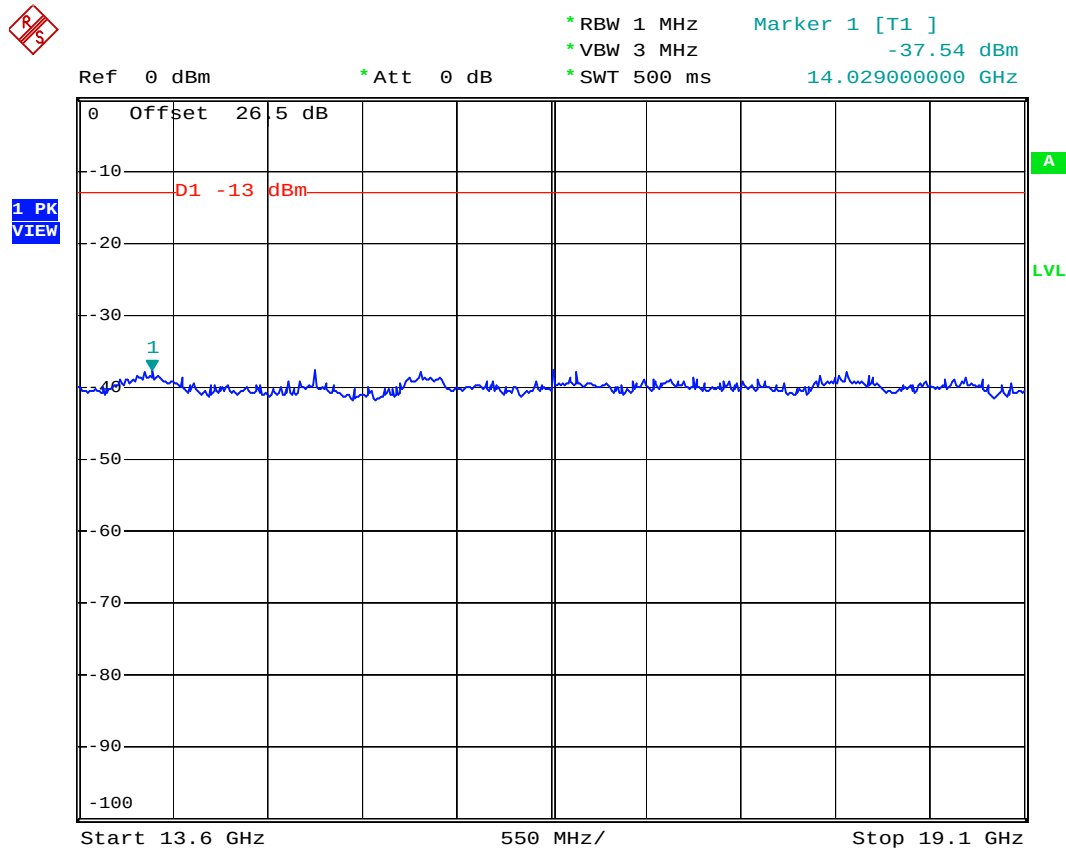


- Test Mode : WCDMA Band II (HSDPA) CH9400
- Frequency Range : 7G-13.6G





- Test Mode : WCDMA Band II (HSDPA) CH9400
- Frequency Range : 13.6G-19.1G



4.6 Field Strength of Spurious Radiation

Equivalent isotropic radiated Power Measurements by substitution method according to ANSI/TIA/EIA-603-C.

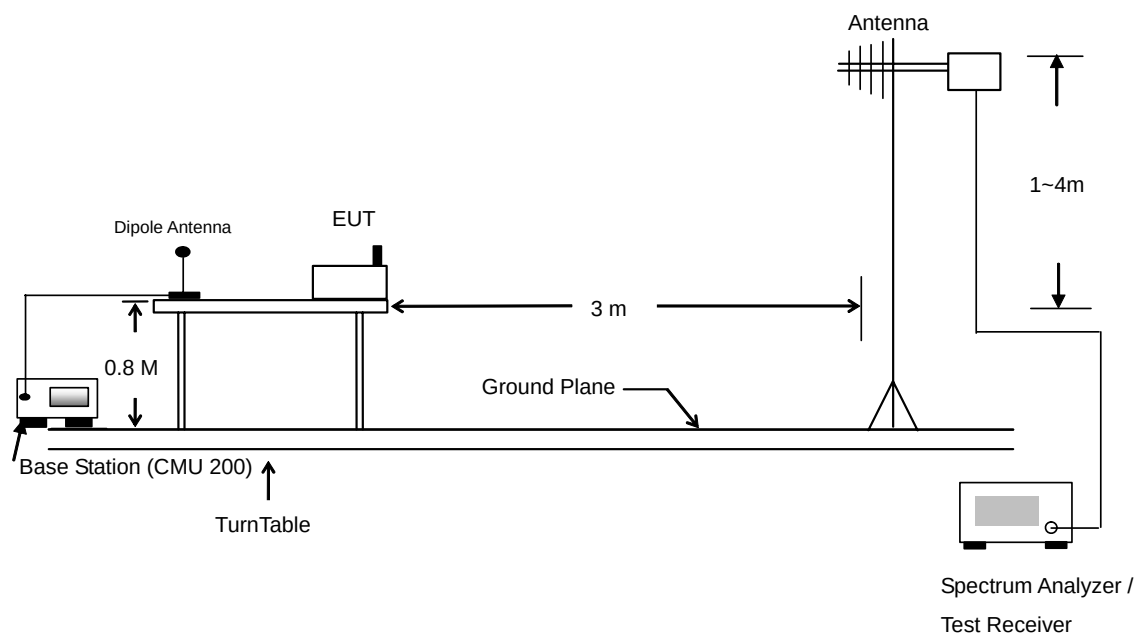
4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

