

# TEST REPORT

Reference No..... : WTX22X12243880W001  
FCC ID..... : 2AHAF-MDT865  
Applicant..... : TOPICON HK LIMITED  
Address..... : Room 2314-2316, Tower C, Huangdu Plaza, Yitian Road, Futian District,  
Shenzhen, China  
Manufacturer..... : The same as Applicant  
Address..... : The same as Applicant  
Product Name..... : Tablet  
Model No..... : MDT865  
Standards..... : FCC Part 22H, FCC Part 24E, FCC Part 27  
Date of Receipt sample.... : 2022-09-13  
Date of Test..... : 2022-09-13 to 2022-11-24; 2022-12-03 to 2023-02-13  
Date of Issue..... : 2023-02-13  
Test Report Form No. .... : WTX\_Part 22\_Part 24\_Part 27W  
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

**Prepared By:**

**Waltek Testing Group (Shenzhen) Co., Ltd.**

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**Report version**

Version No.	Date of issue	Description
Rev.00	2022-11-24	Original report WTX22X09185257W001
Rev.01	2023-02-13	Refer the old report WTX22X09185257W001, updated the EUT appearance photos, model name, rated voltage, antenna gain, firmware version, RF output power and spurious radiated emissions, but the circuit and the electronic construction do not change, declared by the manufacturer. So the test data from the original report.
/	/	/

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT:	
Product Name:	Tablet
Trade Name:	/
Model No.:	MDT865
Adding Model(s):	PaceBlade MDT-801, OBC865, M865A, M865B, MDT865D
Rated Voltage:	DC3.8V
Power Adapter:	GS-W20A0924B INPUT:AC100-240V 50/60Hz 0.6A Output:DC5V3A; DC9V2.22A; DC12V1.67A
Test Sample No.:	WTX22X12243880W001#
Firmware Version:	mdt865_gms_0.6.7
Hardware Version:	MDT1065-MB-V30
<p><i>Note: The Antenna Gain is provided by the customer and can affect the validity of results. The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model MDT865, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

<b>Technical Characteristics of EUT:</b>	
<b>2G</b>	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 33.11dBm, GSM1900: 30.77dBm EDGE850: 27.34dBm, EDGE1900: 25.69dBm
Type of Emission:	GSM850: 248KGXW, GSM1900: 246KGXW EDGE850: 324KG7W, EDGE1900: 246KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: -0.16dBi; GSM1900: 1.83dBi
GPRS/EDGE Class:	Class 12
<b>3G</b>	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 4, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 24.56dBm, WCDMA Band 4: 23.46dBm WCDMA Band 5: 24.07dBm
Type of Emission:	WCDMA Band 2: 4M22F9W WCDMA Band 4: 4M20F9W WCDMA Band 5: 4M22F9W
Type of Modulation:	BPSK, QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: 1.83dBi, WCDMA Band 4: 1dBi, WCDMA Band 5: -0.16dBi

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 2:** Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

**FCC Rules Part 22:** Private Land Mobile Radio Services.

**FCC Rules Part 24:** Public Mobile Services.

**FCC Rules Part 27:** Miscellaneous Wireless Communications Services.

**TIA/EIA 603 E March 2016:** Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

**ANSI C63.26-2015:** American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

**KDB 971168 D01 Power Meas License Digital Systems v03r01:** Measurement Guidance for Certification of Licensed Digital Transmitters.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with TIA/EIA 603 E/ KDB 971168/ ANSI C63.26. The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.4 Test Facility

### **Address of the test laboratory**

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

### **FCC – Registration No.: 125990**

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

## 1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest

possible emissions level, more detailed description as follows:

<b>Test Mode List</b>		
Test Mode	Description	Remark
TM1	GSM 850	Low, Middle, High Channels
TM2	GPRS 850	Low, Middle, High Channels
TM3	EDGE 850	Low, Middle, High Channels
TM4	GSM 1900	Low, Middle, High Channels
TM5	GPRS 1900	Low, Middle, High Channels
TM6	EDGE 1900	Low, Middle, High Channels
TM7	WCDMA Band 5	Low, Middle, High Channels
TM8	HSDPA Band 5	Low, Middle, High Channels
TM9	HSUPA Band 5	Low, Middle, High Channels
TM10	WCDMA Band 4	Low, Middle, High Channels
TM11	HSDPA Band 4	Low, Middle, High Channels
TM12	HSUPA Band 4	Low, Middle, High Channels
TM13	WCDMA Band 2	Low, Middle, High Channels
TM14	HSDPA Band 2	Low, Middle, High Channels
TM15	HSUPA Band 2	Low, Middle, High Channels

<b>Testing Configure</b>			
Support Band	Support Standard	Channel Frequency	Channel Number
GSM 850	GSM/GPRS/EDGE	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS/EDGE	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4 MHz	4132
		836.6 MHz	4183
		846.6 MHz	4233
WCDMA Band 4	WCDMA/HSDPA/HSUPA	1712.4 MHz	1312
		1732.4 MHz	1412
		1752.6 MHz	1513
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538

Note: the transmitter has been tested on the communications mode of GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA compliance test and record the worst case.

<b>Test Conditions</b>	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

<b>EUT Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	1.0	Shielded	With Ferrite
DC Cable	1.45	Unshielded	Without Ferrite
Camera Cable	0.8	Unshielded	Without Ferrite

<b>Special Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	TianYi310-14ISK	/
Battery	JADE	DC12V	/



**1.6 Measurement Uncertainty**

<b>Measurement uncertainty</b>		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Frequency Stability	Conducted	$2.3\%$
Transmitter Spurious Emissions	Conducted	$\pm 0.42\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

**1.7 Test Equipment List and Details**

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1075	Communication Tester	Rohde & Schwarz	CMW500	148650	2022-03-22	2023-03-21
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2022-03-22	2023-03-21
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2022-03-25	2023-03-24
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2022-03-22	2023-03-21
SMET-1313	Spectrum Analyzer	Agilent	N9020A	MY54320548	2022-03-22	2023-03-21
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2022-03-22	2023-03-21
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2022-03-22	2023-03-21
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2022-03-22	2023-03-21
SEMT-1132	Attenuator	HP	8491A	MY39264419	2022-03-22	2023-03-21
SEMT-1325	Band Reject Filter Group	Tonscend	JS0806-F	2018060319	2022-03-22	2023-03-21
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/
SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/
<input checked="" type="checkbox"/> Chamber A: Below 1GHz						
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2022-03-22	2023-03-21
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
SEMT-1008	Amplifier	HP	8447F	2805A03475	2022-01-07	2023-01-06
SEMT-1008	Amplifier	HP	8447F	2805A03475	2022-12-30	2023-12-29
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19

<input checked="" type="checkbox"/> Chamber A: Above 1GHz						
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2022-03-22	2023-03-21
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2022-03-22	2023-03-21
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2022-03-22	2023-03-21
SEMT-1042	Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2021-04-27	2023-04-26
SEMT-1216	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2022-03-25	2023-03-24
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2022-03-22	2023-03-21
<input type="checkbox"/> Chamber B: Below 1GHz						
SEMT-1068	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
SEMT-1067	Amplifier	Agilent	8447D	2944A10179	2022-03-22	2023-03-21
SEMT-1066	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2022-03-22	2023-03-21
<input type="checkbox"/> Chamber C: Below 1GHz						
SEMT-1319	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2022-01-07	2023-01-06
SEMT-1319	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2022-12-30	2023-12-29
SEMT-1343	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2023-05-27
SEMT-1333	Amplifier	HP	8447F	2944A03869	2022-03-22	2023-03-21

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1

\*Remark: indicates software version used in the compliance certification testing.

## 2. SUMMARY OF TEST RESULTS

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FCC Rules	Description of Test Item	Result
§22.913(a), §24.232(c), §27.50(d)	RF Output Power	Compliant
§24.51, §27.50	Peak-to-average Ratio (PAR) of Transmitter	Compliant
§22.917(b), §24.238(b), §27.53	Emission Bandwidth	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Emissions at Antenna Terminal	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Radiation Emissions	Compliant
§22.917(a), §24.238(a), §27.53(h)	Out of Band Emissions	Compliant
§22.355, §24.235, §27.54	Frequency Stability	Compliant

### 3. RF Output Power

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#### 3.1 Standard Applicable

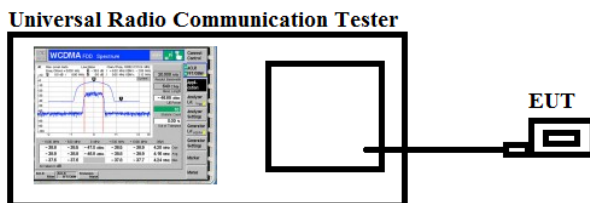
According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

#### 3.2 Test Procedure

- Conducted output power test method:



- Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

#### 3.3 Summary of Test Results/Plots

➤ **Max. Radiated Power**

Mode	Channel	Antenna Polar	ERP (dBm)	Limit (dBm)	Result
GSM850	128	V	31.52	<38.45	Pass
		H	25.35		
	190	V	31.41		
		H	24.96		
	251	V	31.29		
		H	25.74		
GPRS850	128	V	31.01	<38.45	Pass
		H	24.97		
	190	V	31.23		
		H	24.63		
	251	V	31.41		
		H	24.16		
EGPRS850	128	V	25.65	<38.45	Pass
		H	22.12		
	190	V	25.36		
		H	23.12		
	251	V	25.69		
		H	21.74		

Mode	Channel	Antenna Polar	EIRP (dBm)	Limit (dBm)	Result
PCS1900	512	V	28.74	<33.00	Pass
		H	23.12		
	661	V	28.45		
		H	23.21		
	810	V	28.13		
		H	23.36		
GPRS1900	512	V	28.41	<33.00	Pass
		H	23.13		
	661	V	28.62		
		H	23.05		
	810	V	28.41		
		H	22.97		
EGPRS1900	512	V	23.19	<33.00	Pass
		H	19.42		
	661	V	23.42		
		H	19.62		
	810	V	23.41		
		H	19.47		

Mode	Channel	Antenna Polar	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	23.02	<38.45	Pass
		H	19.42		
	4183	V	23.45		
		H	19.36		
	4233	V	22.01		
		H	18.41		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band IV	1312	V	21.05	<30.00	Pass
		H	18.65		
	1412	V	21.12		
		H	18.98		
	1513	V	21.45		
		H	18.69		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	22.62	<33.00	Pass
		H	19.59		
	9400	V	22.35		
		H	18.44		
	9538	V	22.02		
		H	18.14		

➤ **Max. Conducted Power (Average power)**

**Please refer to Appendix A**



## 4. Peak-to-average Ratio (PAR) of Transmitter

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### 4.1 Standard Applicable

According to §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51, in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

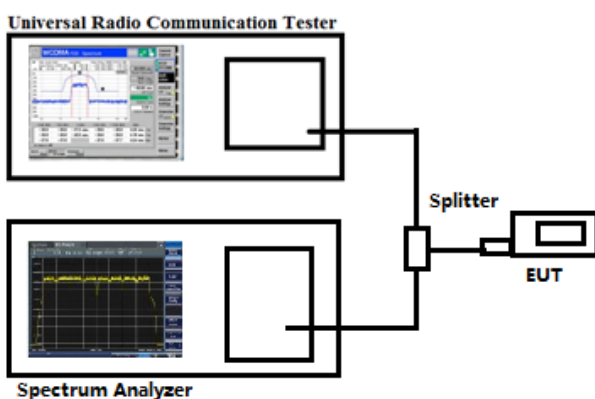
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 4.2 Test Procedure

According with KDB 971168

1. The signal analyzer's CCDF measurement profile is enabled.
2. Frequency = carrier center frequency.
3. Measurement BW > Emission bandwidth of signal.
4. The signal analyzer was set to collect one million samples to generate the CCDF curve.
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power.

Test Configuration for the emission bandwidth testing:



### 4.3 Summary of Test Results

Please refer to Appendix B.

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## 5. Emission Bandwidth

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### 5.1 Standard Applicable

According to §22.917(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

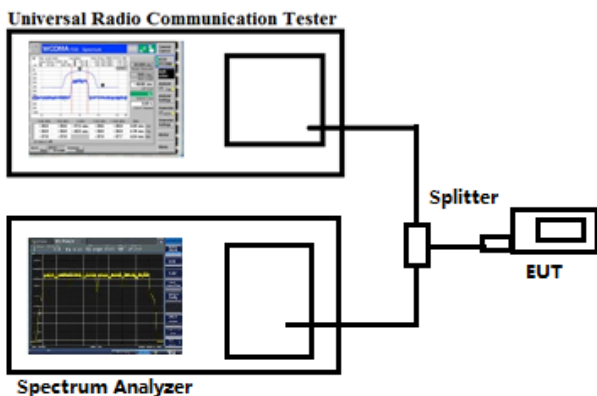
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

According to §27.53, the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

### 5.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

Test Configuration for the emission bandwidth testing:



### 5.3 Summary of Test Results/Plots

Please refer to Appendix C.

## 6. Out of Band Emissions at Antenna Terminal

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### 6.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

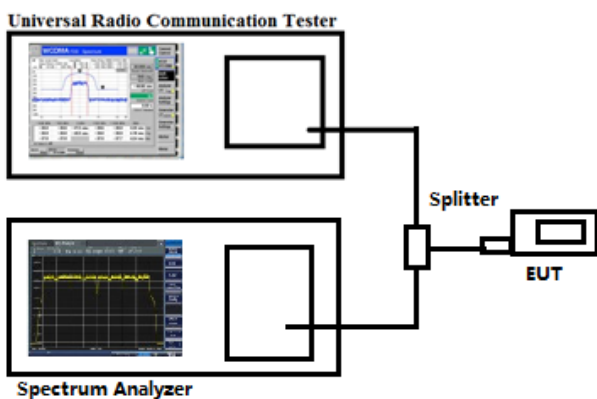
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

### 6.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to  $10^{\text{th}}$  harmonic.

Test Configuration for the out of band emissions testing:



### 6.3 Summary of Test Results/Plots

Please refer to Appendix D.

## 7. Spurious Radiated Emissions

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### 7.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to §27.53 (h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

### 7.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

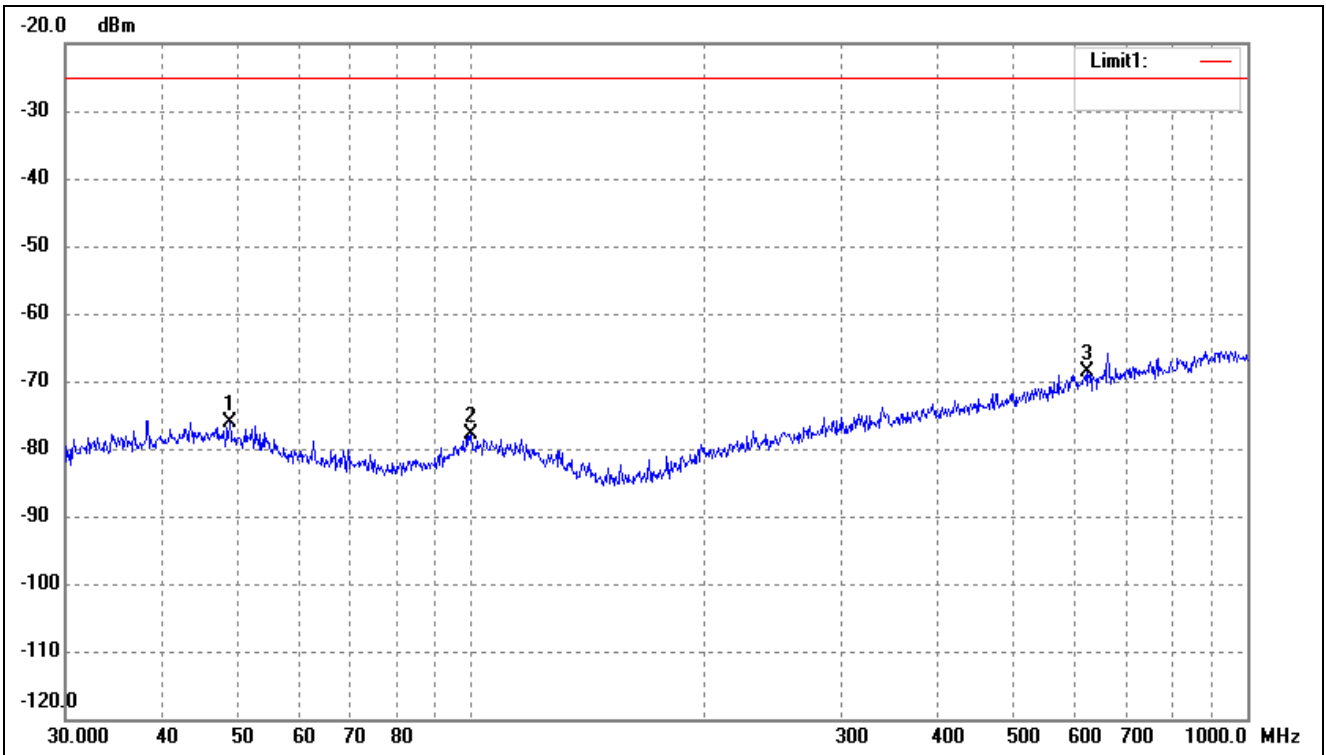
$$\text{Spurious attenuation limit in dB} = 43 + 10 \log_{10}(\text{power out in Watts})$$

### 7.3 Summary of Test Results/Plots

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

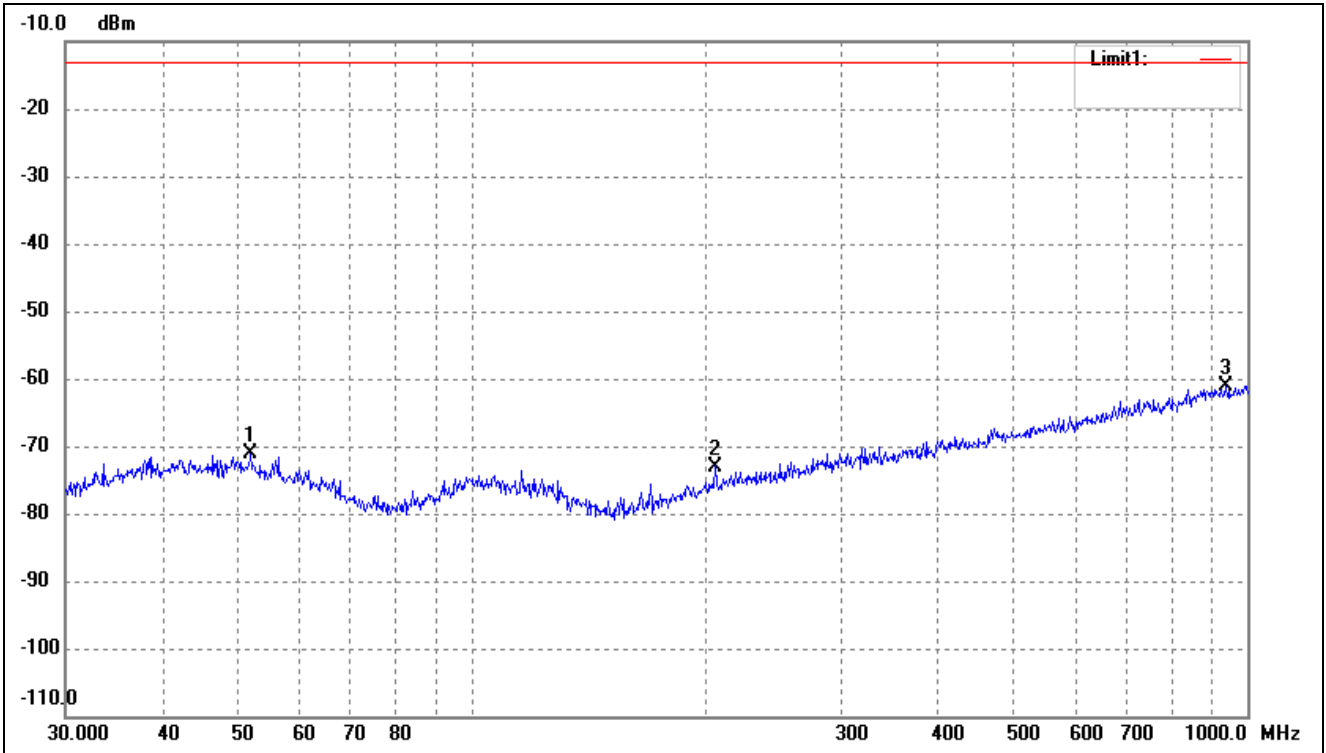
➤ Spurious Emissions Below 1GHz

For Cellular Band			
Test Channel	GSM 850 (GMSK)-Middle	Polarity:	Horizontal



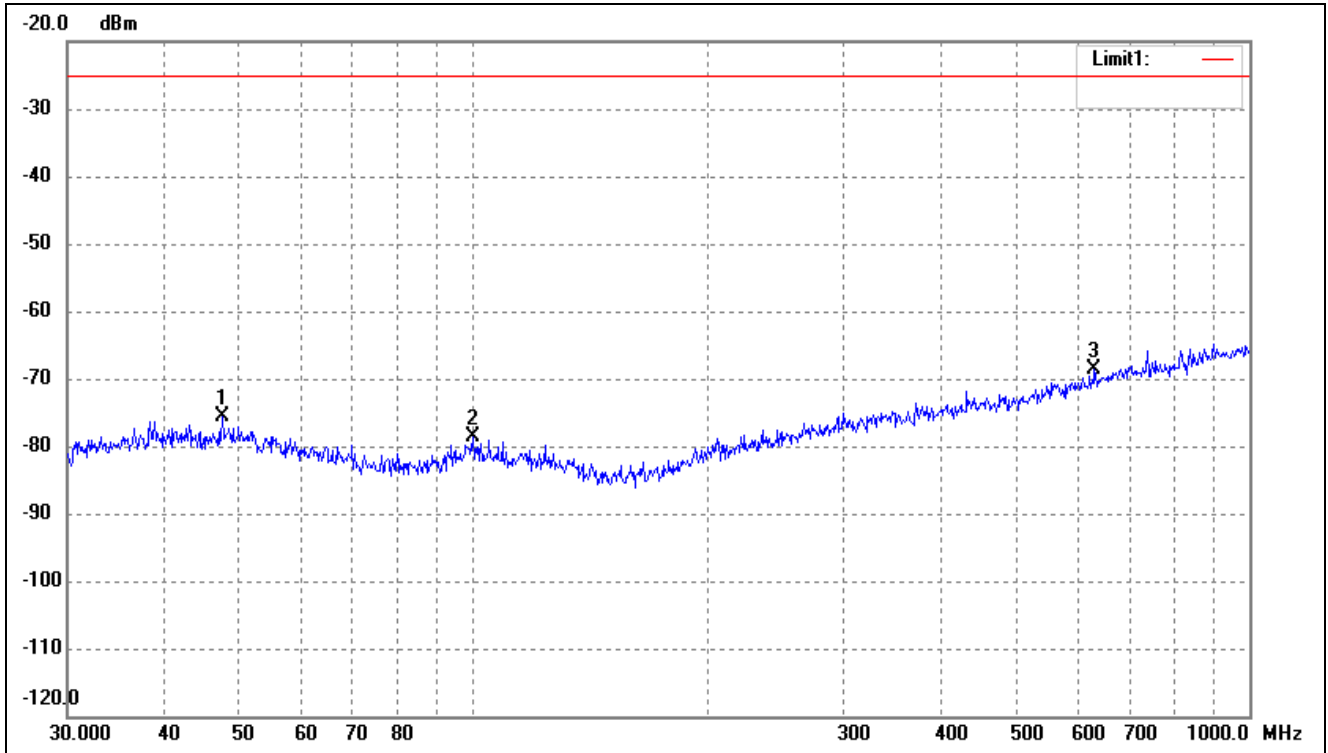
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	48.8429	-80.68	4.50	-76.18	-25.00	-51.18	ERP
2	99.8777	-81.55	3.71	-77.84	-25.00	-52.84	ERP
3	622.8899	-80.59	11.98	-68.61	-25.00	-43.61	ERP

For Cellular Band			
Test Channel	GSM 850 (GMSK)-Middle	Polarity:	Vertical



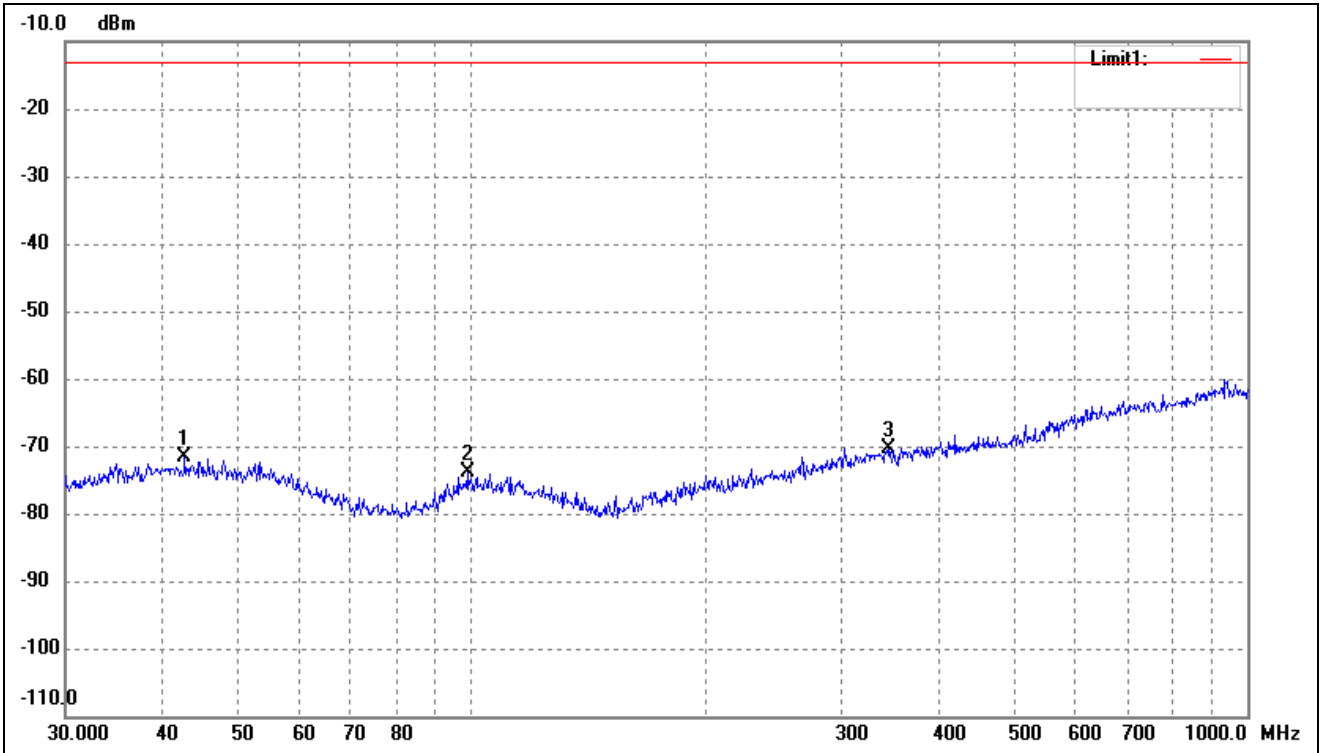
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	52.0251	-75.27	4.13	-71.14	-13.00	-58.14	ERP
2	206.3976	-76.60	3.60	-73.00	-13.00	-60.00	ERP
3	938.8325	-76.92	15.89	-61.03	-13.00	-48.03	ERP

For Cellular Band			
Test Channel	PCS1900 (GMSK)-Middle	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	47.4917	-80.23	4.54	-75.69	-25.00	-50.69	ERP
2	99.8777	-82.38	3.71	-78.67	-25.00	-53.67	ERP
3	631.6884	-80.80	12.11	-68.69	-25.00	-43.69	ERP

For Cellular Band			
Test Channel	PCS1900 (GMSK)-Middle	Polarity:	Vertical

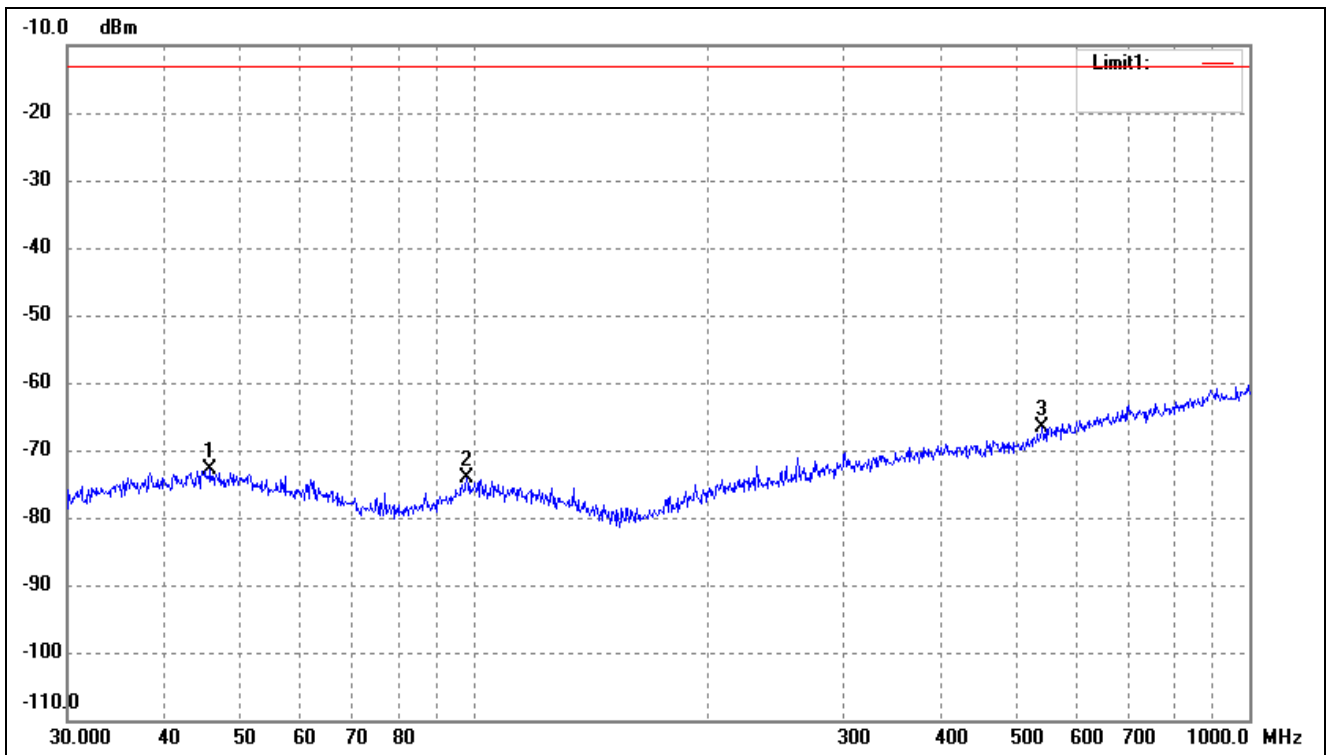


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	42.7496	-76.35	4.63	-71.72	-13.00	-58.72	ERP
2	98.8325	-77.41	3.42	-73.99	-13.00	-60.99	ERP
3	345.5951	-77.87	7.58	-70.29	-13.00	-57.29	ERP

Note: Margin= (Reading+ Correct)- Limit

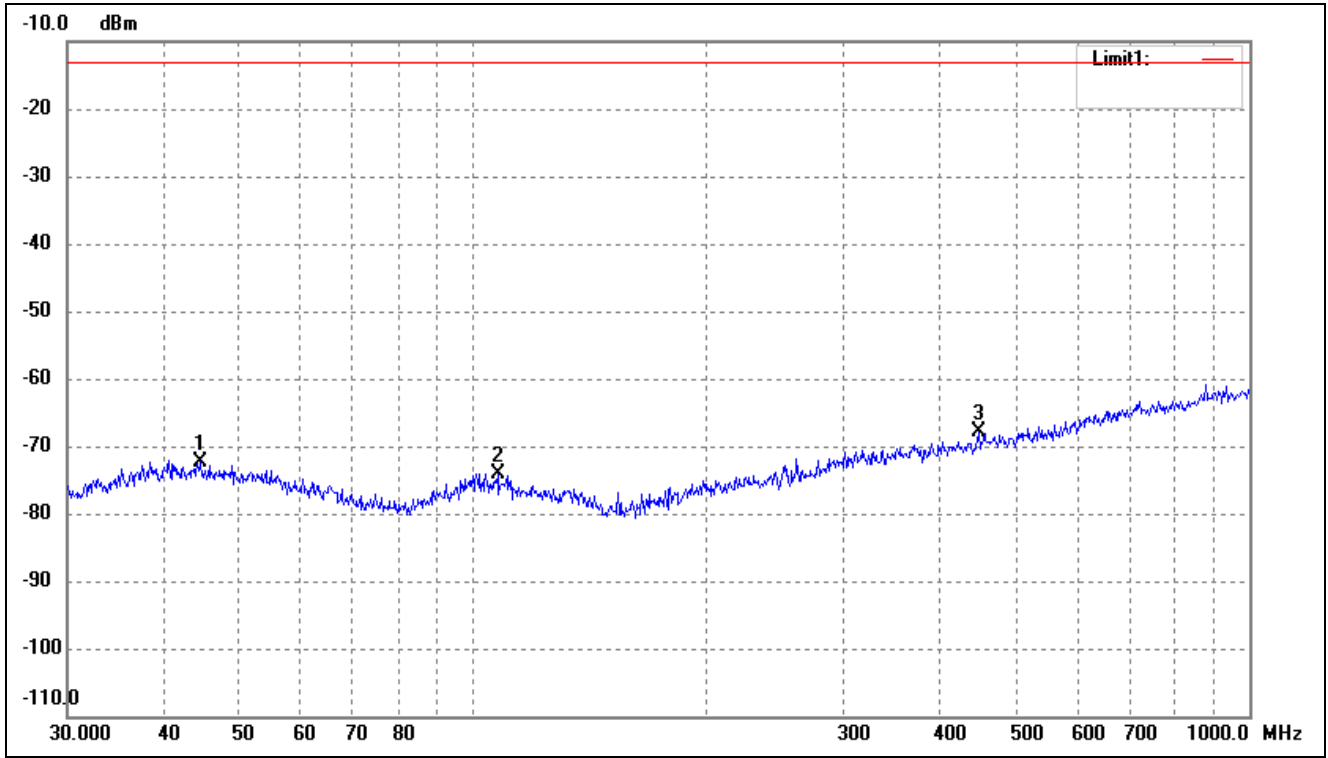


Test Channel	WCDMA Band V-Middle	Polarity:	Horizontal
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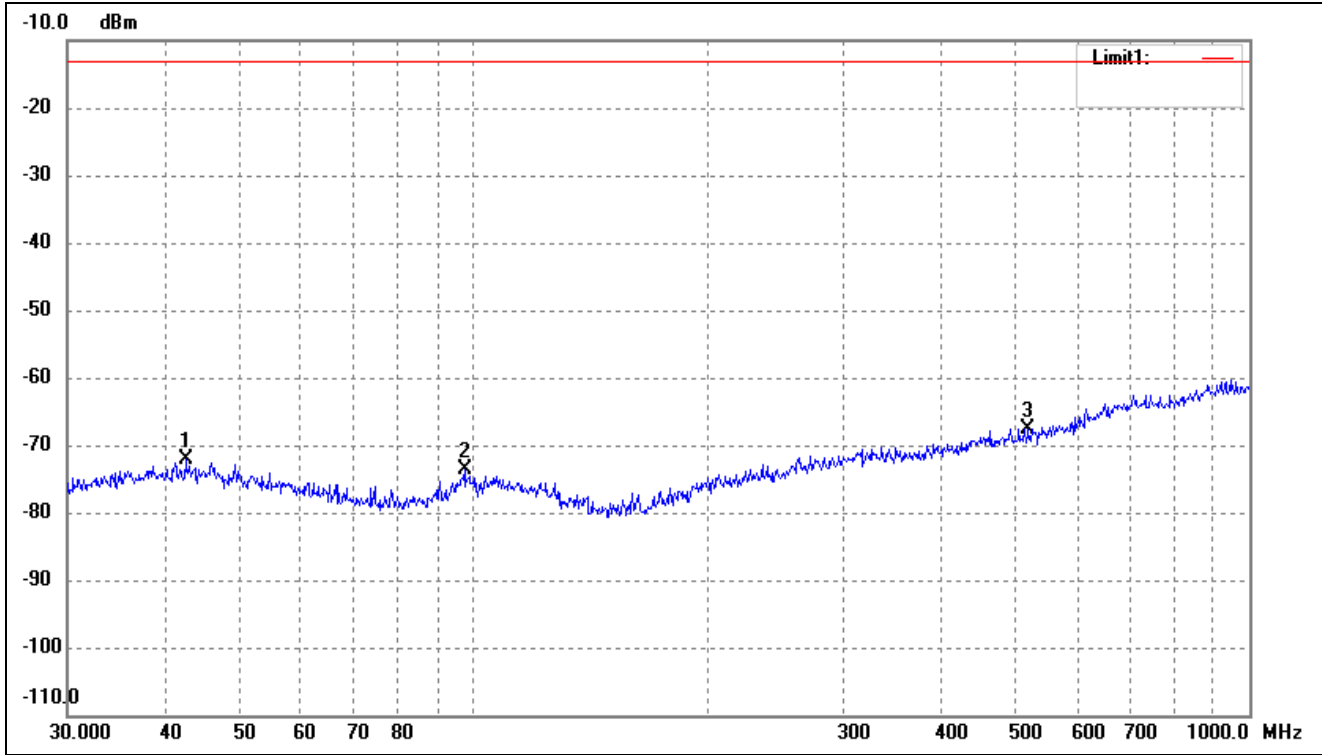
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	45.8552	-77.42	4.56	-72.86	-13.00	-59.86	ERP
2	98.1419	-77.45	3.22	-74.23	-13.00	-61.23	ERP
3	541.3724	-77.24	10.50	-66.74	-13.00	-53.74	ERP

Test Channel	WCDMA Band V-Middle	Polarity:	Vertical
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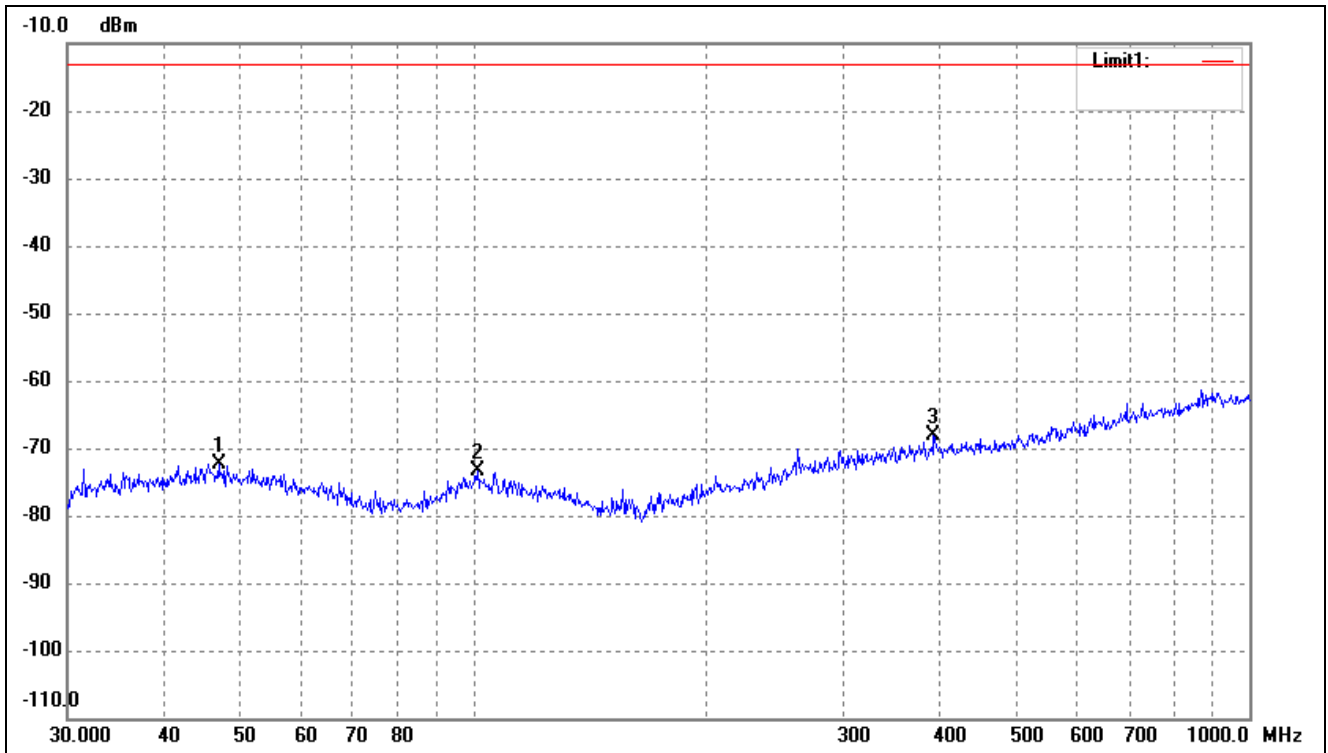
No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	44.4307	-76.88	4.59	-72.29	-13.00	-59.29	ERP
2	107.5100	-77.73	3.68	-74.05	-13.00	-61.05	ERP
3	447.9821	-76.98	9.00	-67.98	-13.00	-54.98	ERP

Test Channel	WCDMA Band IV-Middle	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	42.6000	-76.85	4.63	-72.22	-13.00	-59.22	ERP
2	97.4560	-76.72	3.03	-73.69	-13.00	-60.69	ERP
3	519.0648	-77.58	10.02	-67.56	-13.00	-54.56	ERP

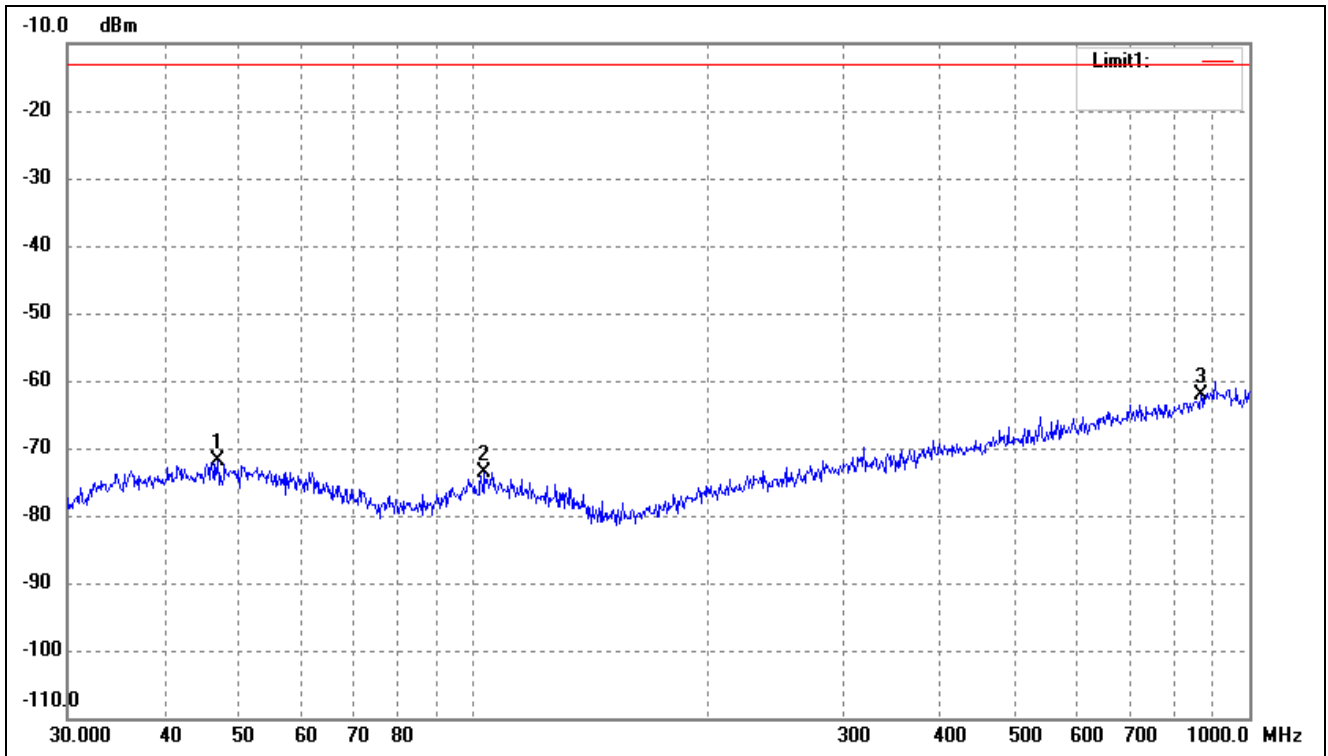
Test Channel	WCDMA Band IV-Middle	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	46.9947	-76.95	4.54	-72.41	-13.00	-59.41	ERP
2	101.2884	-76.99	3.73	-73.26	-13.00	-60.26	ERP
3	392.0951	-76.37	8.36	-68.01	-13.00	-55.01	ERP

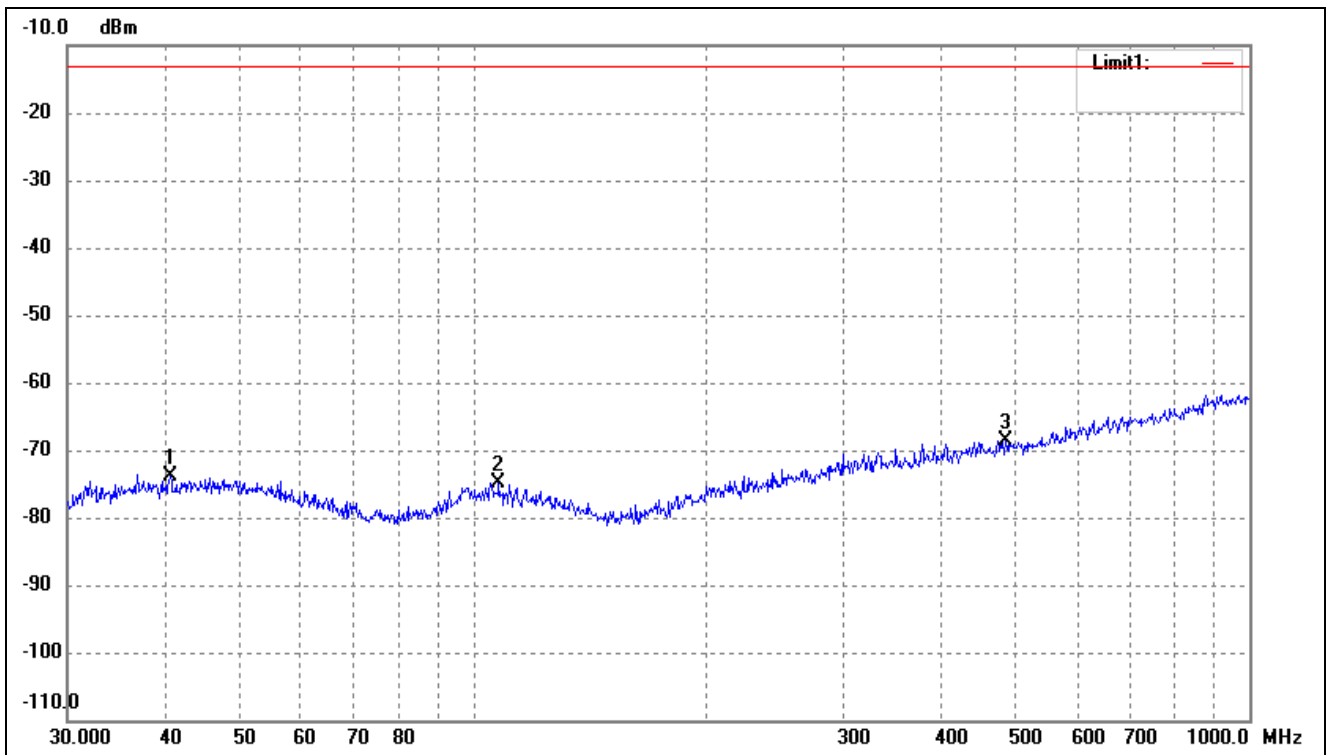
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band II-Middle	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBm)	Correct (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	46.8303	-76.41	4.55	-71.86	-13.00	-58.86	ERP
2	103.4420	-77.40	3.71	-73.69	-13.00	-60.69	ERP
3	866.0878	-77.36	15.27	-62.09	-13.00	-49.09	ERP

Test Channel	WCDMA Band II-Middle	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	40.7015	-78.45	4.67	-73.78	-13.00	-60.78	ERP
2	107.8876	-78.59	3.68	-74.91	-13.00	-61.91	ERP
3	485.6093	-78.06	9.44	-68.62	-13.00	-55.62	ERP