- a. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
- b. The EUT was set 3 meters from the receiving antenna which was mounted on the antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- d. The height of the receiving antenna is varied between one meter and four meters to reach the maximum spurious emission for both horizontal and vertical polarizations.
- e. Taking the record of maximum spurious emission.
- f. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
- g. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
- h. Taking the record of output power at antenna port.
- i. Repeat step 7 to step 8 for another polarization.
- j. Emission level (dBm) = output power + substitution Gain.

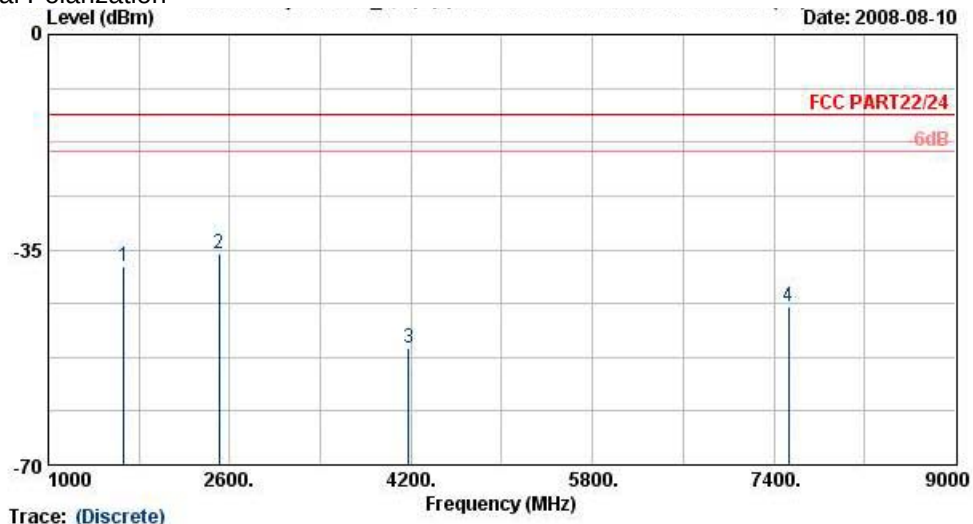
4.6.3 Test Setup Layout





4.6.4 Test Data

- Mode 1
- Horizontal Polarization



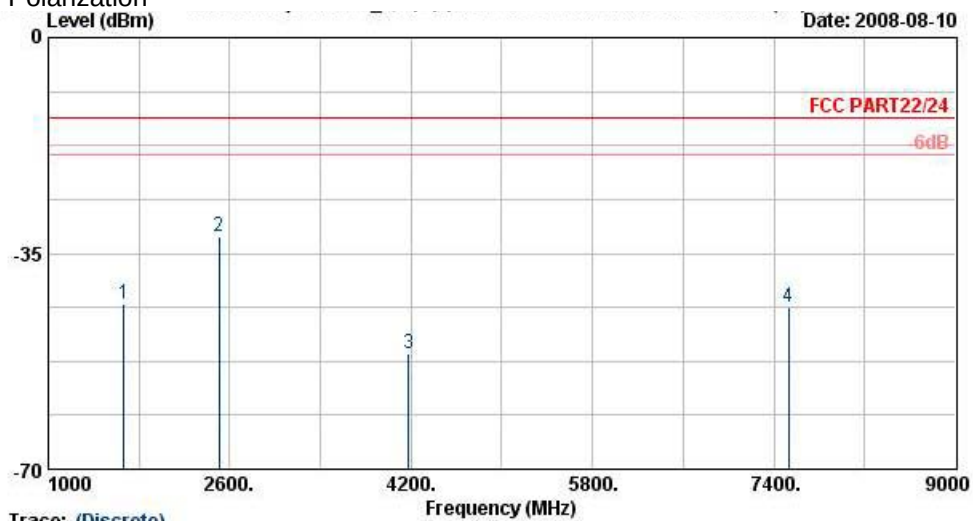
Site : 03CH07-HY
 Condition : HF-EIRP(080306) HORIZONTAL
 Power : 120Vac/60Hz
 Model : FG 602516-09
 Mode : GSM 850 Link Mode ; Ch189 + Adaptor
 IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-37.83	-13	-24.83	-45.89	-36.84	3.39	4.55	H	Pass
2509	-35.64	-13	-22.64	-44.07	-35.70	3.71	5.92	H	Pass
4175	-51.13	-13	-38.13	-60.77	-53.54	3.01	7.57	H	Pass
7530	-44.22	-13	-31.22	-64.34	-45.56	6.22	9.71	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