Note: Margin= (Reading+ Correct)- Limit

- Spurious Emissions Above 1GHz
- For Cellular Band\_GSM850 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (824.2MHz)						
1648.4	-35.96	4.94	-31.02	-13	-18.02	H
2472.6	-42.9	8.46	-34.44	-13	-21.44	H
1648.4	-32.89	4.94	-27.95	-13	-14.95	V
2472.6	-39.22	8.46	-30.76	-13	-17.76	V
Middle Channel (836.6MHz)						
1673.2	-32.34	5.11	-27.23	-13	-14.23	H
2509.8	-41.51	8.54	-32.97	-13	-19.97	H
1673.2	-35.21	5.11	-30.1	-13	-17.1	V
2509.8	-39.16	8.54	-30.62	-13	-17.62	V
High Channel (848.8MHz)						
1697.6	-33.68	5.25	-28.43	-13	-15.43	H
2546.4	-39.59	8.57	-31.02	-13	-18.02	H
1697.6	-32.38	5.25	-27.13	-13	-14.13	V
2546.4	-40.06	8.57	-31.49	-13	-18.49	V

- For PCS Band\_GSM1900 Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1850.2MHz)						
3700.4	-35.86	10.54	-25.32	-13	-12.32	H
5550.6	-41.34	13.37	-27.97	-13	-14.97	H
3700.4	-34.05	10.54	-23.51	-13	-10.51	V
5550.6	-41.97	13.37	-28.6	-13	-15.6	V
Middle Channel (1880MHz)						
3760.0	-36.55	10.64	-25.91	-13	-12.91	H
5640.0	-43.06	13.54	-29.52	-13	-16.52	H
3760.0	-34.39	10.64	-23.75	-13	-10.75	V
5640.0	-41.9	13.54	-28.36	-13	-15.36	V
High Channel (1909.8MHz)						
3819.6	-35.22	10.74	-24.48	-13	-11.48	H
5729.4	-41.95	13.71	-28.24	-13	-15.24	H
3819.6	-37.06	10.74	-26.32	-13	-13.32	V
5729.4	-44.1	13.71	-30.39	-13	-17.39	V

## ➤ For WCDMA Band V Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (826.4MHz)						
1652.8	-33.28	4.94	-28.34	-13	-15.34	H
2479.2	-42.51	8.46	-34.05	-13	-21.05	H
1652.8	-35.15	4.94	-30.21	-13	-17.21	V
2479.2	-39.26	8.46	-30.8	-13	-17.8	V
Middle Channel (836.6MHz)						
1672.8	-35.94	5.11	-30.83	-13	-17.83	H
2509.2	-40.52	8.54	-31.98	-13	-18.98	H
1672.8	-33.22	5.11	-28.11	-13	-15.11	V
2509.2	-40.41	8.54	-31.87	-13	-18.87	V
High Channel (846.6MHz)						
1693.2	-32.35	5.25	-27.1	-13	-14.1	H
2539.8	-39.7	8.57	-31.13	-13	-18.13	H
1693.2	-33.7	5.25	-28.45	-13	-15.45	V
2539.8	-39.14	8.57	-30.57	-13	-17.57	V

## ➤ For WCDMA Band IV Mode

Frequency	Reading	Correct	Result	Limit	Margin	Polar
(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	H/V
Low Channel (1712.4MHz)						
3424.8	-34.45	8.65	-25.8	-13	-12.8	H
5137.2	-41.53	12.03	-29.5	-13	-16.5	H
3424.8	-32.48	8.65	-23.83	-13	-10.83	V
5137.2	-39.28	12.03	-27.25	-13	-14.25	V
Middle Channel (1732.4MHz)						
3466.8	-35.28	8.91	-26.37	-13	-13.37	H
5200.2	-42.99	12.29	-30.7	-13	-17.7	H
3466.8	-33.61	8.91	-24.7	-13	-11.7	V
5200.2	-40.9	12.29	-28.61	-13	-15.61	V
High Channel (1752.6MHz)						
3505.2	-35.7	9.11	-26.59	-13	-13.59	H
5257.8	-42.48	12.56	-29.92	-13	-16.92	H
3505.2	-34.94	9.11	-25.83	-13	-12.83	V
5257.8	-40.27	12.56	-27.71	-13	-14.71	V



## ➤ For WCDMA Band II Mode

Frequency (MHz)	Reading (dBm)	Correct dB	Result (dBm)	Limit (dBm)	Margin (dB)	Polar H/V
Low Channel (1852.4MHz)						
3704.8	-41.03	10.54	-30.49	-13	-17.49	H
5557.2	-49.67	13.37	-36.3	-13	-23.3	H
3704.8	-40.62	10.54	-30.08	-13	-17.08	V
5557.2	-47.81	13.37	-34.44	-13	-21.44	V
Middle Channel (1880MHz)						
3760.8	-40.11	10.64	-29.47	-13	-16.47	H
5640.0	-47.85	13.54	-34.31	-13	-21.31	H
3760.8	-39.4	10.64	-28.76	-13	-15.76	V
5640.0	-48.42	13.54	-34.88	-13	-21.88	V
High Channel (1907.6MHz)						
3815.2	-42.65	10.74	-31.91	-13	-18.91	H
5722.8	-48.65	13.71	-34.94	-13	-21.94	H
3815.2	-41.59	10.74	-30.85	-13	-17.85	V
5722.8	-46.78	13.71	-33.07	-13	-20.07	H

Note:  $Result = Reading + Correct$ ,  $Margin = Result - Limit$

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## **8. Frequency Stability**

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### **8.1 Standard Applicable**

According to §22.355, §24.235, §27.54 the limit is 2.5ppm.

### **8.2 Test Procedure**

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode.

### **8.3 Summary of Test Results/Plots**

**Please refer to Appendix E**

## 9. Modulation characteristics

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### 9.1 Standard Applicable

According to §2.1047, measurements required: Modulation characteristics is given below:

(a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.

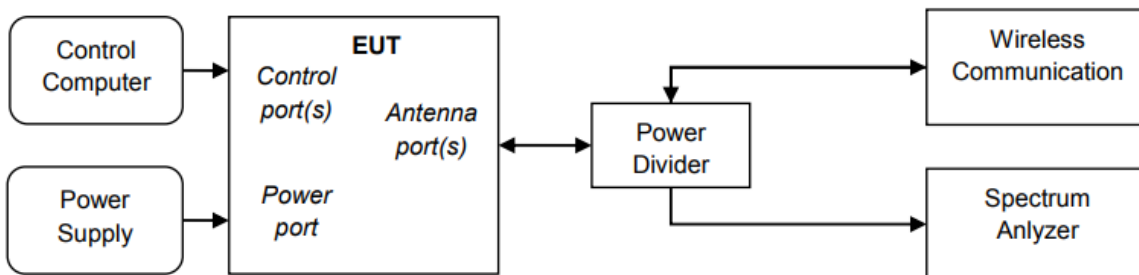
(b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.

(c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.

(d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

### 9.2 Test Procedure

According to ANSI C63.26-2015 section 5.3.2, the following test setup was performed.



### 9.3 Summary of Test Results/Plots

Please refer to Appendix F

## APPENDIX SUMMARY

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Project No.	WTX22X12243880W	Test Engineer	BAIdi Zhong
Start date	2022/10/11	Finish date	2022/11/11
Temperature	23°C	Humidity	56%
RF specifications	GSM/WCDMA		

APPENDIX	Description of Test Item	Result
A	RF Output Power	Compliant
B	Peak-to-average Ratio (PAR) of Transmitter	Compliant
C	Emission Bandwidth	Compliant
D	Out of Band Emissions at Antenna Terminal	Compliant
E	Frequency Stability	Compliant
F	Modulation characteristics	Compliant

**APPENDIX A****Conducted Average power**

Conducted Average power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency(MHz)	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM	33.07	33.11	33.10	30.51	30.30	30.22
GPRS(1Slot)	33.09	33.08	33.07	30.77	30.56	30.47
EGPRS(1Slot)	27.34	27.28	27.15	25.48	25.69	25.59

Conducted Average power (dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4183	4233	9262	9400	9538
Frequency(MHz)	826.4	836.6	846.6	1852.4	1880.0	1907.6
RMC 12.2k	24.05	24.04	24.07	24.06	24.40	24.56
HSDPA Subtest-1	23.02	23.06	23.01	23.13	23.45	23.58
HSDPA Subtest-2	23.01	23.02	22.97	23.11	23.42	23.52
HSDPA Subtest-3	22.96	23.04	22.95	23.08	23.41	23.57
HSDPA Subtest-4	22.97	23.05	22.96	23.09	23.43	23.54
HSUPA Subtest-1	22.93	22.95	22.91	23.17	23.37	23.59
HSUPA Subtest-2	22.91	22.91	22.87	23.15	23.32	23.56
HSUPA Subtest-3	22.89	22.92	22.89	23.13	23.34	23.57
HSUPA Subtest-4	22.89	22.92	22.87	23.14	23.34	23.56
HSUPA Subtest-5	22.9	22.93	22.89	23.14	23.35	23.57

Conducted Average power (dBm)						
Band	WCDMA Band IV					
Channel	1312	1412	1513			
Frequency(MHz)	1712.4	1733.4	1752.6			
RMC 12.2k	23.46	23.29	23.20			
HSDPA Subtest-1	22.47	22.29	22.23			
HSDPA Subtest-2	22.45	22.26	22.21			
HSDPA Subtest-3	22.43	22.27	22.21			
HSDPA Subtest-4	22.45	22.28	22.20			
HSUPA Subtest-1	22.42	22.23	22.16			
HSUPA Subtest-2	22.4	22.21	22.15			
HSUPA Subtest-3	22.38	22.19	22.13			
HSUPA Subtest-4	22.37	22.21	22.14			
HSUPA Subtest-5	22.38	22.2	22.14			

## APPENDIX B

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### Peak-to-average Ratio (PAR) of Transmitter

PCS1900				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
GSM	661	1850.2	4.98	13
GPRS(1 Slot)	661	1850.2	5.01	13
EDGE(1 Slot)	661	1850.2	4.58	13

WCDMA Band IV				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	1312	1712.4	5.96	13
	1412	1733.4	6.04	13
	1513	1752.6	5.77	13

WCDMA Band II				
Test Mode	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)
WCDMA	9262	1852.4	5.65	13
	9400	1880.0	5.74	13
	9538	1907.6	5.96	13

Note: Only the worst case was selected to record.

**APPENDIX C**

EUT Mode	Channel	Frequency (MHz)	99% Occupancy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850 (GMSK)	128	824.20	240	310
	190	836.60	244	308
	251	848.80	242	304
GPRS850 (GMSK,1Slot)	128	824.20	244	316
	190	836.60	248	318
	251	848.80	246	322
EGPRS850 (8PSK,1Slot)	128	824.20	246	328
	190	836.60	242	320
	251	848.80	244	324
PCS1900 (GMSK)	512	1850.20	246	308
	661	1880.00	242	306
	810	1909.80	242	302
GPRS1900 (GMSK,1Slot)	512	1850.20	246	322
	661	1880.00	246	318
	810	1909.80	246	320
EGPRS1900 (8PSK,1Slot)	512	1850.20	238	312
	661	1880.00	244	318
	810	1909.80	246	306

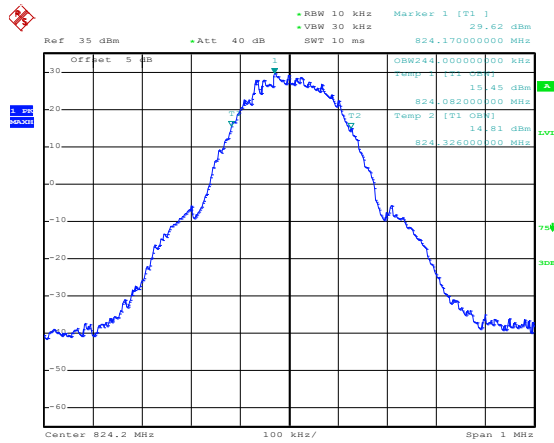


EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
WCDMA Band V	4132	826.40	4180	4720
	4183	836.60	4180	4720
	4233	846.60	4180	4720
HSDPA	4132	826.40	4200	4740
	4183	836.60	4180	4720
	4233	846.60	4200	4720
HSUPA	4132	826.40	4220	4720
	4183	836.60	4200	4740
	4233	846.60	4220	4720
WCDMA Band II	9262	1852.40	4220	4800
	9400	1880.00	4200	4760
	9538	1907.60	4180	4740
HSDPA	9262	1852.40	4220	4760
	9400	1880.00	4200	4720
	9538	1907.60	4160	4720
HSUPA	9262	1852.40	4200	4740
	9400	1880.00	4200	4720
	9538	1907.60	4180	4760
WCDMA Band IV	1312	1712.4	4200	4740
	1412	1733.4	4200	4760
	1513	1752.6	4180	4740
HSDPA	1312	1712.4	4200	4760
	1412	1733.4	4200	4760
	1513	1752.6	4180	4760
HSUPA	1312	1712.4	4200	4720
	1412	1733.4	4200	4740
	1513	1752.6	4180	4720

99% Occupy bandwidth

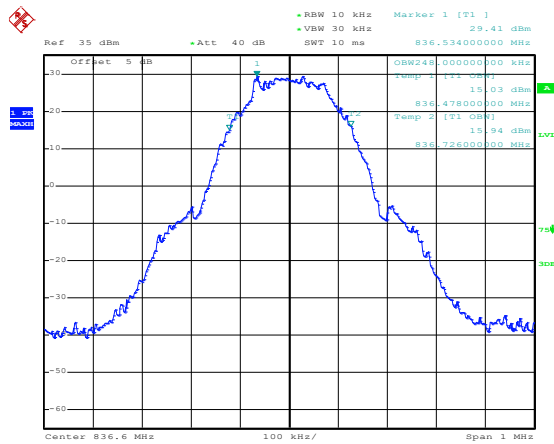
<p>GSM 850 (GMSK)-Low</p>	<p>Ref 35 dBm    +Att 40 dB    +RBW 10 kHz    Marker 1 [T1]    33.53 dBm      +VBW 30 kHz    +SWT 10 ms    824.268000000 MHz</p> <p>Offset 5 dB    DBW240.000000000 kHz    17.84 dBm      824.084000000 MHz    16.61 dBm      824.328000000 MHz</p> <p>Center 824.2 MHz    100 kHz/    Span 1 MHz</p> <p>Date: 18.OCT.2022 15:07:57</p>
<p>GSM 850 (GMSK)-Middle</p>	<p>Ref 35 dBm    +Att 40 dB    +RBW 10 kHz    Marker 1 [T1]    33.43 dBm      +VBW 30 kHz    +SWT 10 ms    836.634000000 MHz</p> <p>Offset 5 dB    DBW240.000000000 kHz    16.72 dBm      836.480000000 MHz    15.25 dBm      836.728000000 MHz</p> <p>Center 836.6 MHz    100 kHz/    Span 1 MHz</p> <p>Date: 18.OCT.2022 15:08:17</p>
<p>GSM 850 (GMSK)-High</p>	<p>Ref 35 dBm    +Att 40 dB    +RBW 10 kHz    Marker 1 [T1]    33.69 dBm      +VBW 30 kHz    +SWT 10 ms    848.870000000 MHz</p> <p>Offset 5 dB    DBW240.000000000 kHz    17.74 dBm      848.682000000 MHz    17.00 dBm      849.024000000 MHz</p> <p>Center 848.8 MHz    100 kHz/    Span 1 MHz</p> <p>Date: 18.OCT.2022 15:08:47</p>

GPRS850  
(GMSK,1Slot)-Low



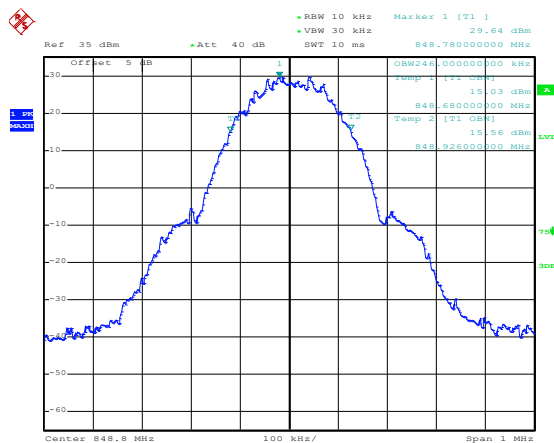
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GPRS850  
(GMSK,1Slot)-Middle



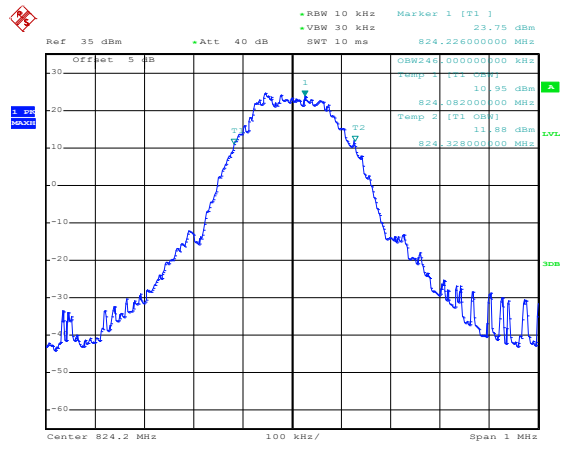
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GPRS850  
(GMSK,1Slot)-High



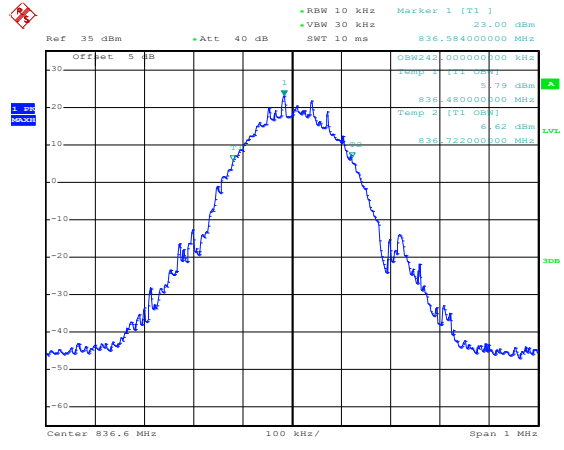
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EGPRS850  
(8PSK,1Slot)-Low



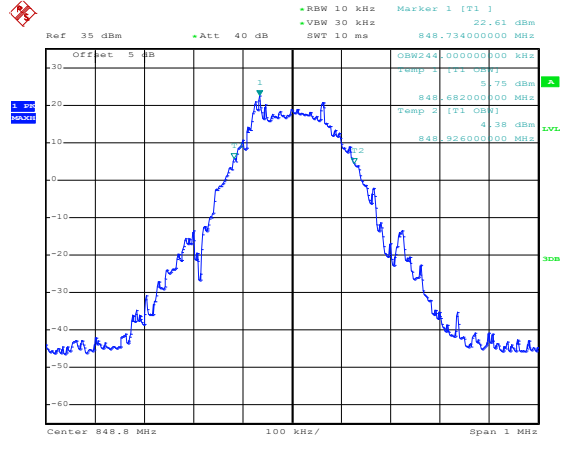
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EGPRS850  
(8PSK,1Slot)-Middle



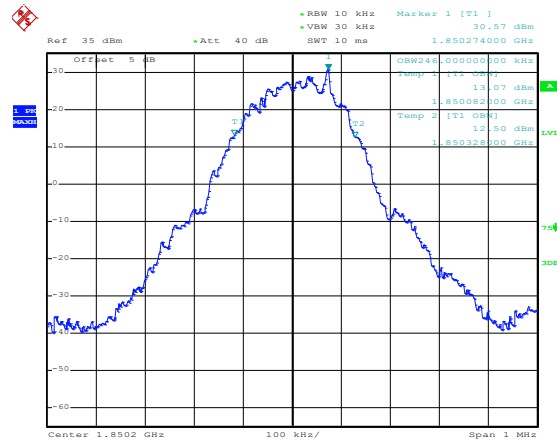
Date: 24.NOV.2022 10:52:13

EGPRS850  
(8PSK,1Slot)-High



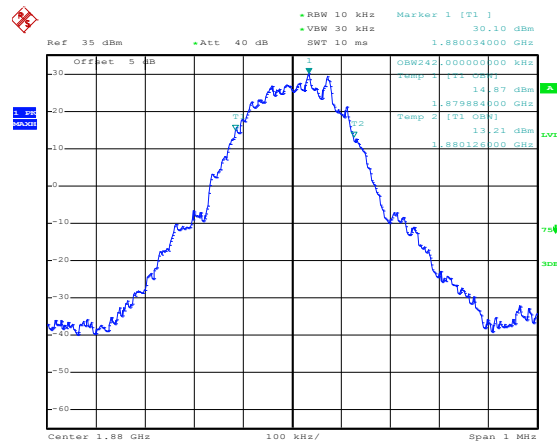
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PCS1900  
(GMSK)-Low



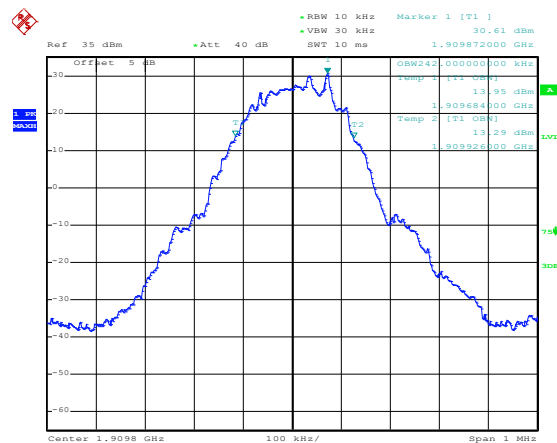
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PCS1900  
(GMSK)-Middle



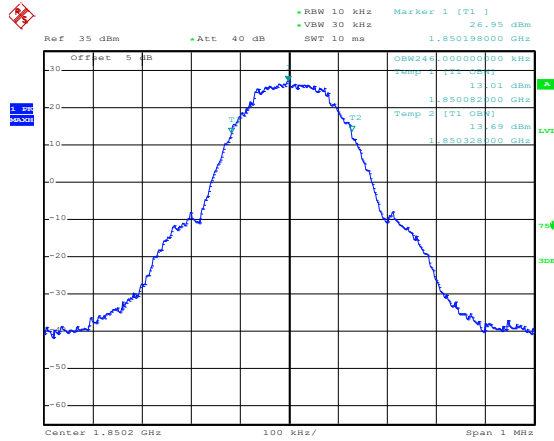
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PCS1900  
(GMSK)-High



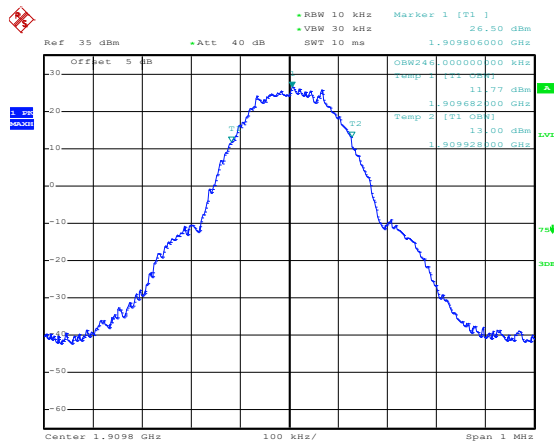
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GPRS1900  
(GMSK,1Slot)-Low



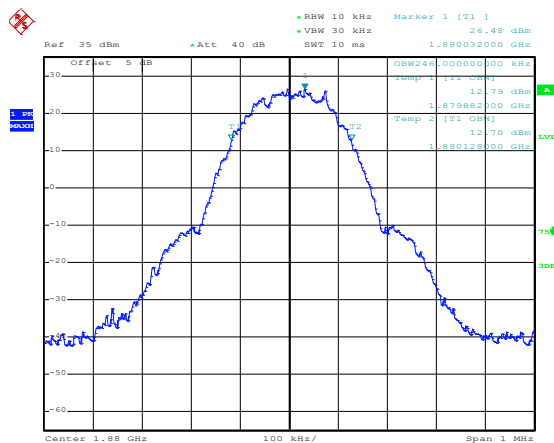
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GPRS1900  
(GMSK,1Slot)-Middle



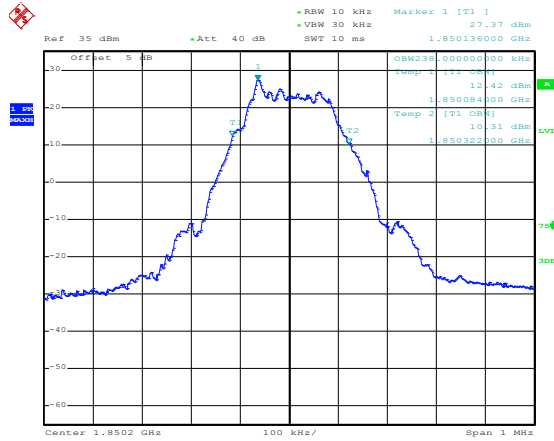
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GPRS1900  
(GMSK,1Slot)-High



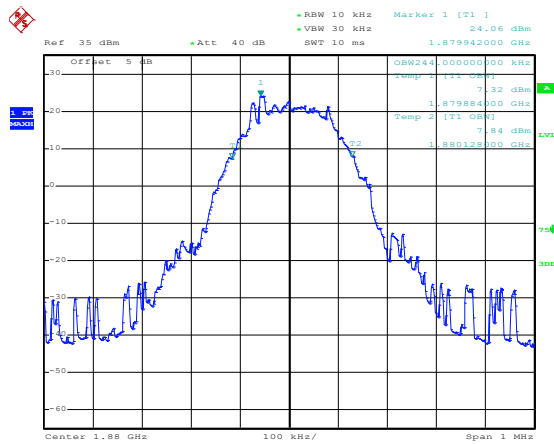
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EGPRS1900  
(8PSK,1Slot)-Low



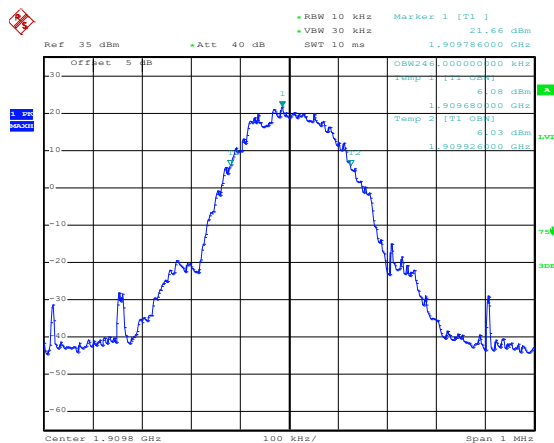
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EGPRS1900  
(8PSK,1Slot)-Middle



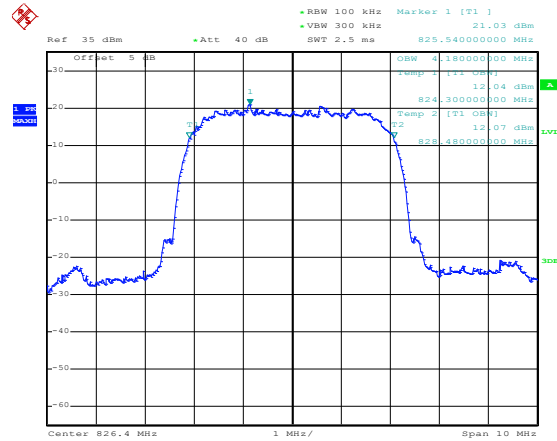
Date: 18.OCT.2022 16:28:27

EGPRS1900  
(8PSK,1Slot)-High



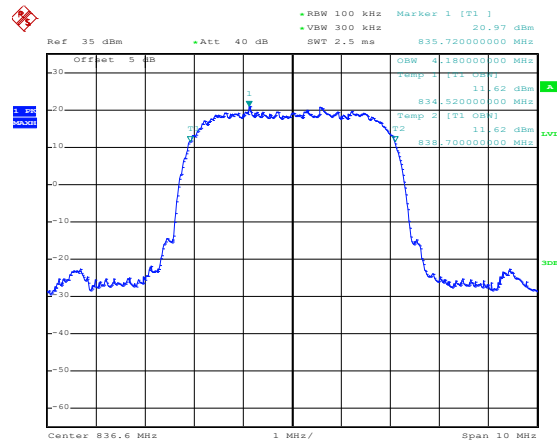
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WCDMA Band V-Low



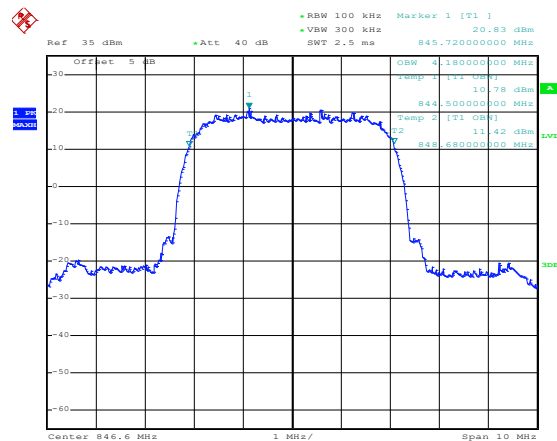
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WCDMA Band V-Middle



Date: 19.OCT.2022 09:02:13

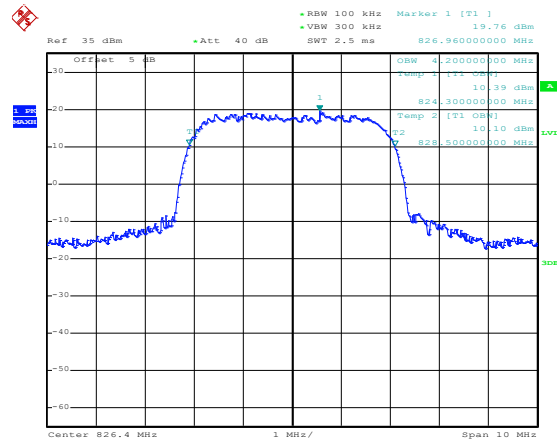
WCDMA Band V-High



Date: 19.OCT.2022 09:00:37

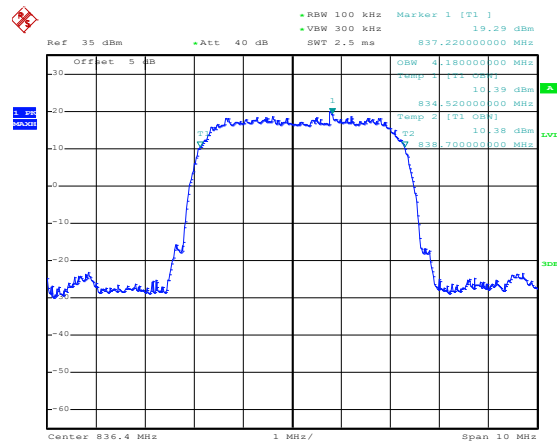


HSDPA-Low



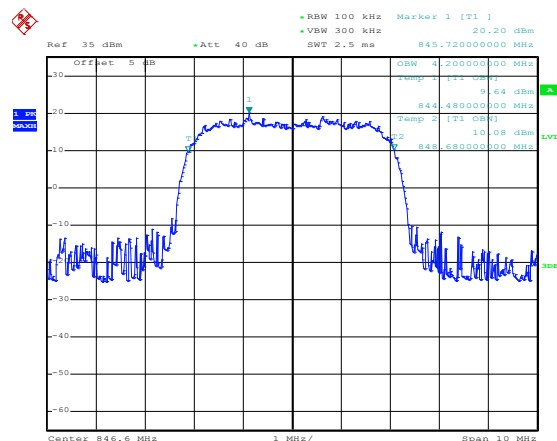
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HSDPA-Middle



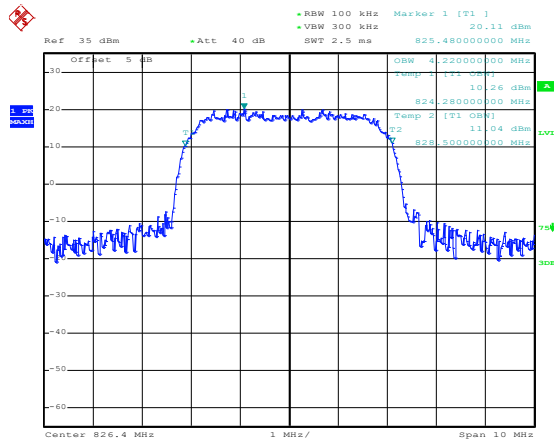
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HSDPA-High



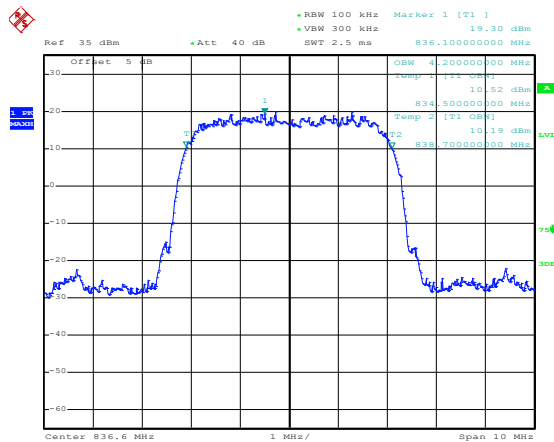
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HSUPA-Low



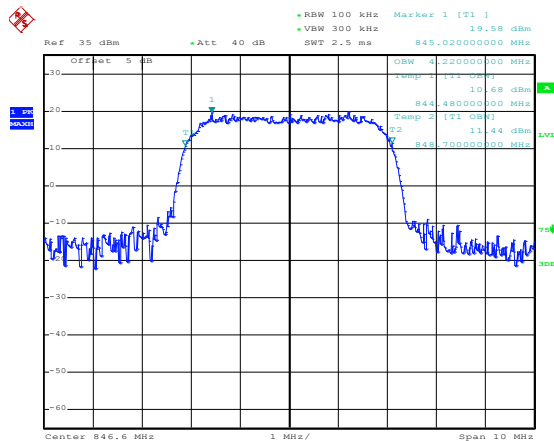
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HSUPA-Middle

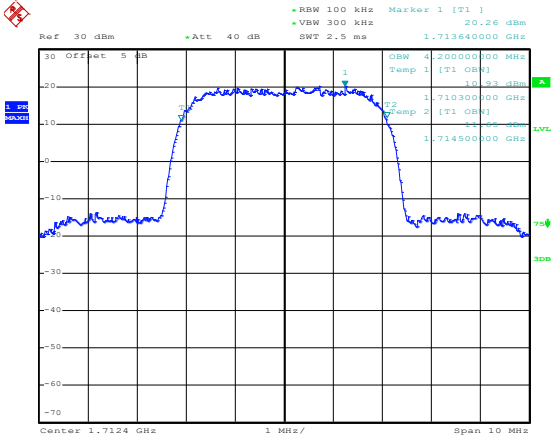
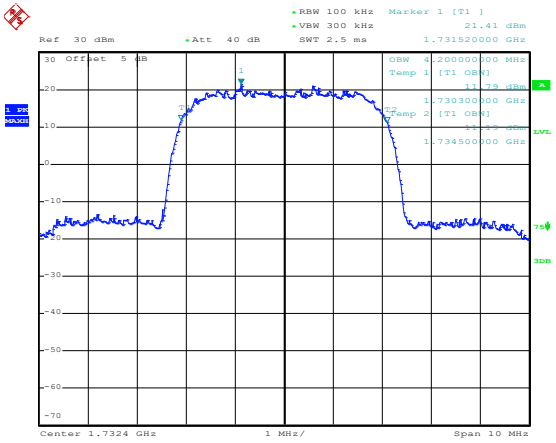
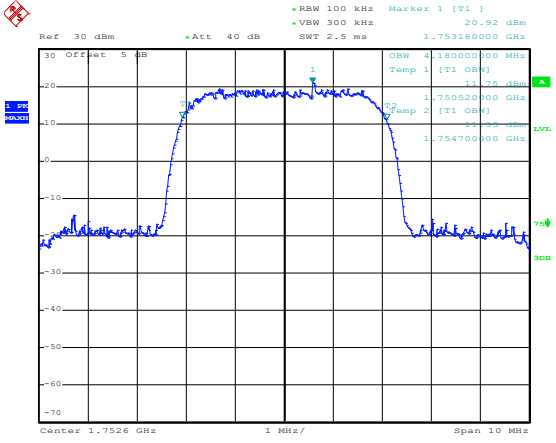


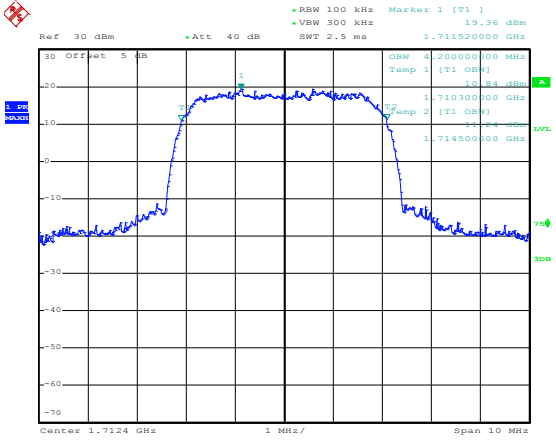
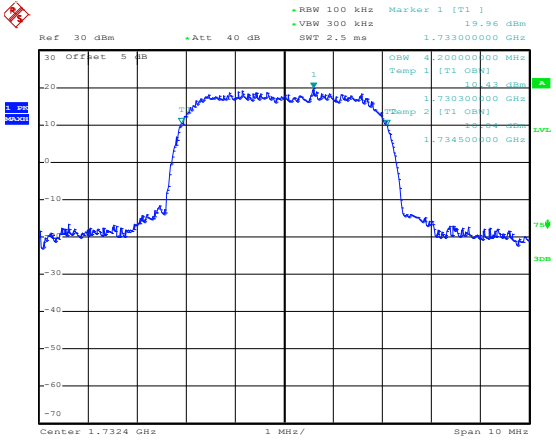
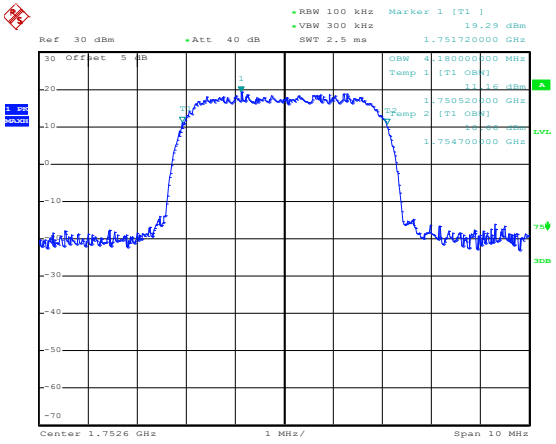
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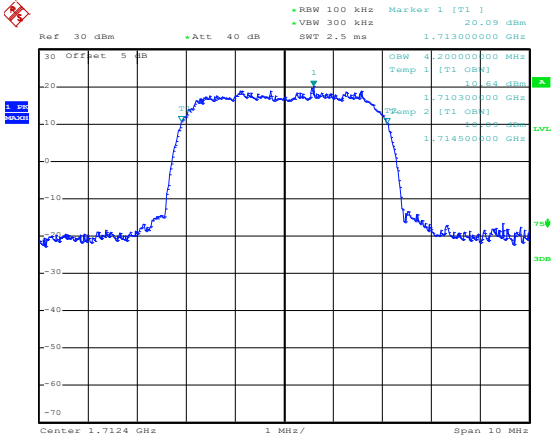
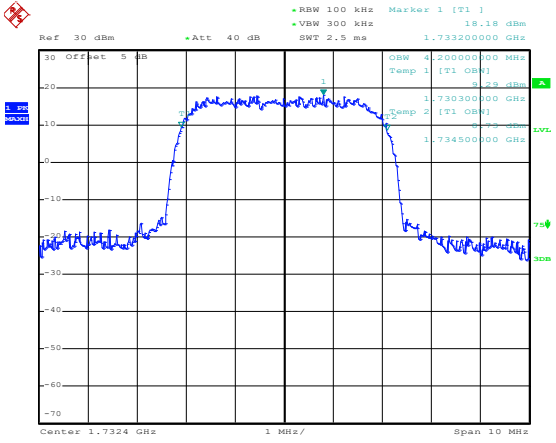
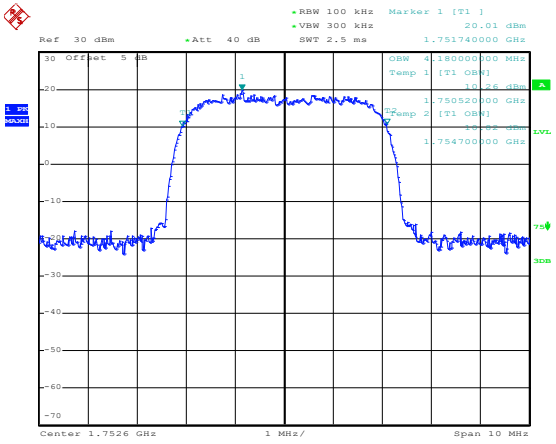
HSUPA-High

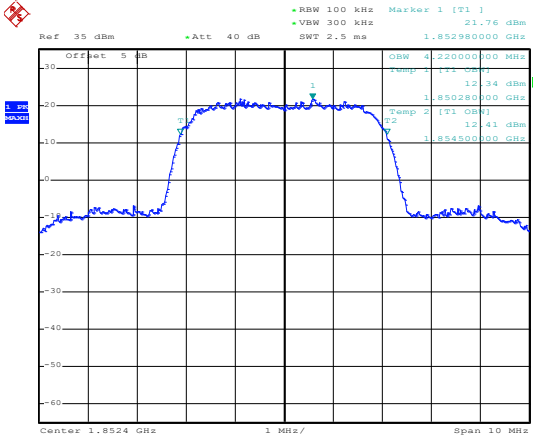
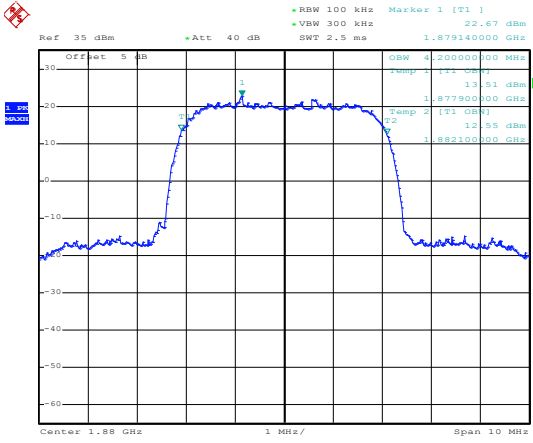
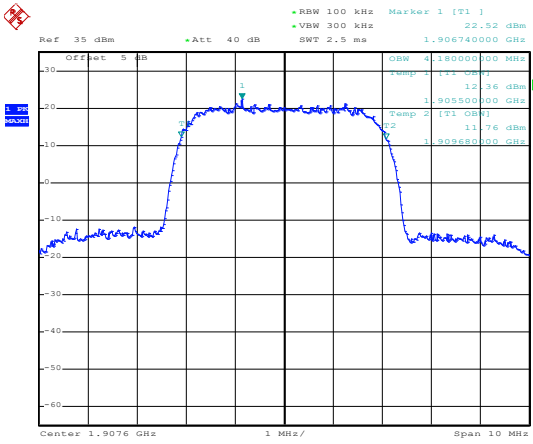


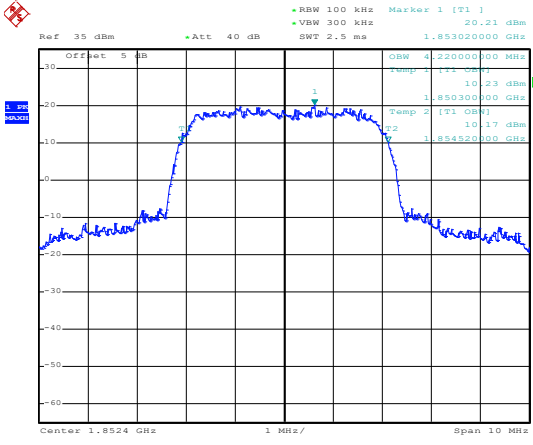
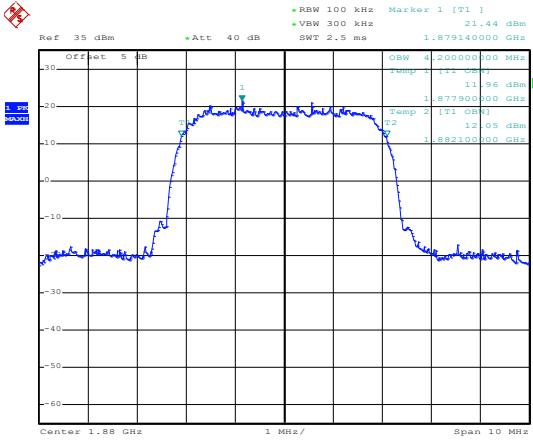
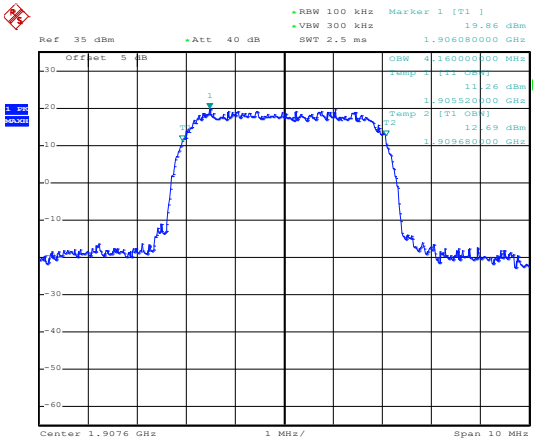
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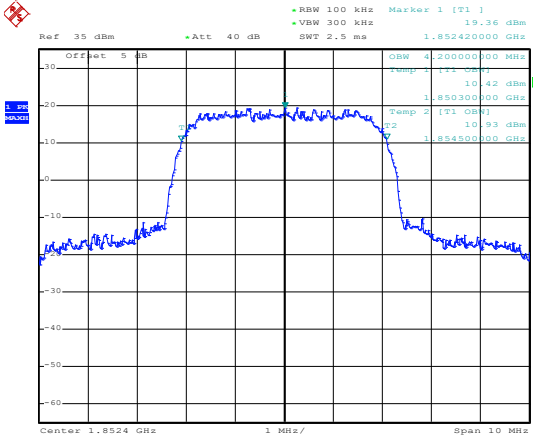
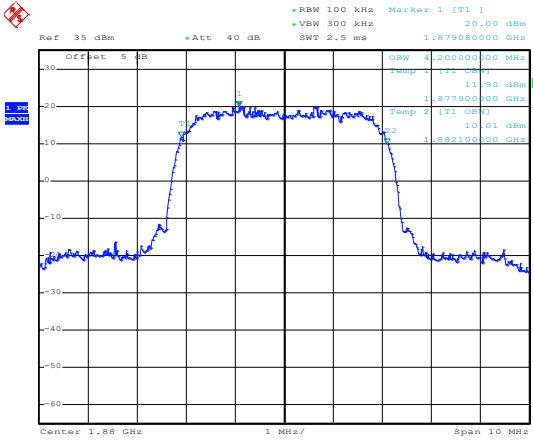
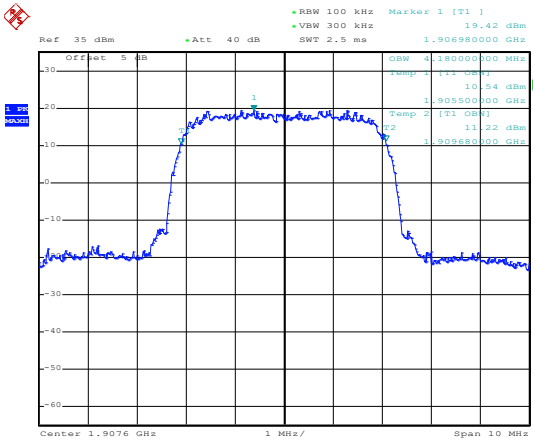
<p>WCDMA Band IV-Low</p>	 <p>Date: 18.OCT.2022 19:39:44</p>
<p>WCDMA Band IV-Middle</p>	 <p>Date: 18.OCT.2022 19:41:10</p>
<p>WCDMA Band IV-High</p>	 <p>Date: 18.OCT.2022 19:41:31</p>

<p>HSDPA-Low</p>	 <p>Date: 18.OCT.2022 19:42:54</p>
<p>HSDPA-Middle</p>	 <p>Date: 18.OCT.2022 19:43:34</p>
<p>HSDPA-High</p>	 <p>Date: 18.OCT.2022 19:44:09</p>