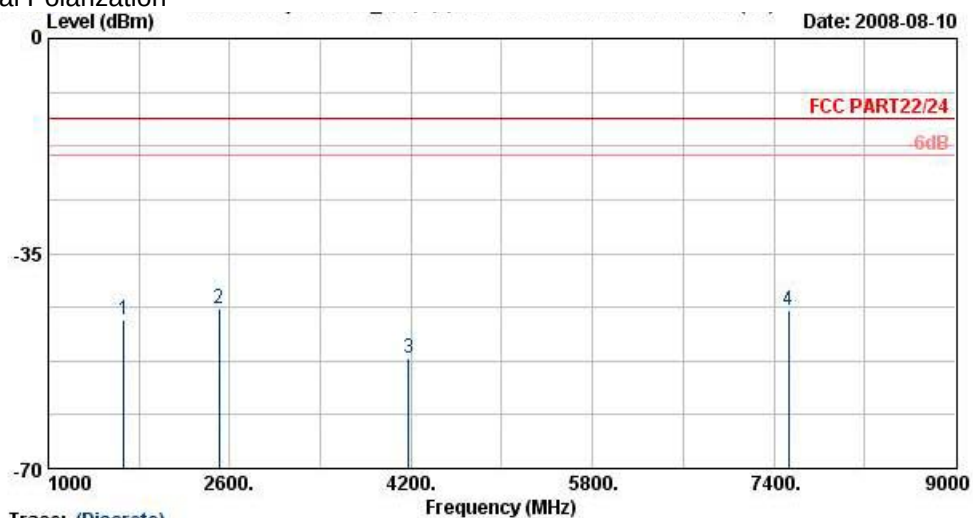
Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : GSM 850 Link Mode ; Ch189 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-43.14	-13	-30.14	-48.73	-41.76	3.39	4.16	V	Pass
2509	-32.14	-13	-19.14	-43.83	-32.00	3.71	5.72	V	Pass
4175	-51.19	-13	-38.19	-61.96	-54.31	3.01	8.28	V	Pass
7530	-43.61	-13	-30.61	-63.51	-46.05	6.22	10.81	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 2
- Horizontal Polarization



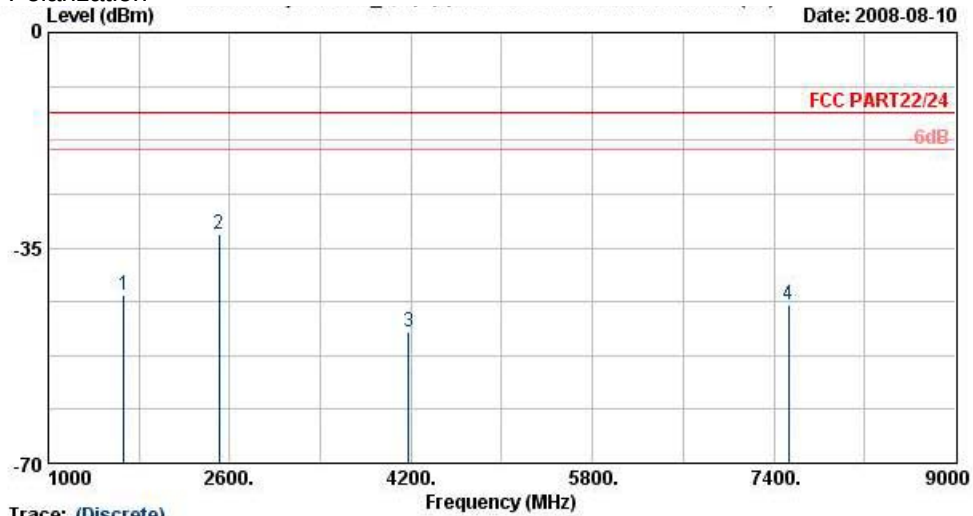
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : EDGE Link Mode ; Ch189 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-45.77	-13	-32.77	-52.85	-44.78	3.39	4.55	H	Pass
2509	-43.94	-13	-30.94	-51.51	-44.00	3.71	5.92	H	Pass
4175	-51.98	-13	-38.98	-62.08	-54.39	3.01	7.57	H	Pass
7530	-44.22	-13	-31.22	-64.34	-45.56	6.22	9.71	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



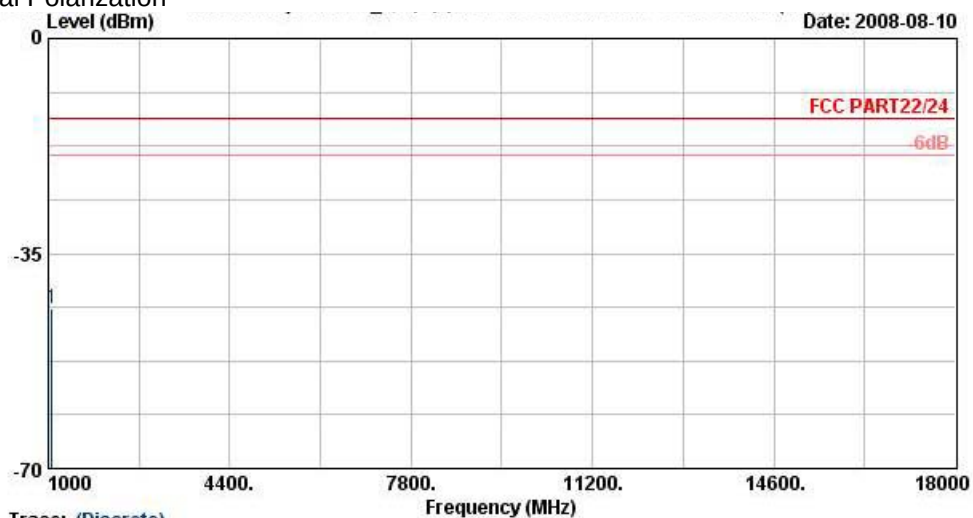
Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : EDGE Link Mode ; Ch189 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-42.55	-13	-29.55	-48.14	-41.17	3.39	4.16	V	Pass
2509	-32.76	-13	-19.76	-44.39	-32.62	3.71	5.72	V	Pass
4175	-48.71	-13	-35.71	-60.22	-51.83	3.01	8.28	V	Pass
7530	-44.12	-13	-31.12	-64.02	-46.56	6.22	10.81	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 3
- Horizontal Polarization