<p>HSUPA-Low</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.09 dBm          VBW 300 kHz    SWT 2.5 ms    1.71300000 GHz</p> <p>30 Offset 5 dB    1    OBW 4.20000000 MHz          Temp 1 [T1] OBW    10.64 dBm          20    1.71030000 GHz          10    Temp 2 [T1] OBW    10.64 dBm          0    1.71450000 GHz          -10          -20          -30          -40          -50          -60          -70</p> <p>Center 1.7124 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:30:23</p>
<p>HSUPA-Middle</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    18.18 dBm          VBW 300 kHz    SWT 2.5 ms    1.73220000 GHz</p> <p>30 Offset 5 dB    1    OBW 4.20000000 MHz          Temp 1 [T1] OBW    10.64 dBm          20    1.73030000 GHz          10    Temp 2 [T1] OBW    10.64 dBm          0    1.73450000 GHz          -10          -20          -30          -40          -50          -60          -70</p> <p>Center 1.7324 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:30:46</p>
<p>HSUPA-High</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.01 dBm          VBW 300 kHz    SWT 2.5 ms    1.75370000 GHz</p> <p>30 Offset 5 dB    1    OBW 4.18000000 MHz          Temp 1 [T1] OBW    10.26 dBm          20    1.75052000 GHz          10    Temp 2 [T1] OBW    10.62 dBm          0    1.75470000 GHz          -10          -20          -30          -40          -50          -60          -70</p> <p>Center 1.7526 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:31:32</p>

<p>WCDMA Band II-Low</p>	 <p>Ref 35 dBm    +Att 40 dB    RBW 100 kHz    Marker 1 [T1]    21.76 dBm          VBW 300 kHz    SWT 2.5 ms    1.852980000 GHz</p> <p>Offset 5 dB    DBW 4.200000000 MHz    Temp 1 [T1]    12.34 dBm          Temp 2 [T2]    1.850280000 GHz          Temp 3 [T3]    12.41 dBm          Temp 4 [T4]    1.854500000 GHz</p> <p>Center 1.8524 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 17:59:57</p>
<p>WCDMA Band II-Middle</p>	 <p>Ref 35 dBm    +Att 40 dB    RBW 100 kHz    Marker 1 [T1]    22.67 dBm          VBW 300 kHz    SWT 2.5 ms    1.879140000 GHz</p> <p>Offset 5 dB    DBW 4.200000000 MHz    Temp 1 [T1]    12.51 dBm          Temp 2 [T2]    1.877900000 GHz          Temp 3 [T3]    12.55 dBm          Temp 4 [T4]    1.882100000 GHz</p> <p>Center 1.88 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:01:31</p>
<p>WCDMA Band II-High</p>	 <p>Ref 35 dBm    +Att 40 dB    RBW 100 kHz    Marker 1 [T1]    22.52 dBm          VBW 300 kHz    SWT 2.5 ms    1.906740000 GHz</p> <p>Offset 5 dB    DBW 4.180000000 MHz    Temp 1 [T1]    12.36 dBm          Temp 2 [T2]    1.905500000 GHz          Temp 3 [T3]    11.76 dBm          Temp 4 [T4]    1.908800000 GHz</p> <p>Center 1.9076 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:37:24</p>

<p>HSDPA-Low</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    20.21 dBm          Offset 5 dB    Center 1.8524 GHz    Span 10 MHz</p> <table border="1" data-bbox="1005 280 1173 660"> <tr><td>DBW</td><td>4.220000000 MHz</td><td>10.23 dBm</td></tr> <tr><td>Temp 1</td><td>[73.0dB]</td><td>1.853000000 GHz</td></tr> <tr><td>Temp 2</td><td>[73.0dB]</td><td>1.854200000 GHz</td></tr> </table> <p>Date: 18.OCT.2022 18:38:29</p>	DBW	4.220000000 MHz	10.23 dBm	Temp 1	[73.0dB]	1.853000000 GHz	Temp 2	[73.0dB]	1.854200000 GHz
DBW	4.220000000 MHz	10.23 dBm								
Temp 1	[73.0dB]	1.853000000 GHz								
Temp 2	[73.0dB]	1.854200000 GHz								
<p>HSDPA-Middle</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    21.44 dBm          Offset 5 dB    Center 1.88 GHz    Span 10 MHz</p> <table border="1" data-bbox="1005 835 1173 1216"> <tr><td>DBW</td><td>4.200000000 MHz</td><td>11.96 dBm</td></tr> <tr><td>Temp 1</td><td>[73.0dB]</td><td>1.879000000 GHz</td></tr> <tr><td>Temp 2</td><td>[73.0dB]</td><td>1.882100000 GHz</td></tr> </table> <p>Date: 18.OCT.2022 18:39:06</p>	DBW	4.200000000 MHz	11.96 dBm	Temp 1	[73.0dB]	1.879000000 GHz	Temp 2	[73.0dB]	1.882100000 GHz
DBW	4.200000000 MHz	11.96 dBm								
Temp 1	[73.0dB]	1.879000000 GHz								
Temp 2	[73.0dB]	1.882100000 GHz								
<p>HSDPA-High</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    19.86 dBm          Offset 5 dB    Center 1.9076 GHz    Span 10 MHz</p> <table border="1" data-bbox="1005 1391 1173 1771"> <tr><td>DBW</td><td>4.160000000 MHz</td><td>11.26 dBm</td></tr> <tr><td>Temp 1</td><td>[73.0dB]</td><td>1.905200000 GHz</td></tr> <tr><td>Temp 2</td><td>[73.0dB]</td><td>1.908800000 GHz</td></tr> </table> <p>Date: 18.OCT.2022 18:39:30</p>	DBW	4.160000000 MHz	11.26 dBm	Temp 1	[73.0dB]	1.905200000 GHz	Temp 2	[73.0dB]	1.908800000 GHz
DBW	4.160000000 MHz	11.26 dBm								
Temp 1	[73.0dB]	1.905200000 GHz								
Temp 2	[73.0dB]	1.908800000 GHz								

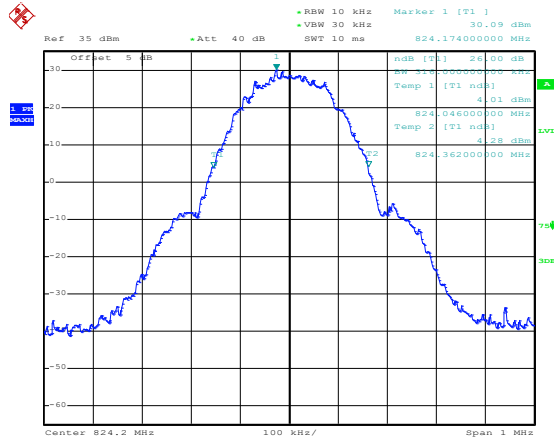
<p>HSUPA-Low</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    19.36 dBm</p> <p>Center 1.8524 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:41:09</p>
<p>HSUPA-Middle</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    20.00 dBm</p> <p>Center 1.88 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:41:39</p>
<p>HSUPA-High</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    19.42 dBm</p> <p>Center 1.9076 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:42:05</p>



-26dB bandwidth

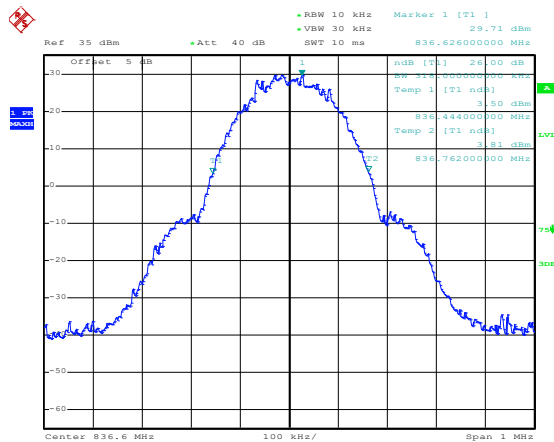
<p>GSM 850 (GMSK)-Low</p>	<p>Date: 18.OCT.2022 15:05:55</p>
<p>GSM 850 (GMSK)-Middle</p>	<p>Date: 18.OCT.2022 15:06:32</p>
<p>GSM 850 (GMSK)-High</p>	<p>Date: 18.OCT.2022 15:06:57</p>

GPRS850  
(GMSK,1Slot)-Low



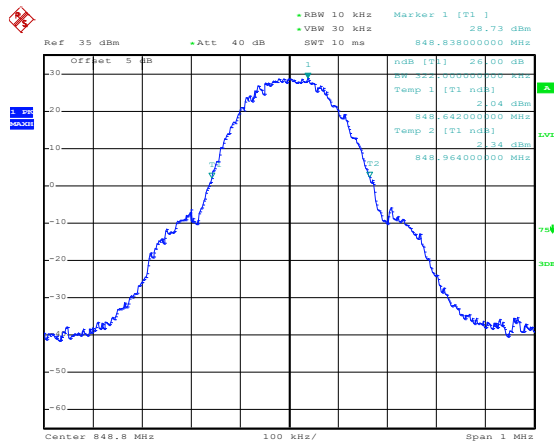
Date: 18.OCT.2022 15:12:27

GPRS850  
(GMSK,1Slot)-Middle



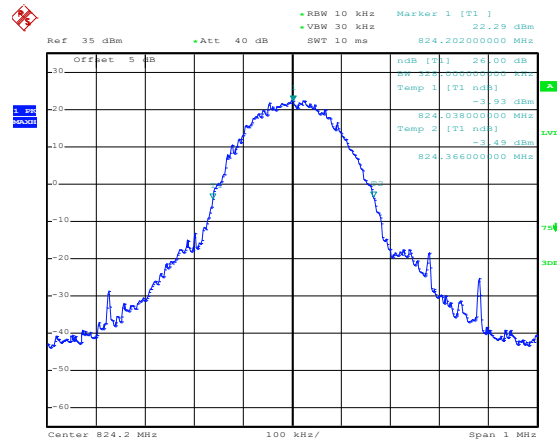
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GPRS850  
(GMSK,1Slot)-High



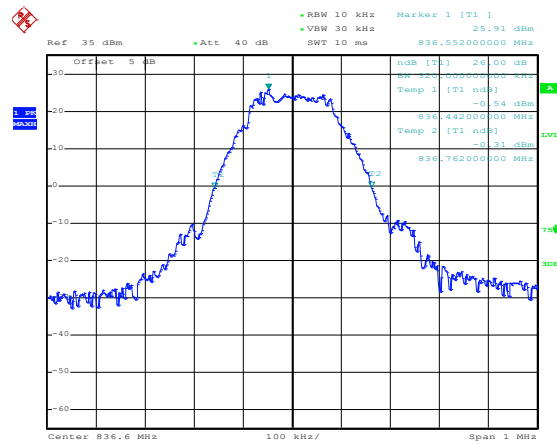
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EGPRS850  
(8PSK,1Slot)-Low



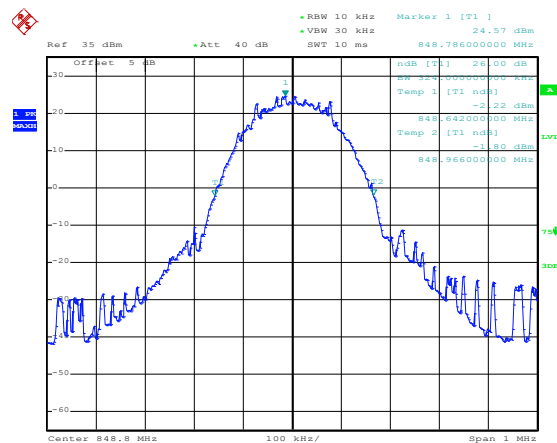
Date: 18.OCT.2022 15:16:35

EGPRS850  
(8PSK,1Slot)-Middle



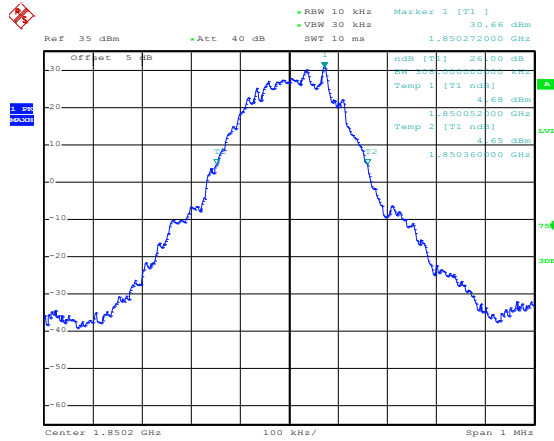
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EGPRS850  
(8PSK,1Slot)-High



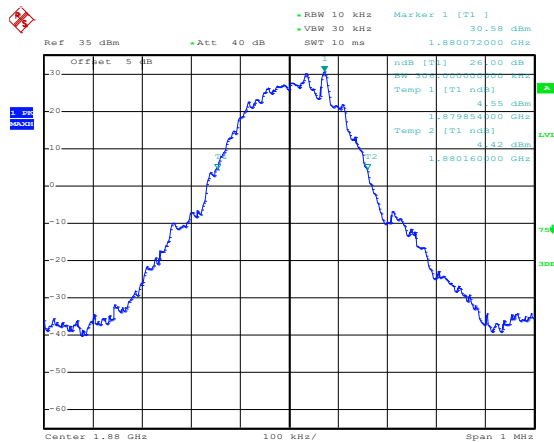
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PCS1900  
(GMSK)-Low



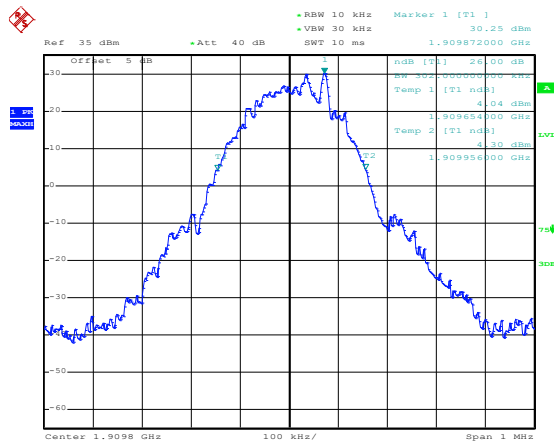
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PCS1900  
(GMSK)-Middle



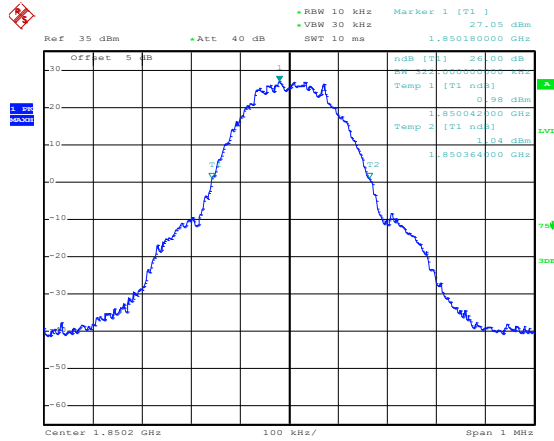
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PCS1900  
(GMSK)-High



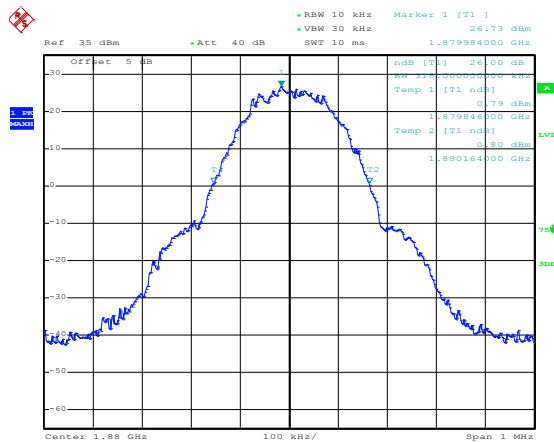
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GPRS1900  
(GMSK,1Slot)-Low



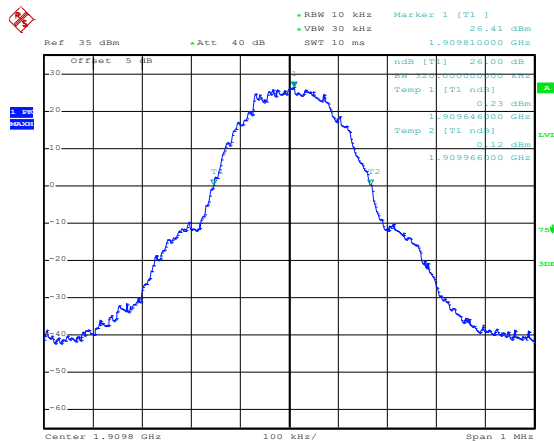
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GPRS1900  
(GMSK,1Slot)-Middle

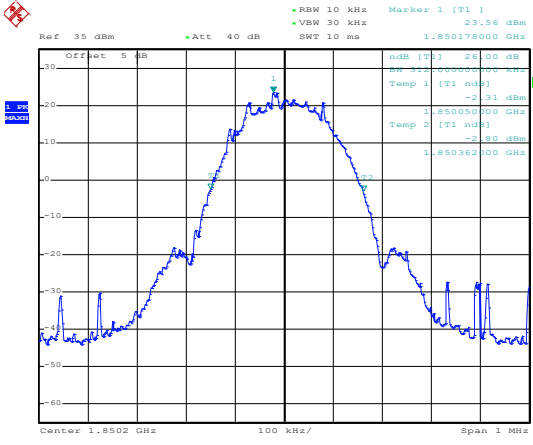
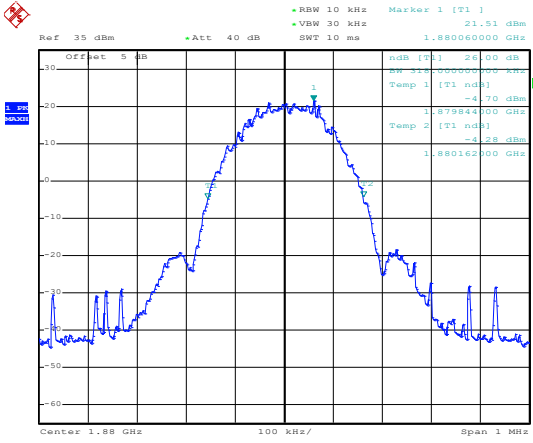
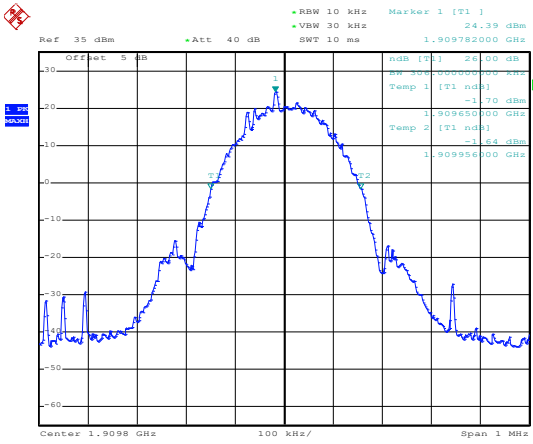


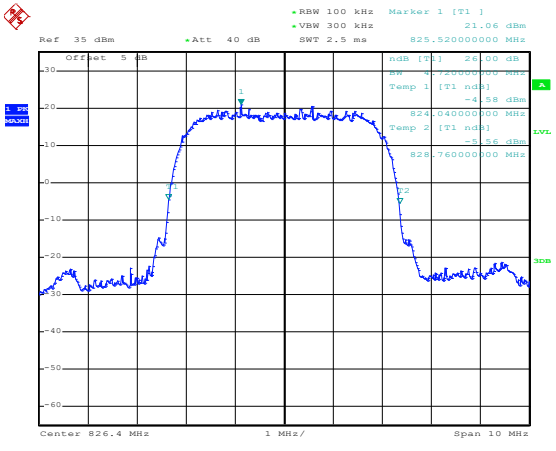
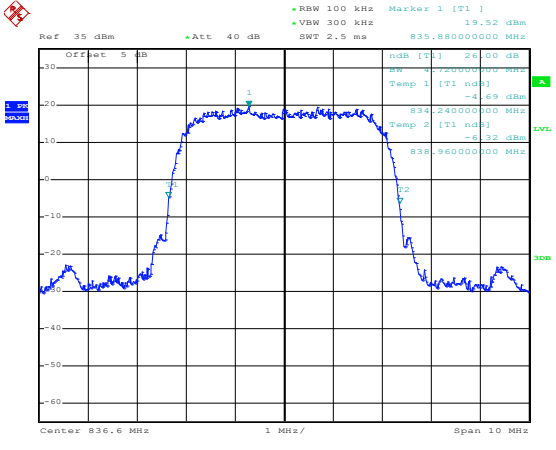
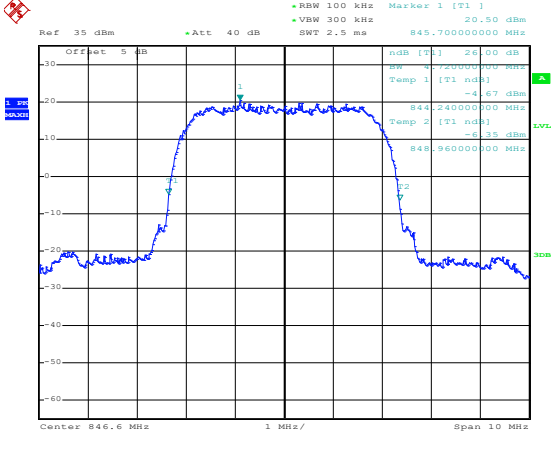
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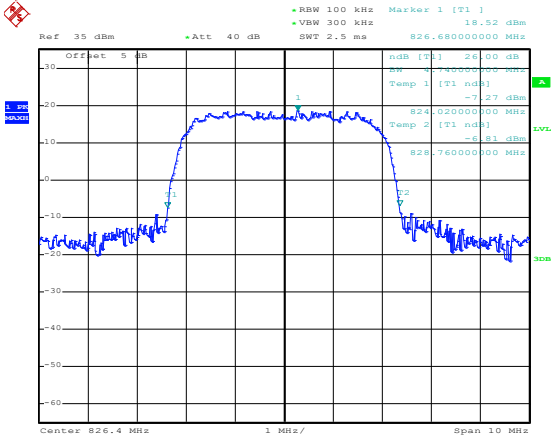
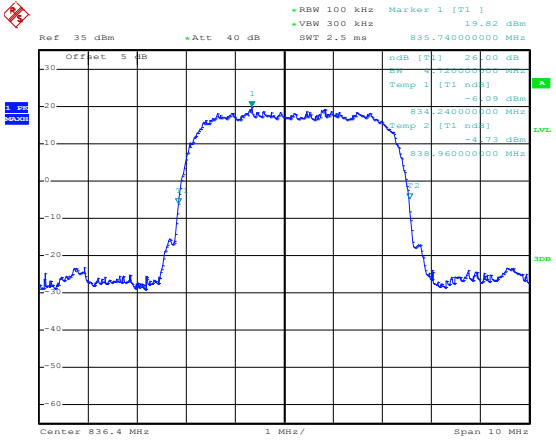
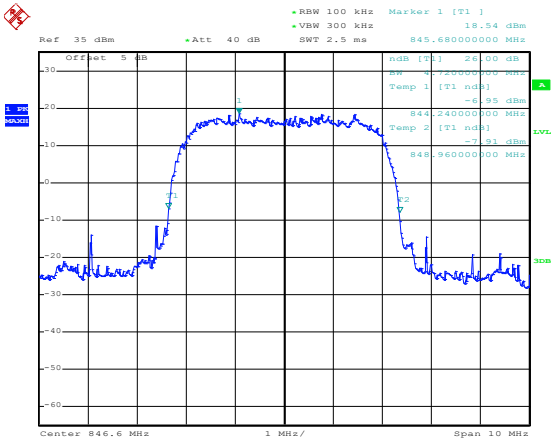
GPRS1900  
(GMSK,1Slot)-High