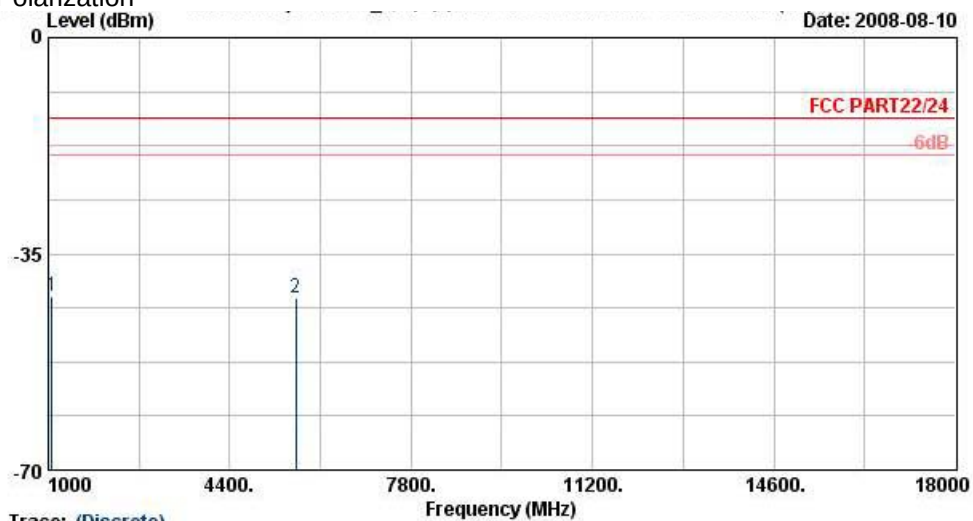
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : PCS 1900 Link Mode ; Ch661 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1062	-43.94	-13	-30.94	-55.94	-44.43	2.15	2.64	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



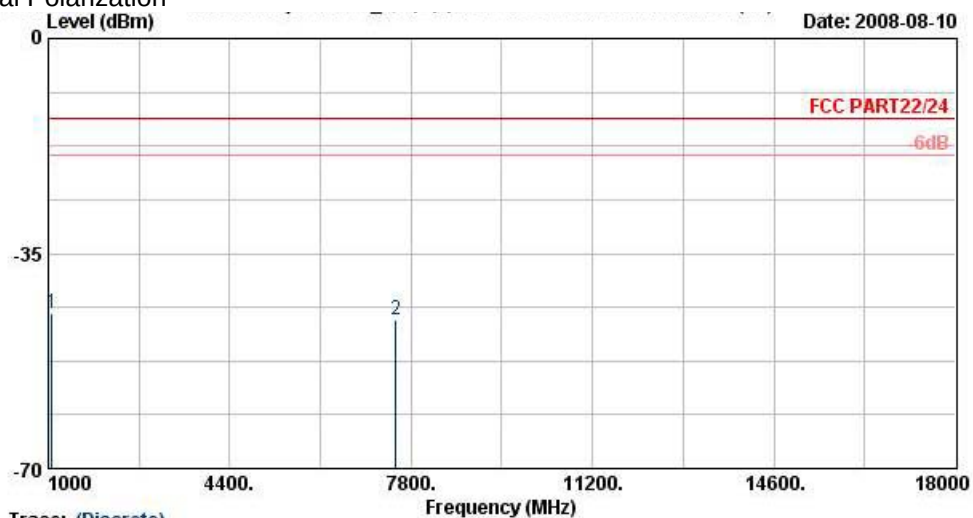
Site : 03CH07-HY
 Condition : HF-EIRP(080306) VERTICAL
 Power : 120Vac/60Hz
 Model : FG 602516-09
 Mode : PCS 1900 Link Mode ; Ch661 + Adaptor
 IMEI : 352679013090415

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1062	-41.87	-13	-28.87	-56.17	-42.61	2.15	2.89	V	Pass
5636	-42.05	-13	-29.05	-62.76	-47.95	3.87	9.77	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 4
- Horizontal Polarization