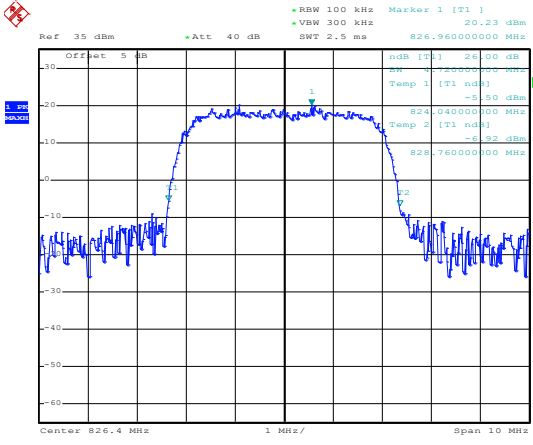
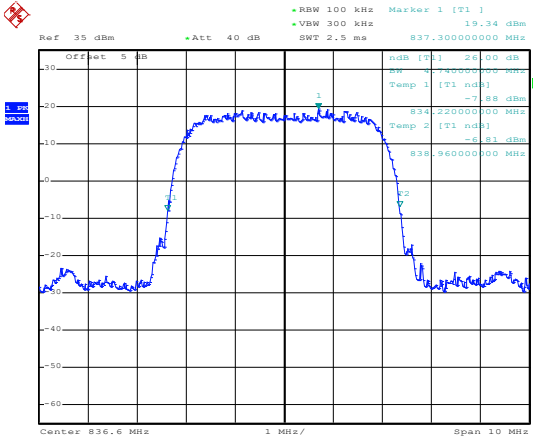
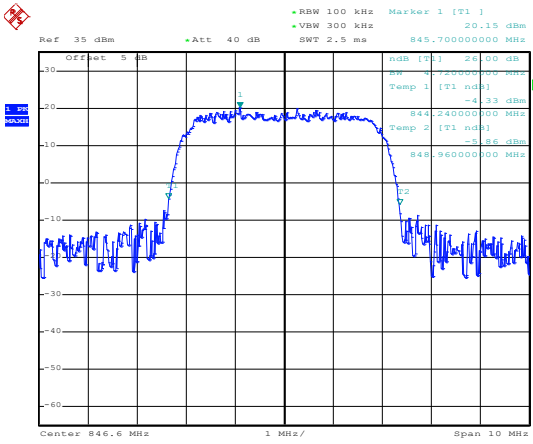
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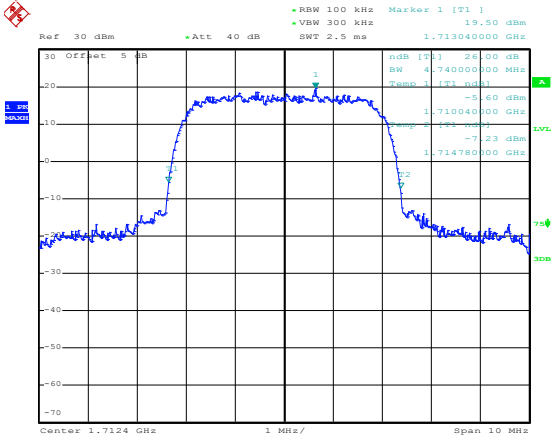
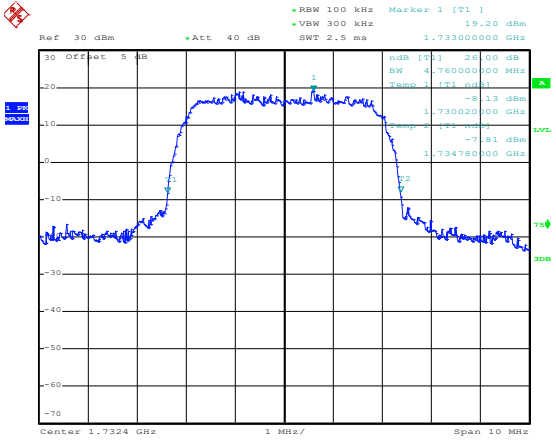
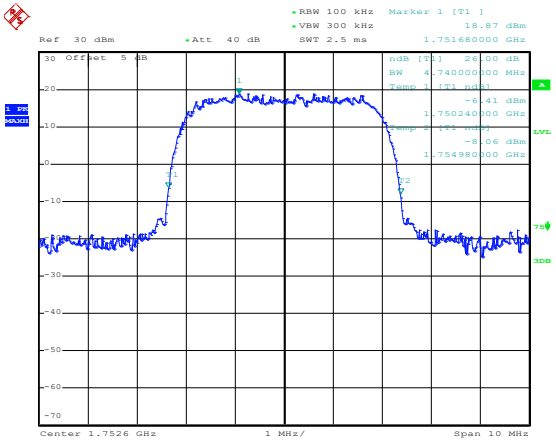
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<p>EGPRS1900 (8PSK,1Slot)-Middle</p>	 <p>Date: 18.OCT.2022 16:30:03</p>
<p>EGPRS1900 (8PSK,1Slot)-High</p>	 <p>Date: 18.OCT.2022 16:29:46</p>

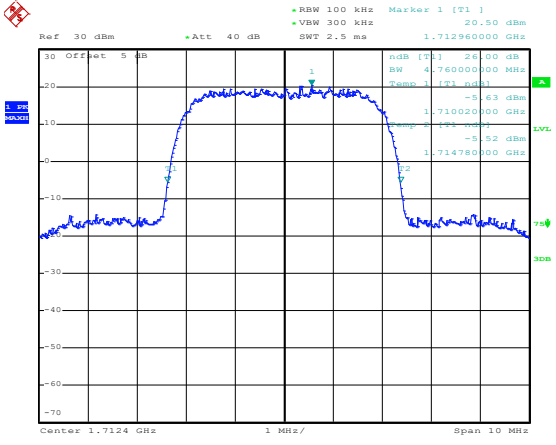
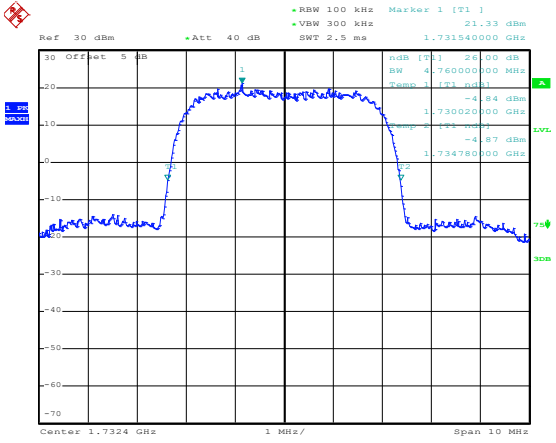
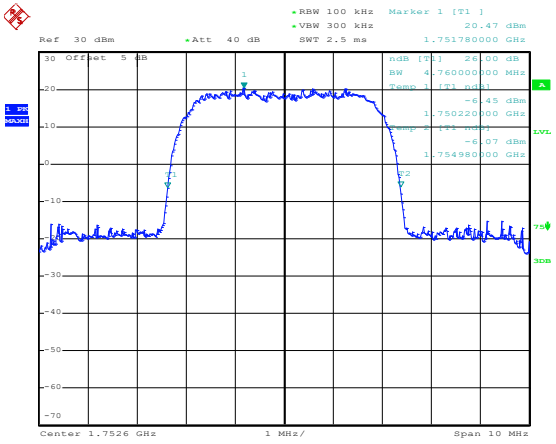
<p>WCDMA Band V-Low</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    21.06 dBm  +VBW 300 kHz    +SWT 2.5 ms    825.520000000 MHz</p> <p>Offset 5 dB    n dB [T1]    21.06 dB  dBm [T1]    21.06 dBm  Temp 1 [T1 ndB]    -4.58 dBm  824.040000000 MHz  Temp 2 [T1 ndB]    -4.58 dBm  828.760000000 MHz</p> <p>Center 826.4 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:59:00</p>
<p>WCDMA Band V-Middle</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    19.52 dBm  +VBW 300 kHz    +SWT 2.5 ms    835.880000000 MHz</p> <p>Offset 5 dB    n dB [T1]    19.52 dB  dBm [T1]    19.52 dBm  Temp 1 [T1 ndB]    -4.69 dBm  834.240000000 MHz  Temp 2 [T1 ndB]    -4.32 dBm  839.960000000 MHz</p> <p>Center 836.6 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:59:20</p>
<p>WCDMA Band V-High</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    20.50 dBm  +VBW 300 kHz    +SWT 2.5 ms    845.700000000 MHz</p> <p>Offset 5 dB    n dB [T1]    20.50 dB  dBm [T1]    20.50 dBm  Temp 1 [T1 ndB]    -4.67 dBm  844.240000000 MHz  Temp 2 [T1 ndB]    -4.35 dBm  849.960000000 MHz</p> <p>Center 846.6 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:59:51</p>

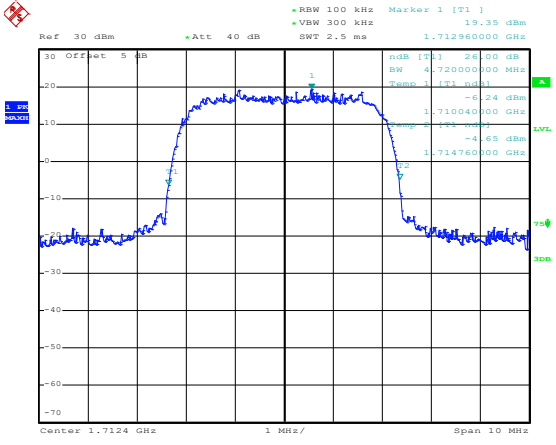
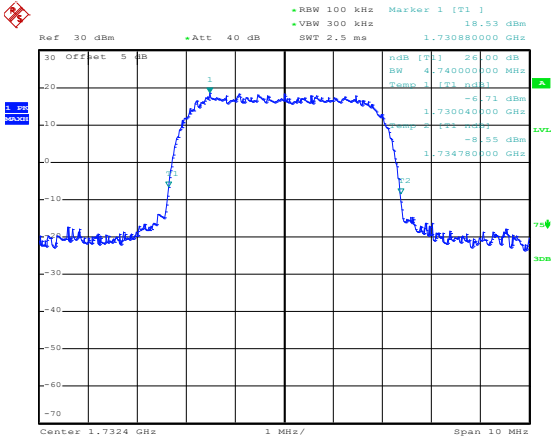
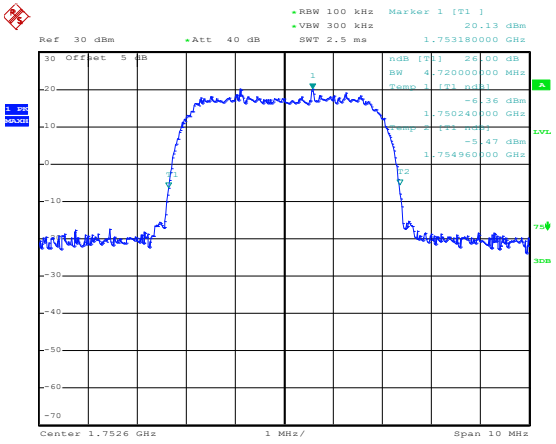
<p>HSDPA-Low</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    18.52 dBm          +VBW 300 kHz    826.68000000 MHz          +SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          dBm [T1]    18.52 dBm          Temp 1 [T1 ndB]    -7.27 dBm          824.02000000 MHz          Temp 2 [T1 ndB]    -6.81 dBm          828.76000000 MHz</p> <p>Center 826.4 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:57:59</p>
<p>HSDPA-Middle</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    19.82 dBm          +VBW 300 kHz    835.74000000 MHz          +SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          dBm [T1]    19.82 dBm          Temp 1 [T1 ndB]    -8.09 dBm          834.24000000 MHz          Temp 2 [T1 ndB]    -4.73 dBm          838.96000000 MHz</p> <p>Center 836.4 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:57:12</p>
<p>HSDPA-High</p>	 <p>Ref 35 dBm    +Att 40 dB    +RBW 100 kHz    Marker 1 [T1]    18.34 dBm          +VBW 300 kHz    845.68000000 MHz          +SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          dBm [T1]    18.34 dBm          Temp 1 [T1 ndB]    -6.95 dBm          844.24000000 MHz          Temp 2 [T1 ndB]    -7.91 dBm          848.96000000 MHz</p> <p>Center 846.6 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 19.OCT.2022 08:56:01</p>



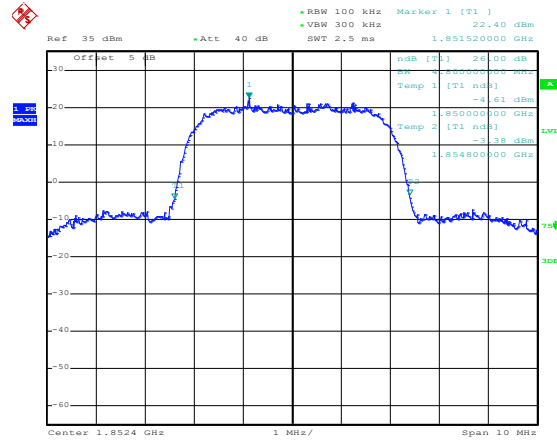
<p>HSUPA-Low</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.23 dBm          VBW 300 kHz    826.96000000 MHz          SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1] 26.00 dB          BW 120000000 Hz          Temp 1 [T1 ndB] -3.50 dBm          824.04000000 MHz          Temp 2 [T1 ndB] -6.92 dBm          828.76000000 MHz</p> <p>Center 826.4 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 20:30:40</p>
<p>HSUPA-Middle</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    19.34 dBm          VBW 300 kHz    837.20000000 MHz          SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1] 26.00 dB          BW 120000000 Hz          Temp 1 [T1 ndB] -3.88 dBm          834.22000000 MHz          Temp 2 [T1 ndB] -6.81 dBm          838.96000000 MHz</p> <p>Center 836.6 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 20:30:13</p>
<p>HSUPA-High</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.15 dBm          VBW 300 kHz    845.70000000 MHz          SWT 2.5 ms</p> <p>Offset 5 dB    ndB [T1] 26.00 dB          BW 120000000 Hz          Temp 1 [T1 ndB] -4.33 dBm          843.24000000 MHz          Temp 2 [T1 ndB] -5.86 dBm          848.96000000 MHz</p> <p>Center 846.6 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 20:29:57</p>

<p>WCDMA Band IV-Low</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    19.50 dBm    1.713040000 GHz</p> <p>ndB [T1]    26.00 dBm BW    4.740000000 MHz Temp    [T1] ndBm</p> <p>1    19.50 dBm    1.710040000 GHz 2    -7.23 dBm    1.714780000 GHz</p> <p>Center 1.7124 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:34:34</p>
<p>WCDMA Band IV-Middle</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    19.20 dBm    1.733000000 GHz</p> <p>ndB [T1]    26.00 dBm BW    4.760000000 MHz Temp    [T1] ndBm</p> <p>1    19.20 dBm    1.730020000 GHz 2    -7.81 dBm    1.734780000 GHz</p> <p>Center 1.7324 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:34:58</p>
<p>WCDMA Band IV-High</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    VBW 300 kHz    SWT 2.5 ms    Marker 1 [T1]    18.87 dBm    1.751680000 GHz</p> <p>ndB [T1]    26.00 dBm BW    4.740000000 MHz Temp    [T1] ndBm</p> <p>1    18.87 dBm    1.750240000 GHz 2    -8.06 dBm    1.754980000 GHz</p> <p>Center 1.7526 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:35:31</p>

<p>HSDPA-Low</p>	 <p>Ref 30 dBm    +Att 40 dB    Marker 1 [T1]    20.50 dBm          +RBW 100 kHz    +VBW 300 kHz    +SWT 2.5 ms    1.712960000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.760000000 MHz          Temp 1 [T1] ndB1    -5.63 dBm          1.710020000 GHz    -5.52 dBm          1.714780000 GHz</p> <p>Center 1.7124 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:36:13</p>
<p>HSDPA-Middle</p>	 <p>Ref 30 dBm    +Att 40 dB    Marker 1 [T1]    21.33 dBm          +RBW 100 kHz    +VBW 300 kHz    +SWT 2.5 ms    1.731540000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.760000000 MHz          Temp 1 [T1] ndB1    -4.84 dBm          1.730020000 GHz    -4.87 dBm          1.734780000 GHz</p> <p>Center 1.7324 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:37:33</p>
<p>HSDPA-High</p>	 <p>Ref 30 dBm    +Att 40 dB    Marker 1 [T1]    20.47 dBm          +RBW 100 kHz    +VBW 300 kHz    +SWT 2.5 ms    1.751780000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.760000000 MHz          Temp 1 [T1] ndB1    -6.45 dBm          1.750220000 GHz    -6.07 dBm          1.754980000 GHz</p> <p>Center 1.7526 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:38:03</p>

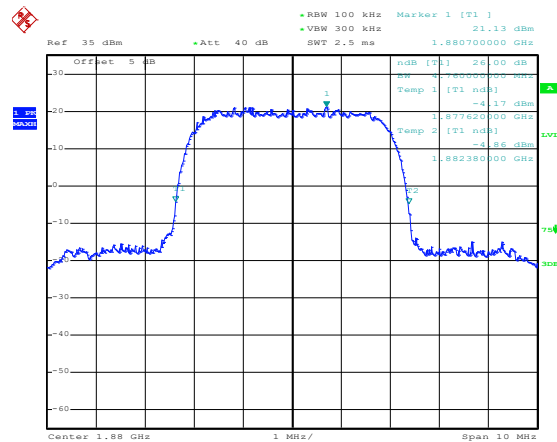
<p>HSUPA-Low</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    19.35 dBm          VBW 300 kHz    SWT 2.5 ms    1.71296000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.72000000 MHz          Temp 1 [T1] ndB</p> <p>20    -4.24 dBm          10    -4.65 dBm          0    -4.65 dBm          -10    -4.65 dBm          -20    -4.65 dBm          -30    -4.65 dBm          -40    -4.65 dBm          -50    -4.65 dBm          -60    -4.65 dBm          -70    -4.65 dBm</p> <p>Center 1.7124 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:33:34</p>
<p>HSUPA-Middle</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    18.53 dBm          VBW 300 kHz    SWT 2.5 ms    1.73098000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.74000000 MHz          Temp 1 [T1] ndB</p> <p>20    -4.71 dBm          10    -4.71 dBm          0    -4.71 dBm          -10    -4.71 dBm          -20    -4.71 dBm          -30    -4.71 dBm          -40    -4.71 dBm          -50    -4.71 dBm          -60    -4.71 dBm          -70    -4.71 dBm</p> <p>Center 1.7324 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:33:08</p>
<p>HSUPA-High</p>	 <p>Ref 30 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.13 dBm          VBW 300 kHz    SWT 2.5 ms    1.75318000 GHz</p> <p>30 Offset 5 dB    ndB [T1] 26.00 dB          BW 4.72000000 MHz          Temp 1 [T1] ndB</p> <p>20    -6.36 dBm          10    -5.47 dBm          0    -5.47 dBm          -10    -5.47 dBm          -20    -5.47 dBm          -30    -5.47 dBm          -40    -5.47 dBm          -50    -5.47 dBm          -60    -5.47 dBm          -70    -5.47 dBm</p> <p>Center 1.7526 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 19:32:38</p>

WCDMA Band II-Low



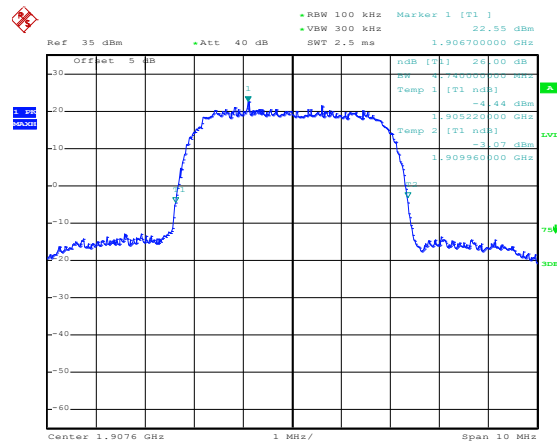
Date: 18.OCT.2022 18:47:07

WCDMA Band II-Middle

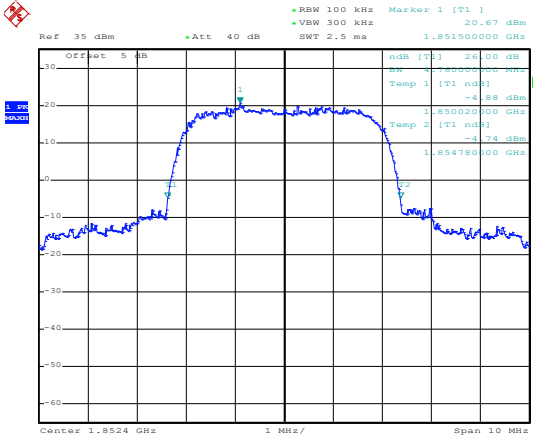
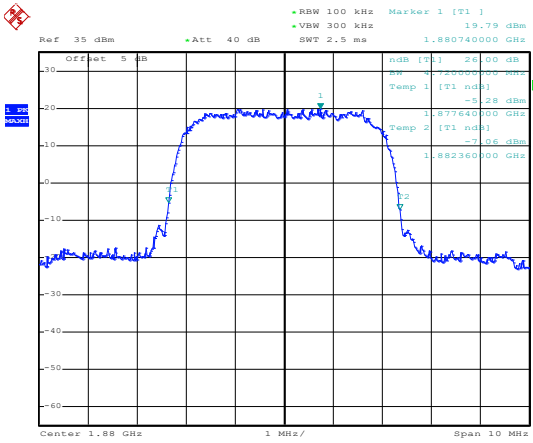
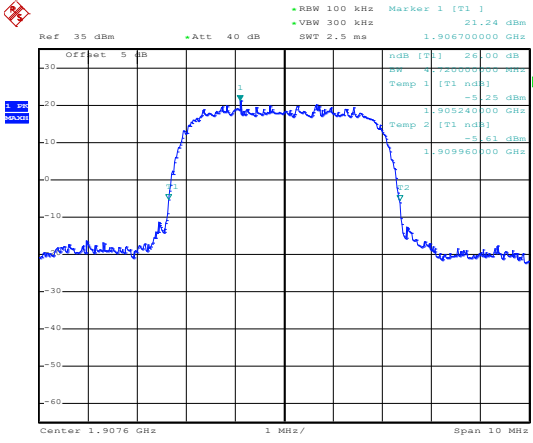


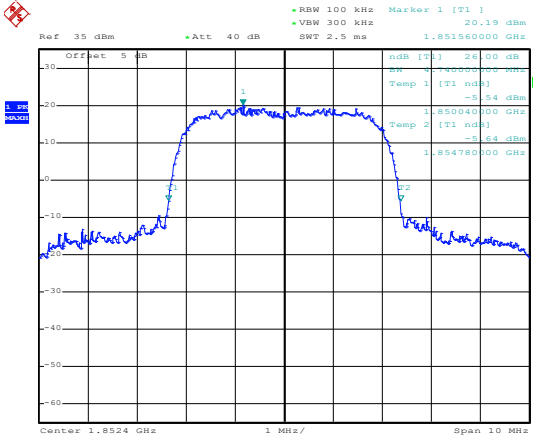
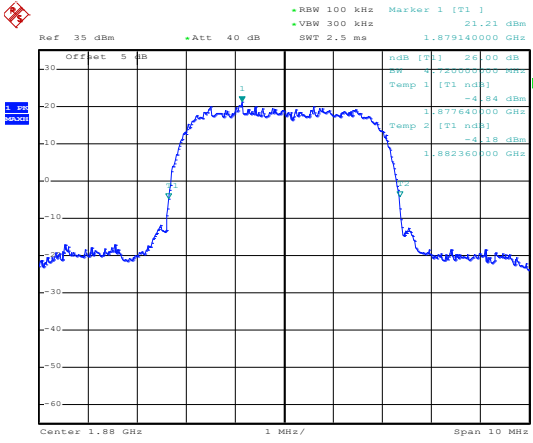
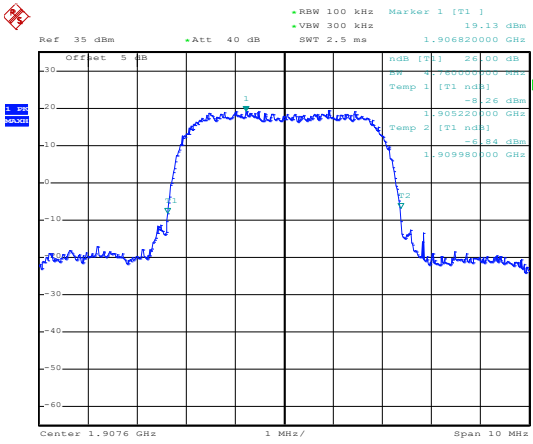
Date: 18.OCT.2022 18:47:42

WCDMA Band II-High



Date: 18.OCT.2022 18:48:05

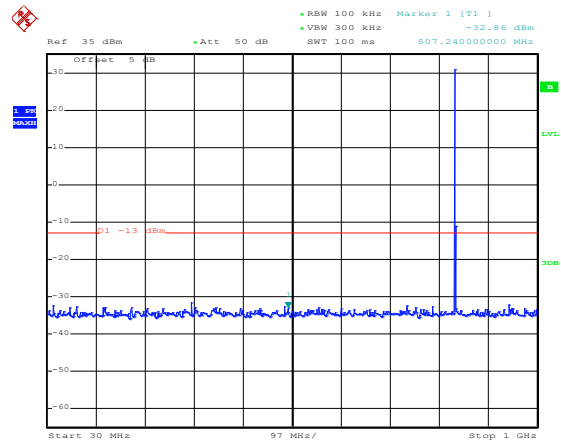
<p>HSDPA-Low</p>	 <p>Date: 18.OCT.2022 18:45:34</p>
<p>HSDPA-Middle</p>	 <p>Date: 18.OCT.2022 18:46:03</p>
<p>HSDPA-High</p>	 <p>Date: 18.OCT.2022 18:46:25</p>

<p>HSUPA-Low</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    20.19 dBm          VBW 300 kHz    SWT 2.5 ms    1.851560000 GHz</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          SW    24.0000000 GHz          Temp 1 [T1 ndB]    -3.84 dBm          1.850000000 GHz          Temp 2 [T1 ndB]    -5.64 dBm          1.854780000 GHz</p> <p>Center 1.8524 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:44:12</p>
<p>HSUPA-Middle</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    21.21 dBm          VBW 300 kHz    SWT 2.5 ms    1.879140000 GHz</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          SW    22.0000000 GHz          Temp 1 [T1 ndB]    -4.84 dBm          1.877640000 GHz          Temp 2 [T1 ndB]    -4.18 dBm          1.882360000 GHz</p> <p>Center 1.88 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:43:40</p>
<p>HSUPA-High</p>	 <p>Ref 35 dBm    Att 40 dB    RBW 100 kHz    Marker 1 [T1]    19.13 dBm          VBW 300 kHz    SWT 2.5 ms    1.906820000 GHz</p> <p>Offset 5 dB    ndB [T1]    26.00 dB          SW    22.0000000 GHz          Temp 1 [T1 ndB]    -6.86 dBm          1.905220000 GHz          Temp 2 [T1 ndB]    -6.82 dBm          1.909980000 GHz</p> <p>Center 1.9076 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 18.OCT.2022 18:43:05</p>

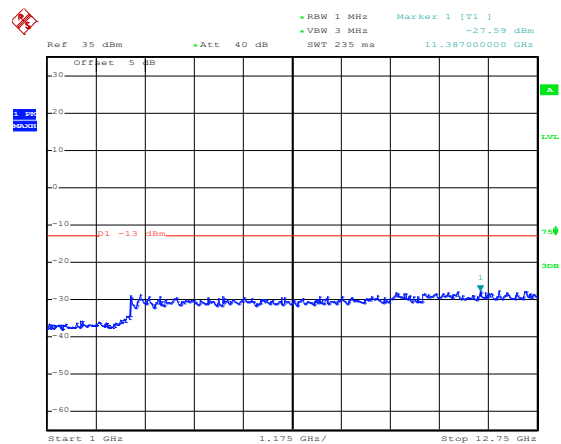
## APPENDIX D

### Out of Band Emissions at Antenna Terminal

GSM 850  
(GMSK)-Low



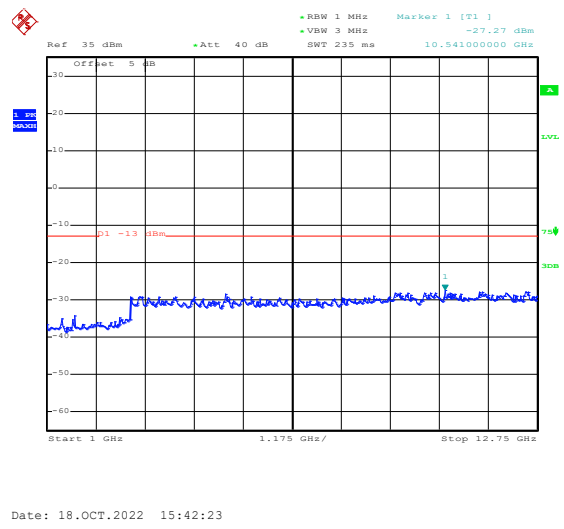
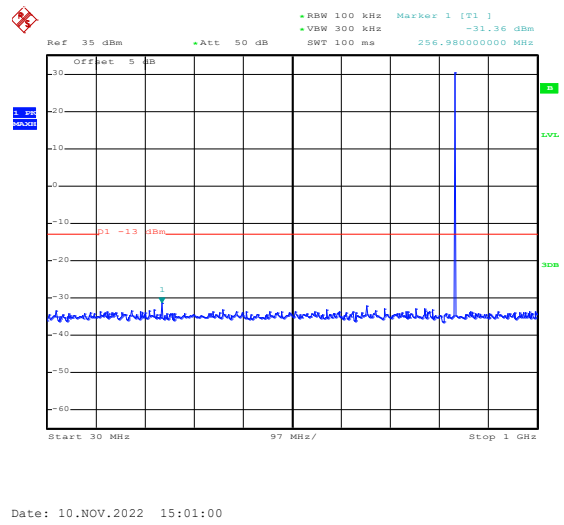
Date: 10.NOV.2022 14:59:57



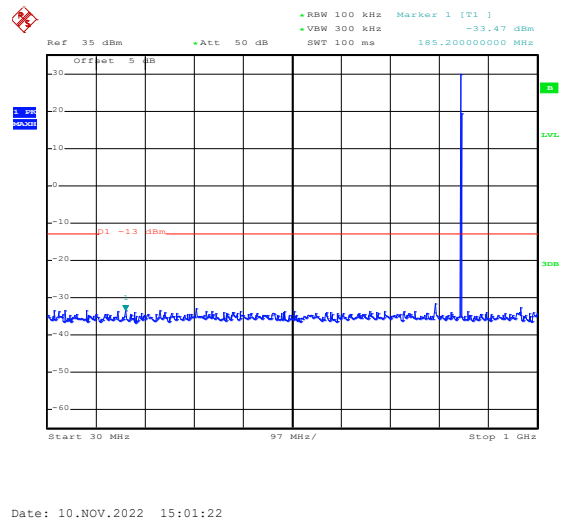
Date: 18.OCT.2022 15:41:09

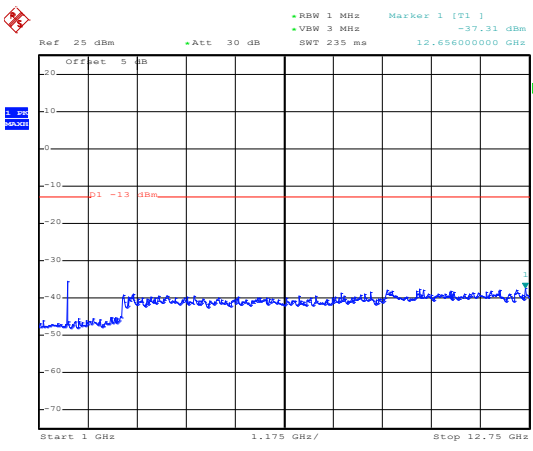
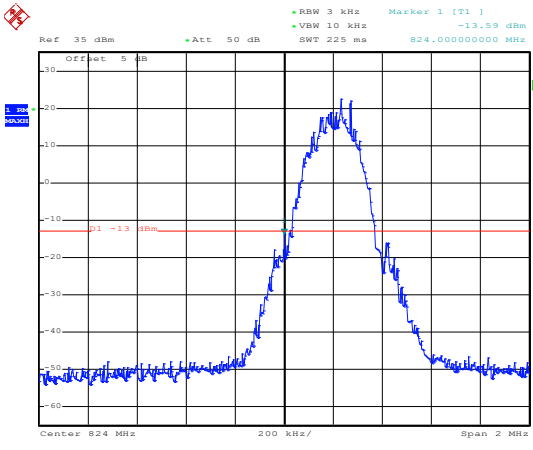
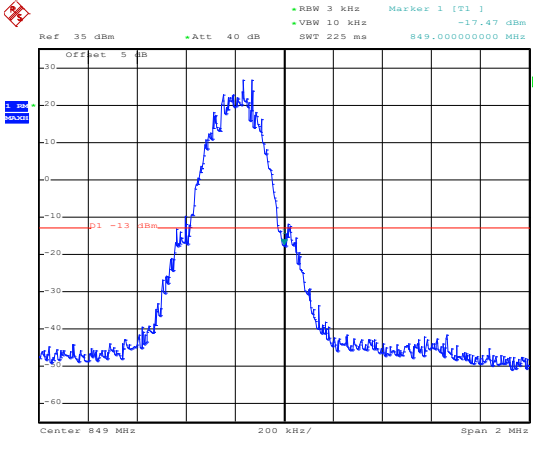


GSM 850  
(GMSK)-Middle

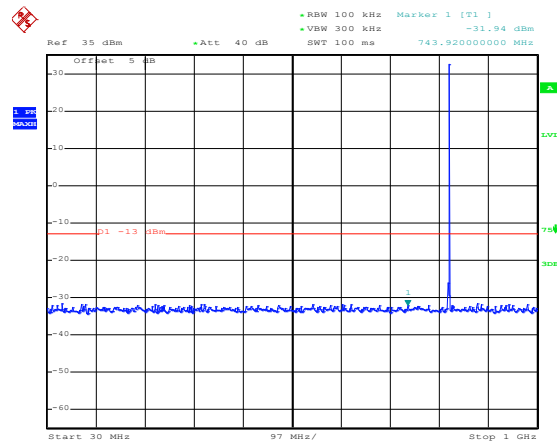


GSM 850  
(GMSK)-High

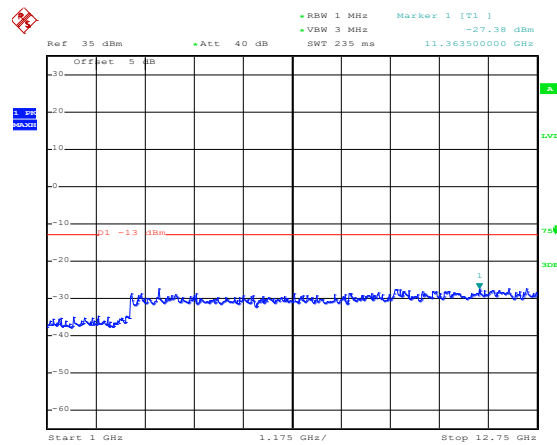


	 <p>Date: 18.OCT.2022 15:43:25</p>
<p>Bandedge</p>	 <p>Date: 10.NOV.2022 15:03:17</p>
	 <p>Date: 18.OCT.2022 14:48:50</p>

GPRS850  
(GMSK,1Slot)-Low

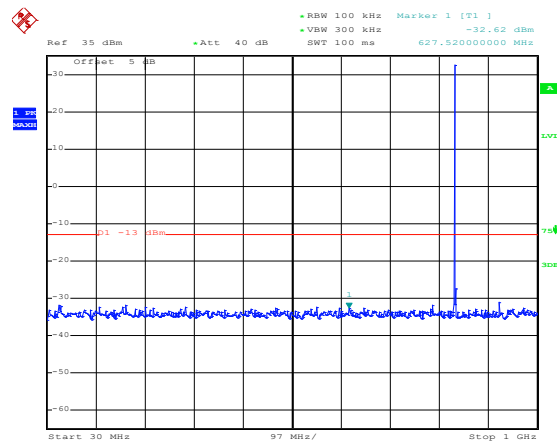


Date: 18.OCT.2022 15:36:20



Date: 18.OCT.2022 15:36:45

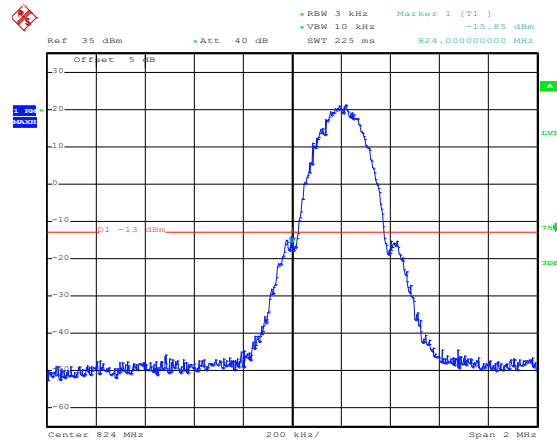
GPRS850  
(GMSK,1Slot)-Middle



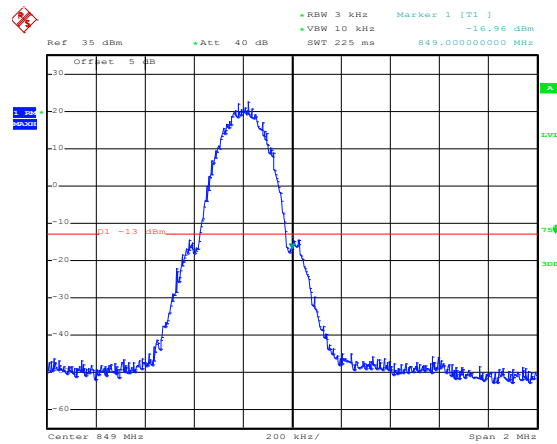
Date: 18.OCT.2022 15:37:07

	<p>Ref 35 dBm    +Att 40 dB    RBW 1 MHz    Marker 1 [T1]    -26.72 dBm          VBW 3 MHz    SWT 235 ms    12.44450000 GHz</p> <p>Offset 5 dB</p> <p>Start 1 GHz    1.175 GHz/    Stop 12.75 GHz</p> <p>Date: 18.OCT.2022 15:37:19</p>
<p>GPRS850 (GMSK)-High</p>	<p>Ref 35 dBm    +Att 40 dB    RBW 100 kHz    Marker 1 [T1]    -31.50 dBm          VBW 300 kHz    SWT 100 ms    456.74000000 MHz</p> <p>Offset 5 dB</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 18.OCT.2022 15:37:45</p>
	<p>Ref 35 dBm    +Att 40 dB    RBW 1 MHz    Marker 1 [T1]    -27.60 dBm          VBW 3 MHz    SWT 235 ms    10.00050000 GHz</p> <p>Offset 5 dB</p> <p>Start 1 GHz    1.175 GHz/    Stop 12.75 GHz</p> <p>Date: 18.OCT.2022 15:37:57</p>

Bandedge

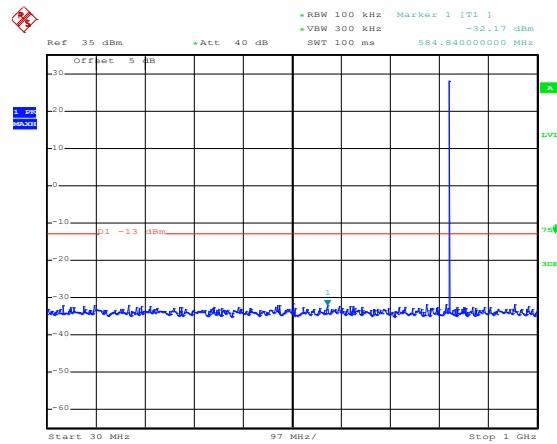


Date: 18.OCT.2022 14:50:27

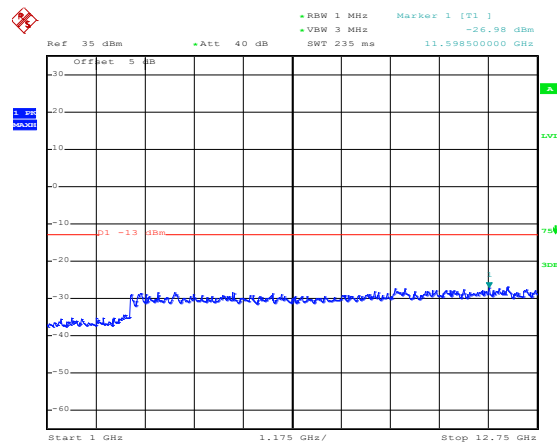


Date: 18.OCT.2022 14:50:48

EGPRS850  
(8PSK,1Slot)-Low

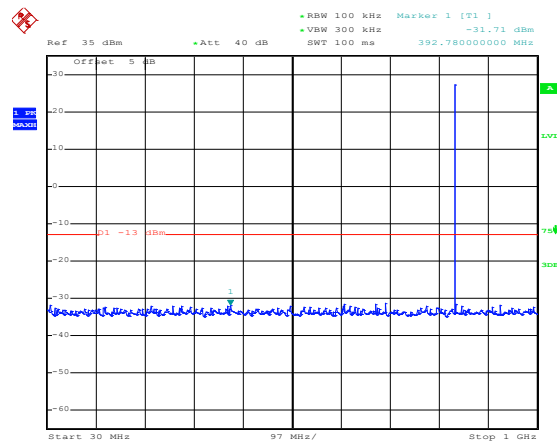


Date: 18.OCT.2022 15:27:19



Date: 18.OCT.2022 15:27:51

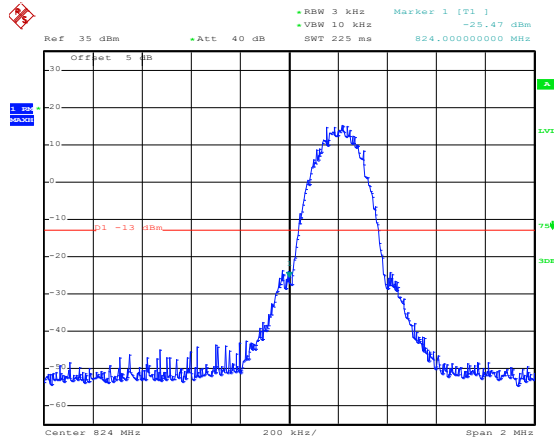
EGPRS850  
(8PSK,1Slot)-Middle



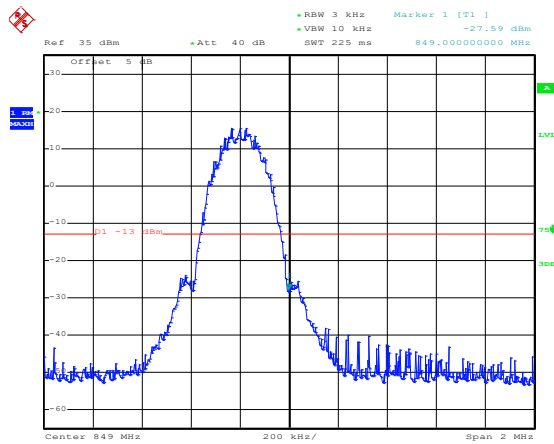
Date: 18.OCT.2022 15:28:29

	<p>Date: 18.OCT.2022 15:28:46</p>
<p>EGPRS850 (8PSK,1Slot)-High</p>	<p>Date: 18.OCT.2022 15:29:28</p>
	<p>Date: 18.OCT.2022 15:30:48</p>