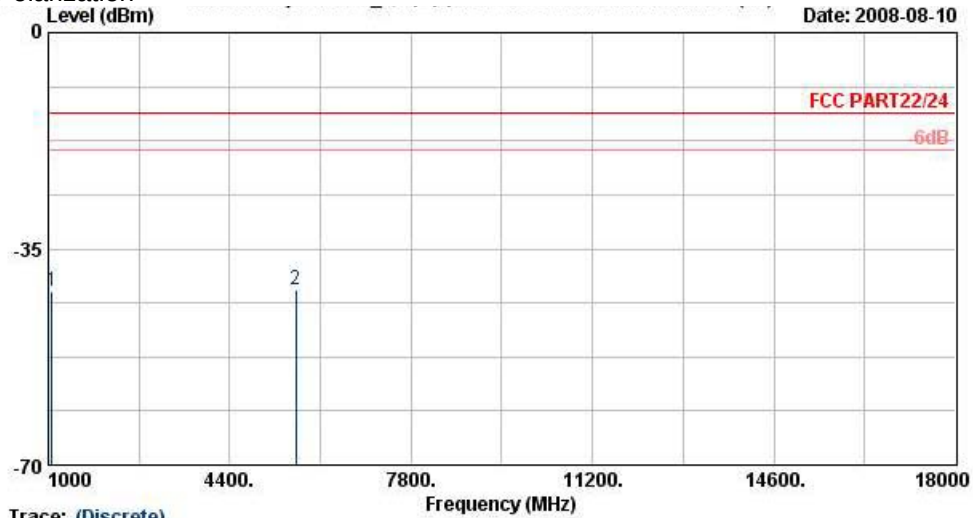
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : EDGE Link Mode ; Ch661 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1062	-44.84	-13	-31.84	-56.63	-45.33	2.15	2.64	H	Pass
7520	-45.81	-13	-32.81	-66.08	-49.69	5.83	9.71	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



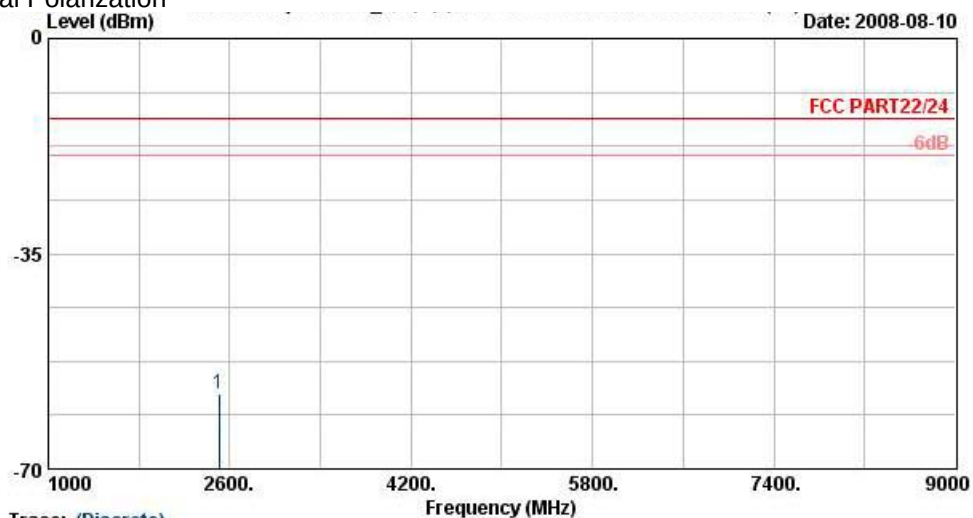
Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : EDGE Link Mode ; Ch661 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1062	-41.88	-13	-28.88	-56.17	-42.62	2.15	2.89	V	Pass
5636	-41.72	-13	-28.72	-62.43	-47.62	3.87	9.77	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 5
- Horizontal Polarization



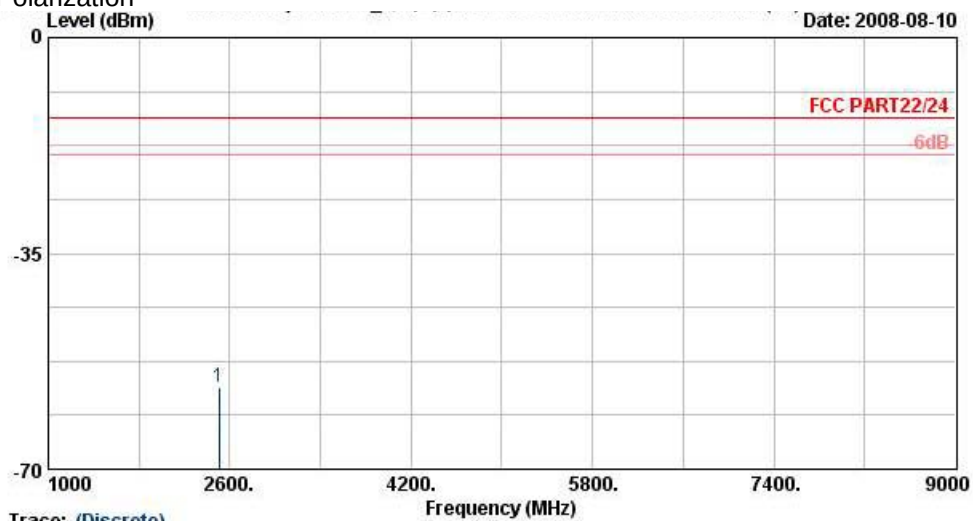
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : WCDMA Link Mode ; Ch4182 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2509	-57.74	-13	-44.74	-64.88	-57.80	3.71	5.92	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



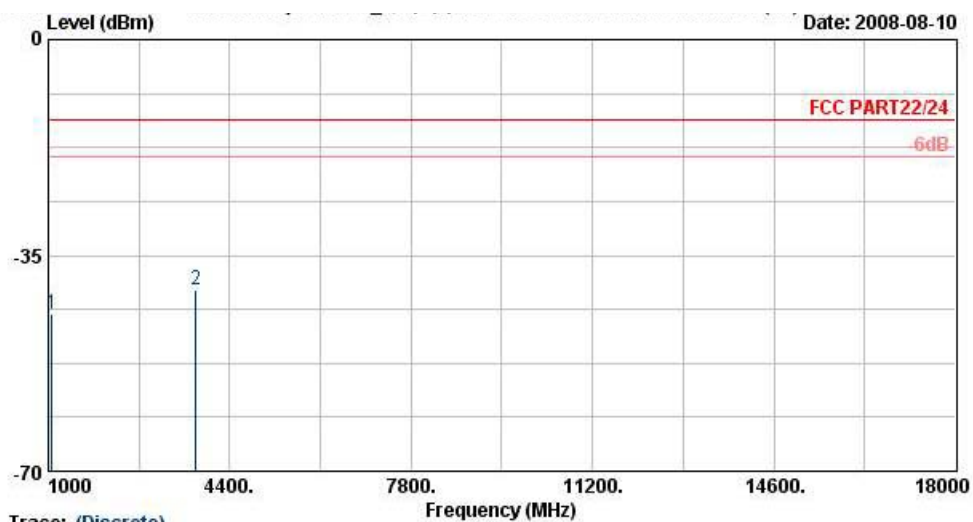
Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : WCDMA Link Mode ; Ch4182 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
2506	-56.67	-13	-43.67	-64.26	-56.53	3.71	5.72	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 6
- Horizontal Polarization



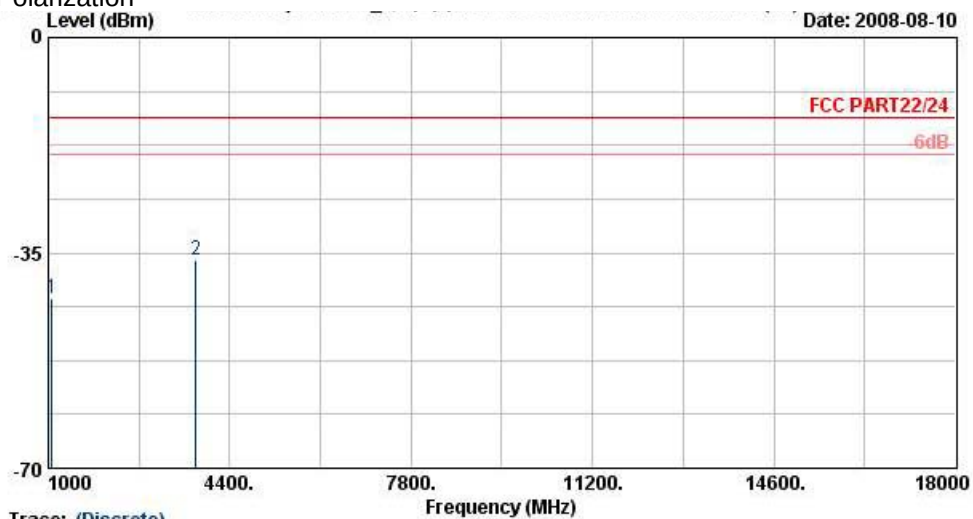
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Power : 120Vac/60Hz
Model : FG 602516-09
Mode : WCDMA Link Mode ; Ch9400 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1062	-44.39	-13	-31.39	-56.18	-44.88	2.15	2.64	H	Pass
3760	-40.61	-13	-27.61	-55.49	-43.98	4.03	7.40	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



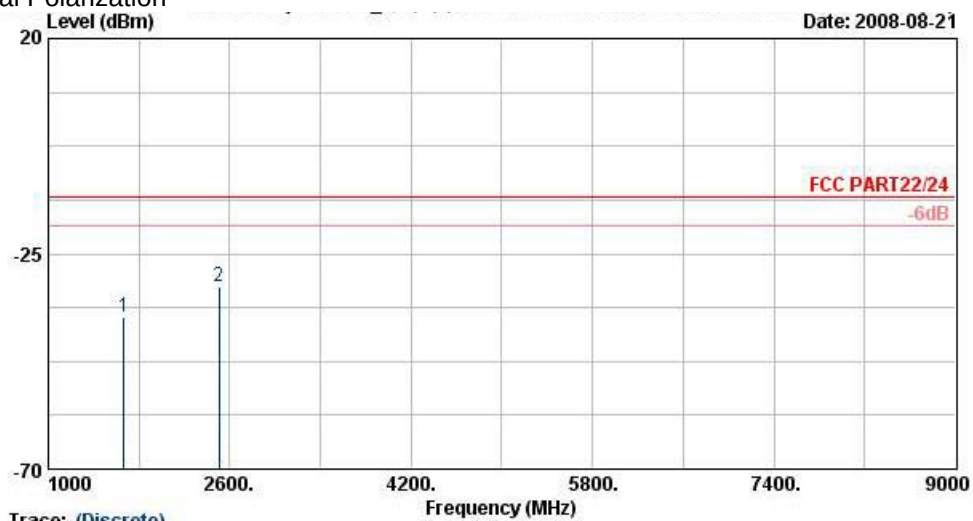
Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Power : 120Vac/60Hz
Model : FG 6O2516-09
Mode : WCDMA Link Mode ; Ch9400 + Adaptor
IMEI : 352679013090415

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1060	-42.37	-13	-29.37	-56.66	-43.11	2.15	2.89	V	Pass
3760	-36.25	-13	-23.25	-54.26	-40.13	4.03	7.91	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



- Mode 7
- Horizontal Polarization



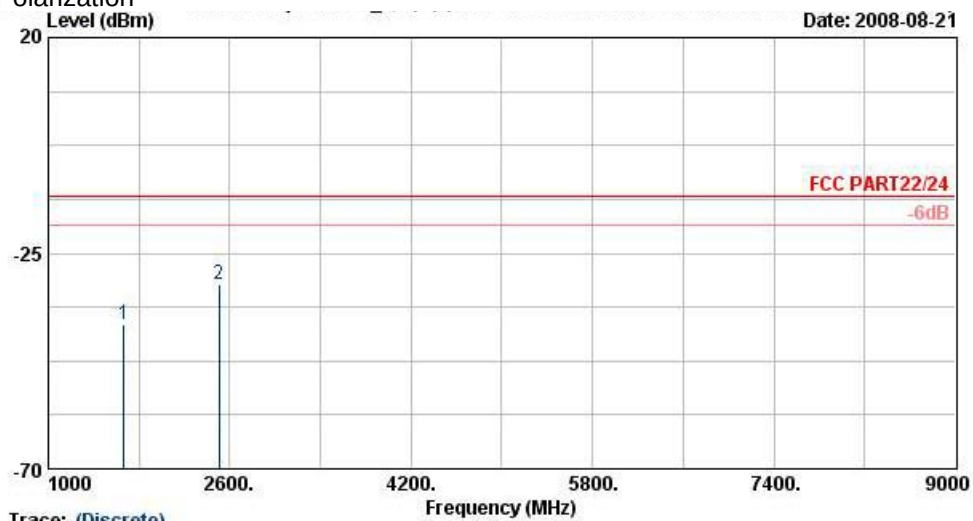
Site : 03CH07-HY
Condition : HF-EIRP(080306) HORIZONTAL
Model : FG 6O2516-09
Mode : Mode 1

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-38.29	-13	-25.29	-46.36	-37.3	3.39	4.55	H	Pass
2509	-31.92	-13	-18.92	-40.44	-31.98	3.71	5.92	H	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Vertical Polarization



Site : 03CH07-HY
Condition : HF-EIRP(080306) VERTICAL
Model : FG 6O2516-09
Mode : Mode 1

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-39.93	-13	-26.93	-45.79	-38.55	3.39	4.16	V	Pass
2509	-31.66	-13	-18.66	-43.35	-31.52	3.71	5.72	V	Pass

Remark : Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

4.7 Frequency Stability (Temperature Variation)

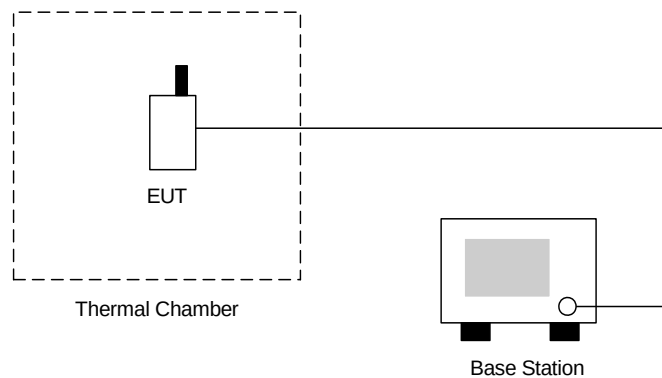
4.7.1 Measurement Instrument

As described in chapter 5 of this test report.

4.7.2 Test Procedure

- a. The EUT and test equipment were set up as shown on the following section.
- b. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
- c. With power OFF, the temperature was raised in 10°C steps. 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.
- d. The temperature tests were performed for the worst case.
- e. Test data was recorded.

4.7.3 Test Setup Layout



4.7.4 Test Result

• Test Mode : GSM850 (GSM) CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	-55	-0.03		
0	-38	-0.02		
10	30	0.02		
20	26	0.01		
30	-28	-0.01		
40	-30	-0.02		
50	-37	-0.02		

Remark: The EUT can not turn on in -20 and -30°C.

• Test Mode : GSM850 (EDGE) CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	-44	-0.02		
0	-30	-0.02		
10	-26	-0.01		
20	-22	-0.01		
30	20	0.01		
40	28	0.01		
50	-30	-0.02		

Remark: The EUT can not turn on in -20 and -30°C.



• Test Mode : GSM1900 (GSM) CH661

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	53	0.03		
0	26	0.01		
10	33	0.02		
20	28	0.01		
30	36	0.02		
40	-39	-0.02		
50	-48	-0.03		

Remark: The EUT can not turn on in -20 and -30°C.

• Test Mode : GSM1900 (EDGE) CH661

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	66	0.03		
0	52	0.03		
10	-40	-0.02		
20	38	0.02		
30	42	0.02		
40	54	0.03		
50	-58	-0.03		

Remark: The EUT can not turn on in -20 and -30°C.

• Test Mode : WCDMA Band V CH4182

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	29	0.02		
0	26	0.01		
10	11	0.01		
20	-15	-0.01		
30	-23	-0.01		
40	33	0.02		
50	35	0.02		

Remark: The EUT can not turn on in -20 and -30°C.

• Test Mode : WCDMA Band V (HSDPA) CH4182

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	-34	-0.02		
0	-30	-0.02		
10	22	0.01		
20	26	0.01		
30	-25	-0.01		
40	-28	-0.01		
50	31	0.02		

Remark: The EUT can not turn on in -20 and -30°C.



- Test Mode : WCDMA Band II CH9400

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	-42	-0.02		
0	-33	-0.02		
10	28	0.01		
20	-17	-0.01		
30	22	0.01		
40	25	0.01		
50	-28	-0.01		

Remark: The EUT can not turn on in -20 and -30°C.

- Test Mode : WCDMA Band II (HSDPA) CH9400

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-	-	2.5	Passed
-20	-	-		
-10	-40	-0.02		
0	38	0.02		
10	-28	-0.01		
20	26	0.01		
30	22	0.01		
40	-30	-0.02		
50	-33	-0.02		

Remark: The EUT can not turn on in -20 and -30°C.

4.8 Frequency Stability (Voltage Variation)

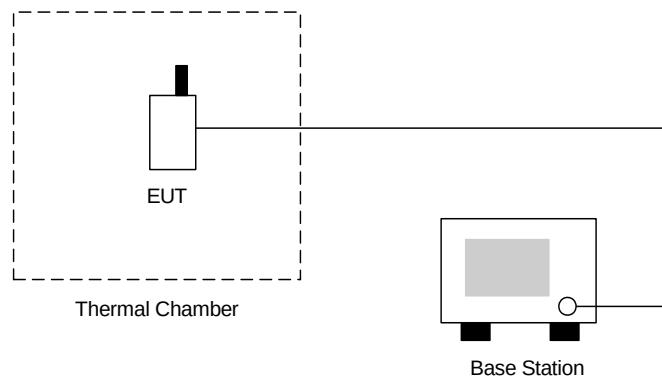
4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

4.8.2 Test Procedure

- The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as the following section.
- The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
- The variation in frequency was measured for the worst case.

4.8.3 Test Setup Layout



4.8.4 Test Result

- Test Mode : GSM850 (GSM) CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	-51.0	-0.03	2.5	Passed
BEP	47.0	0.02		
12.8	34.0	0.02		

- Test Mode : GSM850 (EDGE) CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	-47.0	-0.02	2.5	Passed
BEP	28.0	0.01		
12.8	39.0	0.02		



- Test Mode : GSM1900 (GSM) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	57.0	0.03	2.5	Passed
BEP	64.0	0.03		
12.8	52.0	0.03		

- Test Mode : GSM1900 (EDGE) CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	40.0	0.02	2.5	Passed
BEP	68.0	0.04		
12.8	-48.0	-0.03		

- Test Mode : WCDMA Band V CH4182

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	37.0	0.02	2.5	Passed
BEP	28.0	0.01		
12.8	34.0	0.02		

- Test Mode : WCDMA Band V (HSDPA) CH4182

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	-39.0	-0.02	2.5	Passed
BEP	28.0	0.01		
12.8	34.0	0.02		

- Test Mode : WCDMA Band II CH9400

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	-38.0	-0.02	2.5	Passed
BEP	-47.0	-0.02		
12.8	26.0	0.01		

- Test Mode : WCDMA Band II (HSDPA) CH9400

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
11.1	48.0	0.03	2.5	Passed
BEP	-24.0	-0.01		
12.8	-41.0	-0.02		

Remark:

- Normal Voltage= 11.1V.
- Battery End Point (BEP)= 9.4 V.



5. List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz-1GHz	Dec. 01, 2007	Nov. 30, 2008	Radiation (03CH07-HY)
Spectrum Analyzer	R & S	FSP	101067	9KHz~30GHz	Dec. 05, 2007	Dec. 04, 2008	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1G~18G	Aug. 13, 2008	Aug. 12, 2009	Radiation (03CH07-HY)
PreAmplifier	Agilent	8449B	3008A02362	1~26.5GHz	Dec. 22, 2007	Dec. 21, 2008	Radiation (03CH07-HY)
PreAmplifier	COM-POWER	PA-103A	161241	10-1000MHz.32d B.GAIN	Mar. 31, 2008	Mar. 30, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	66584	1G~18G	Aug. 06, 2008	Aug. 05, 2009	Radiation (03CH07-HY)
Spectrum	R&S	FSP40	100055	9KHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Thermal Chamber	TEN BILLION	TTH-D35P	TBN-930701	N/A	Aug. 01, 2008	Jul. 31, 2009	Conducted (TH02-HY)

6. Uncertainty Evaluation

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
Combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of Confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of Confidence of 95% U=2Uc(y)	4.72				

END OF TEST REPORT



Appendix A. Photographs of EUT

Please refer to Sporton report number EP6O2516-09 as below.