Bandedge



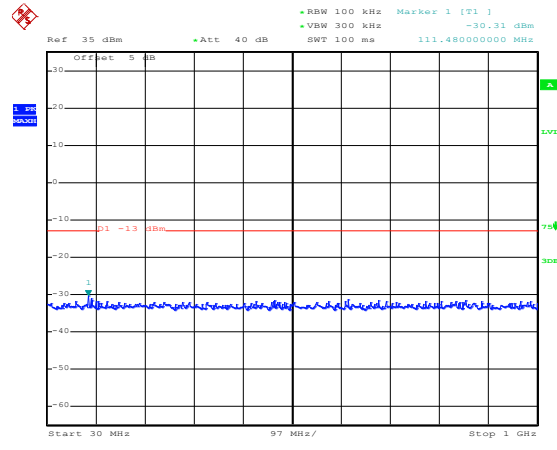
Date: 18.OCT.2022 14:52:53



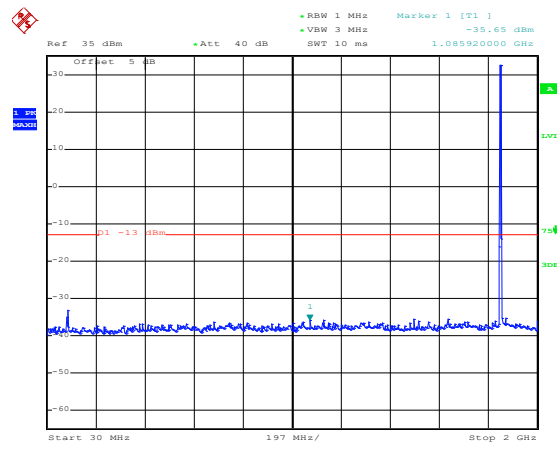
Date: 18.OCT.2022 14:53:32



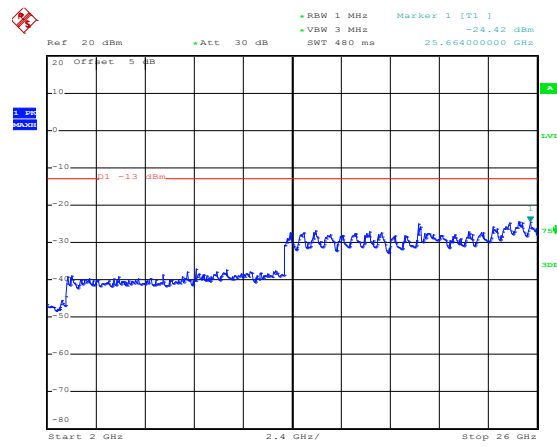
PCS1900  
(GMSK)-Low



Date: 18.OCT.2022 16:42:52

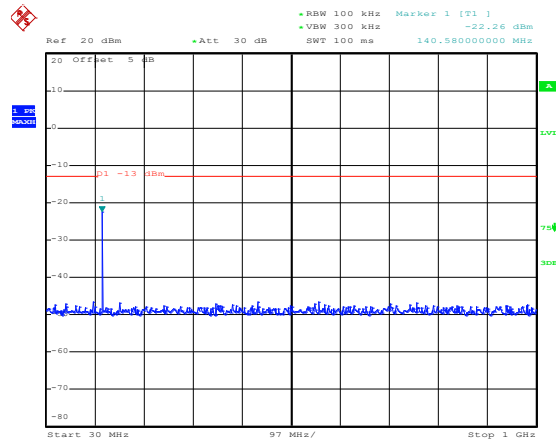


Date: 18.OCT.2022 16:43:10

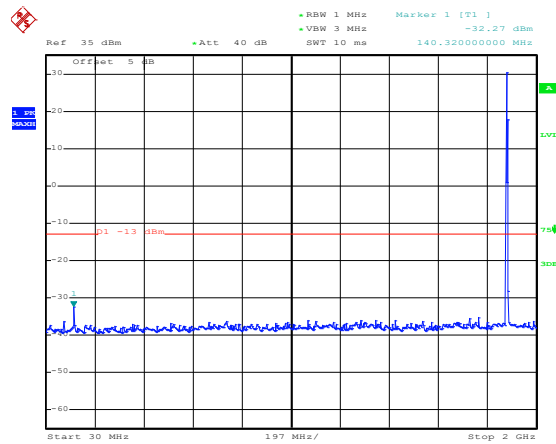


Date: 18.OCT.2022 16:43:28

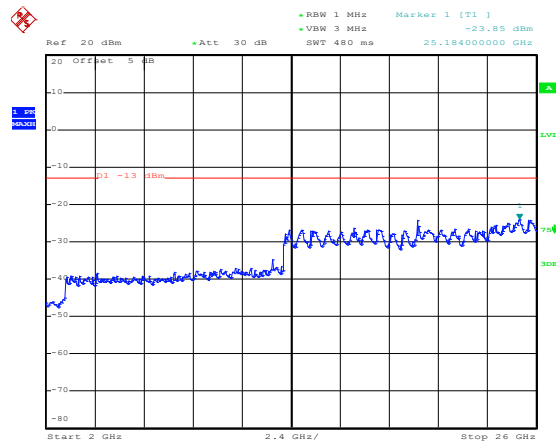
PCS1900  
(GMSK)-Middle



Date: 18.OCT.2022 16:44:01

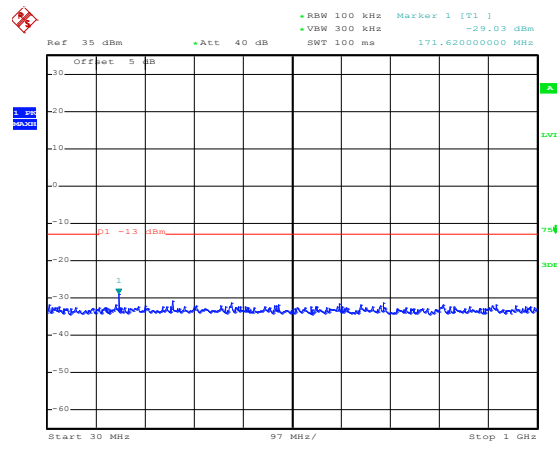


Date: 18.OCT.2022 16:44:29

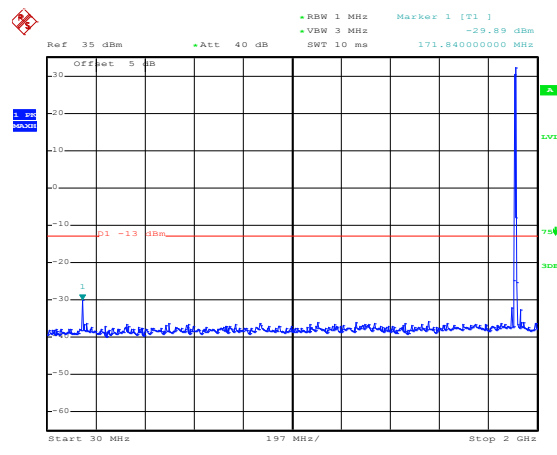


Date: 18.OCT.2022 16:44:57

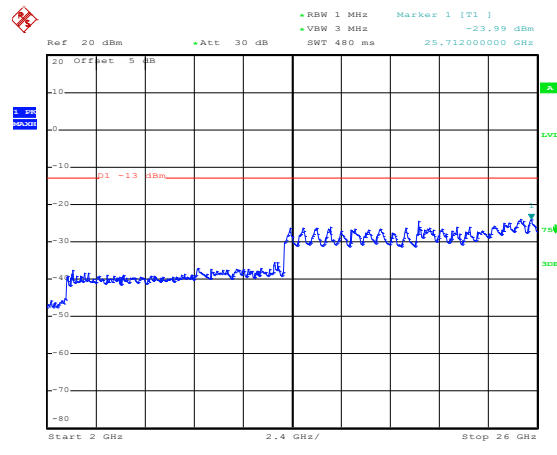
PCS1900  
(GMSK)-High



Date: 18.OCT.2022 16:45:56

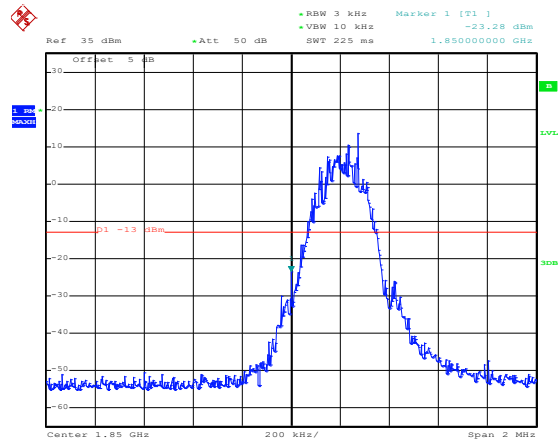


Date: 18.OCT.2022 16:46:13

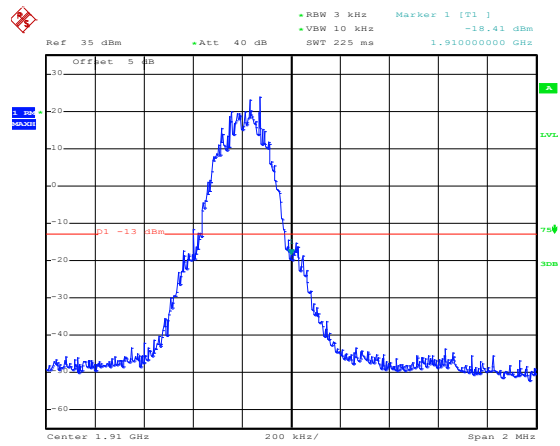


Date: 18.OCT.2022 16:46:44

Bandedge

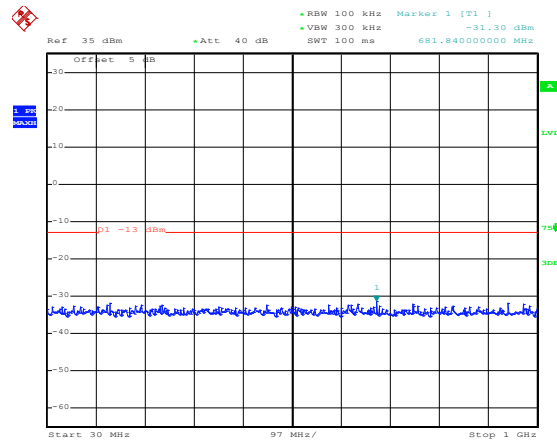


Date: 10.NOV.2022 16:23:07

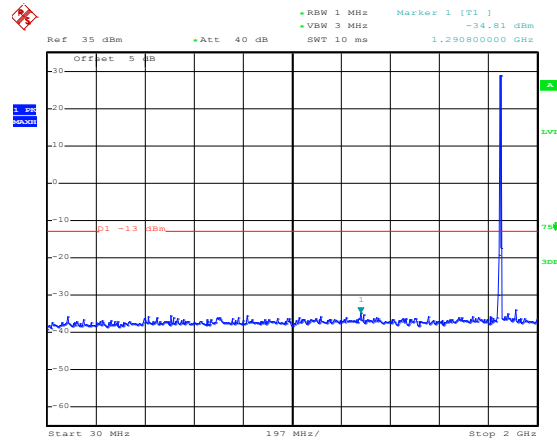


Date: 18.OCT.2022 15:51:51

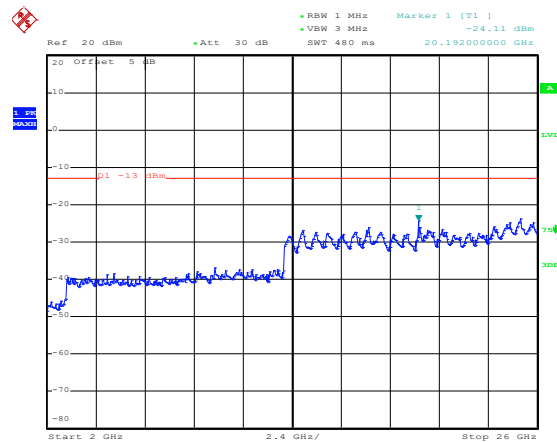
GPRS1900  
(GMSK,1Slot)-Low



Date: 18.OCT.2022 16:51:10

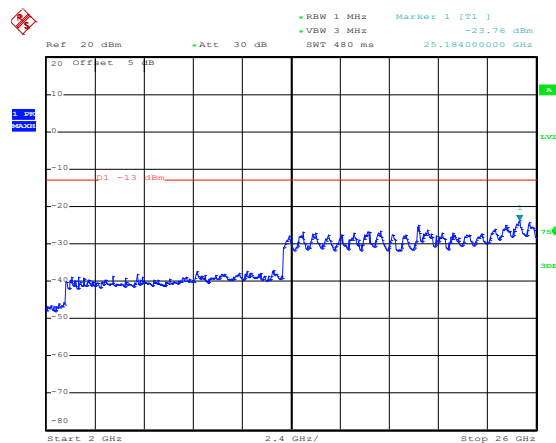
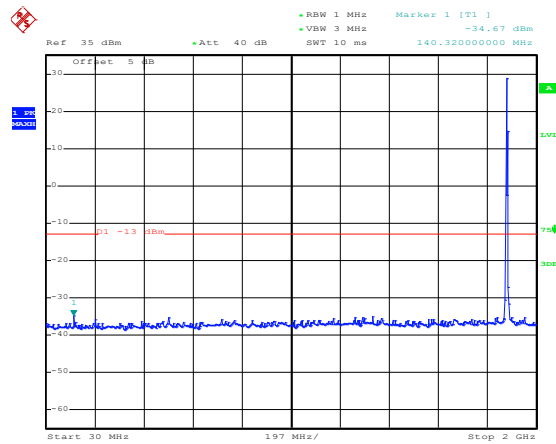
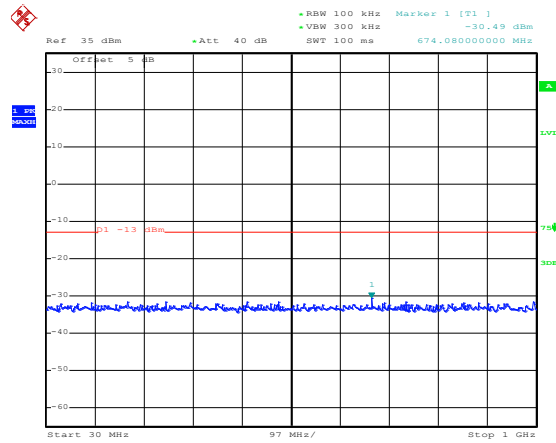


Date: 18.OCT.2022 16:51:56

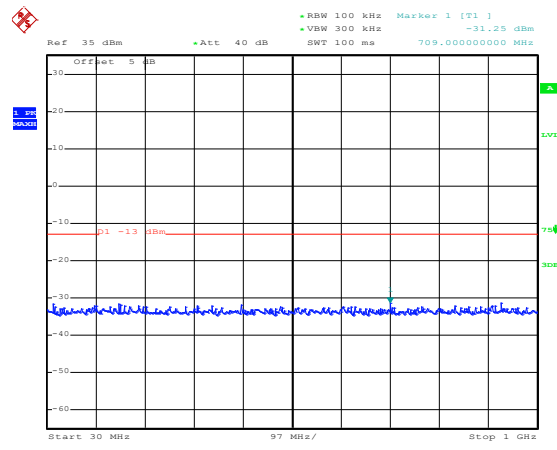


Date: 18.OCT.2022 16:52:30

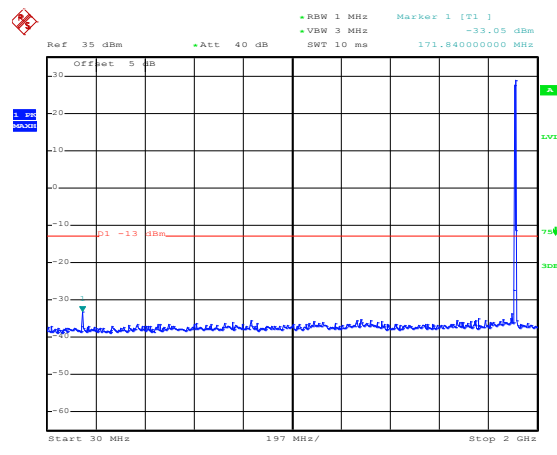
GPRS1900  
(GMSK,1Slot)-Middle



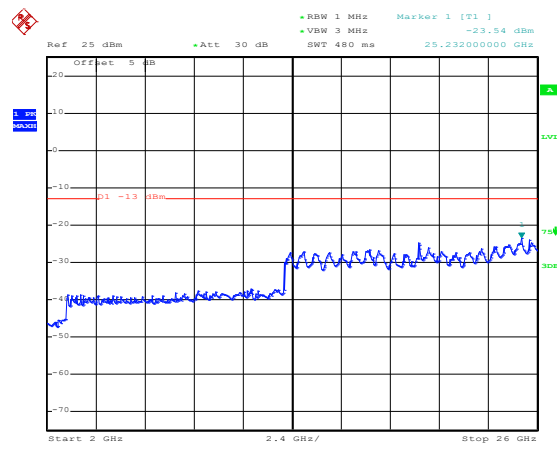
GPRS1900  
(GMSK,1Slot)-High



Date: 18.OCT.2022 16:59:08

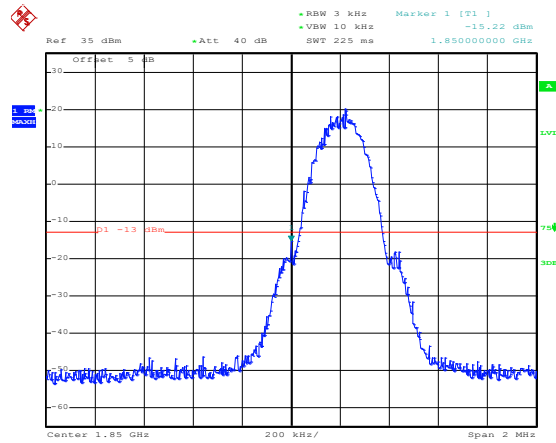


Date: 18.OCT.2022 16:59:48

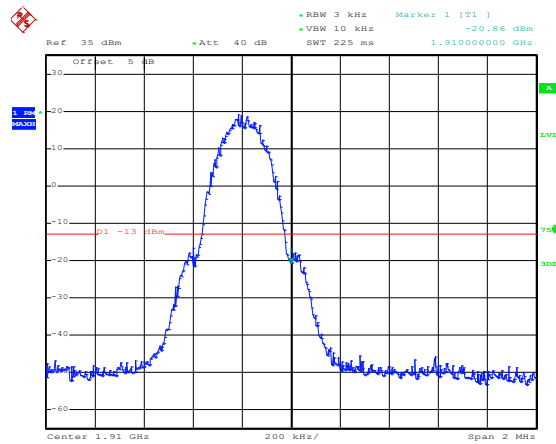


Date: 18.OCT.2022 17:00:21

Bandedge



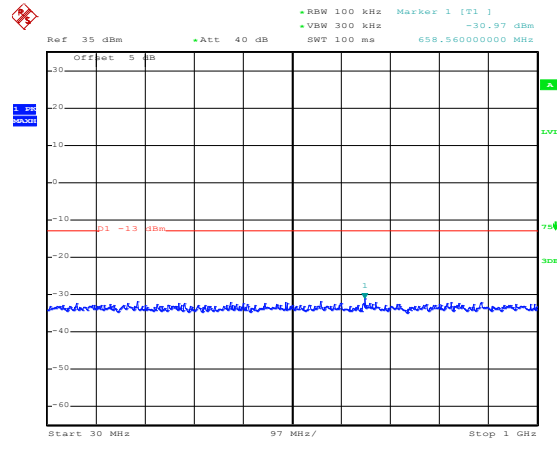
Date: 18.OCT.2022 15:53:47



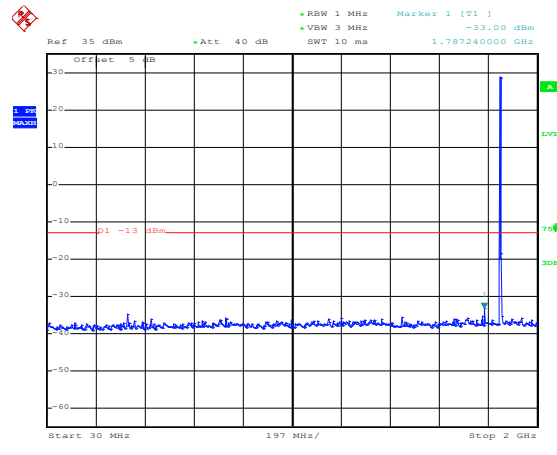
Date: 18.OCT.2022 15:54:56



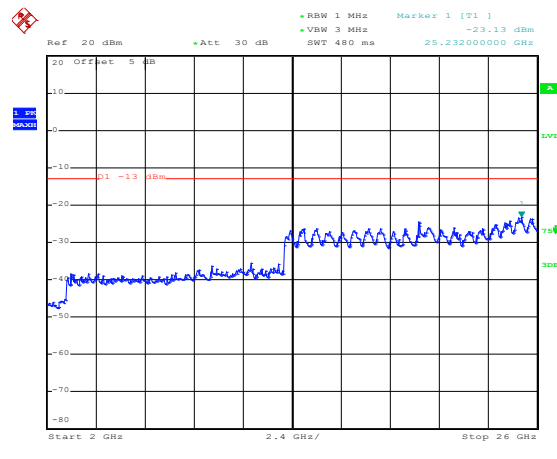
EGPRS1900  
(8PSK,1Slot)-Low



Date: 18.OCT.2022 17:09:16

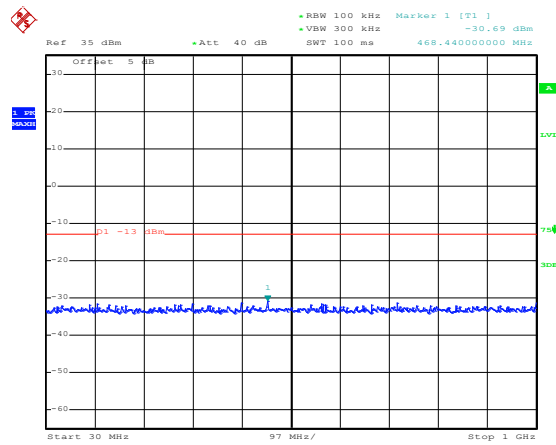


Date: 18.OCT.2022 17:10:20

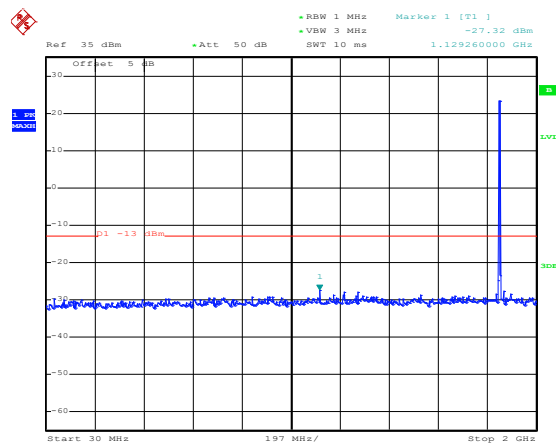


Date: 18.OCT.2022 17:10:59

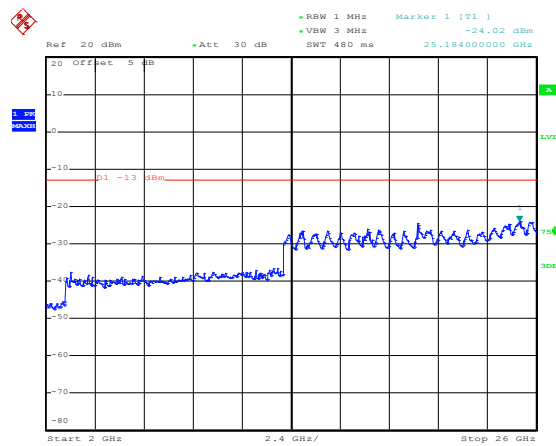
EGPRS1900  
(8PSK,1Slot)-Middle



Date: 18.OCT.2022 17:12:45

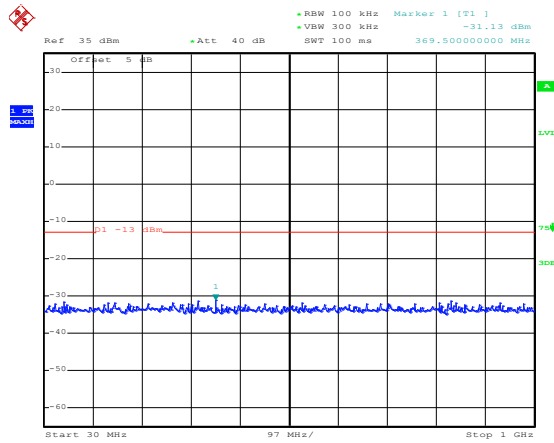


Date: 10.NOV.2022 16:26:14

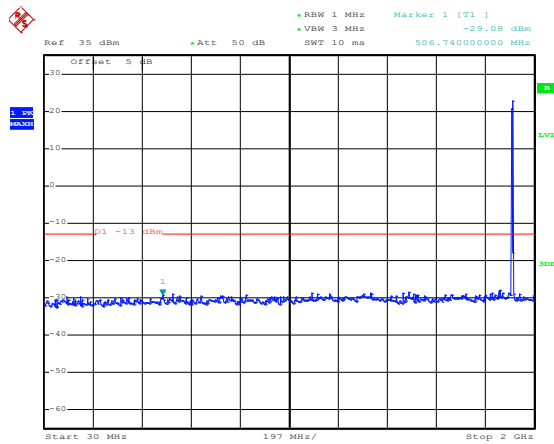


Date: 18.OCT.2022 17:13:41

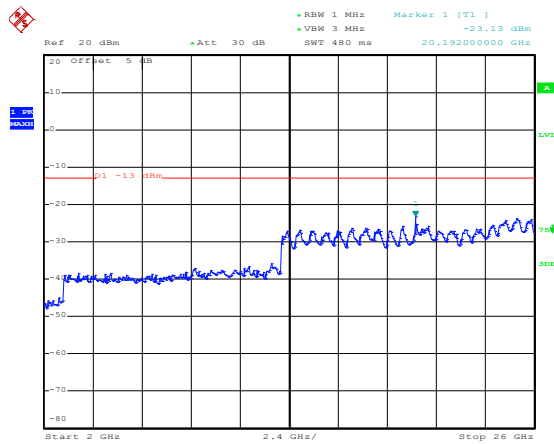
EGPRS1900  
(8PSK,1Slot)-High



Date: 18.OCT.2022 17:14:45

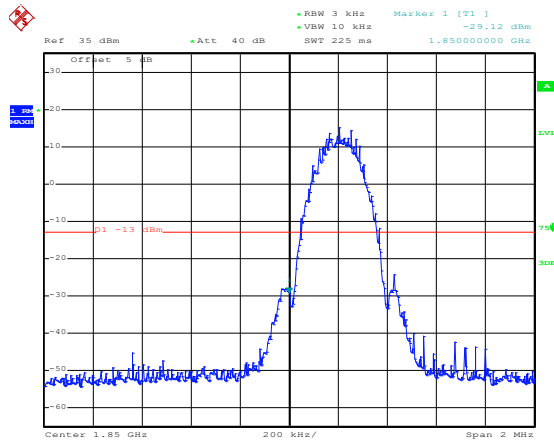


Date: 10.NOV.2022 16:27:00

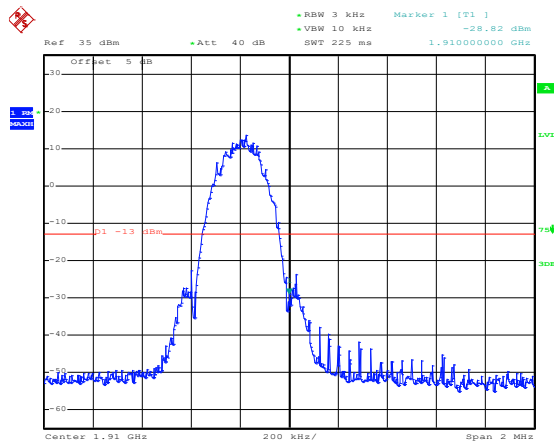


Date: 18.OCT.2022 17:16:10

Bandedge

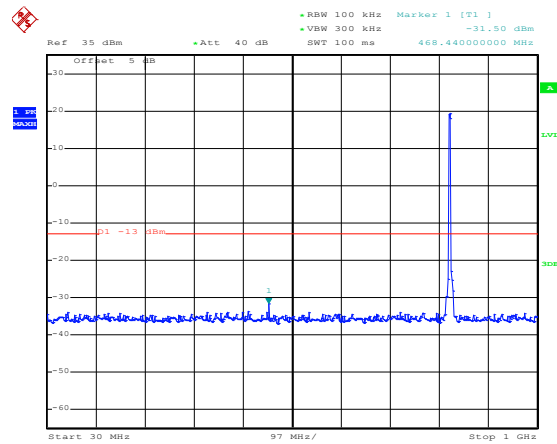


Date: 18.OCT.2022 15:56:52



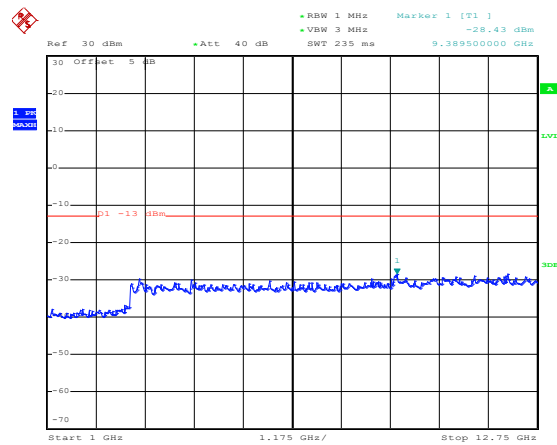
Date: 18.OCT.2022 15:57:17

WCDMA Band V-Low

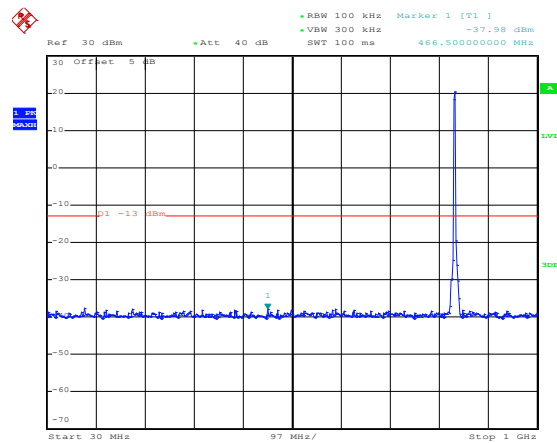


Date: 19.OCT.2022 09:06:05

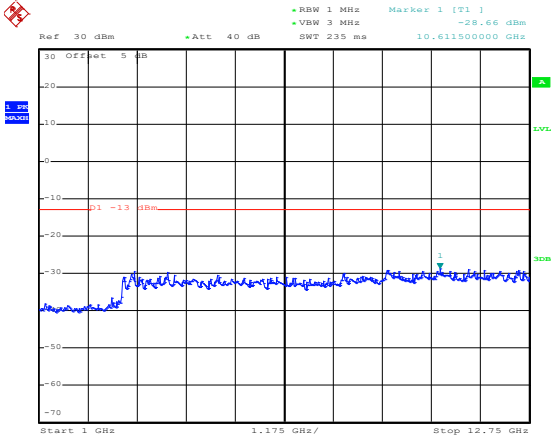
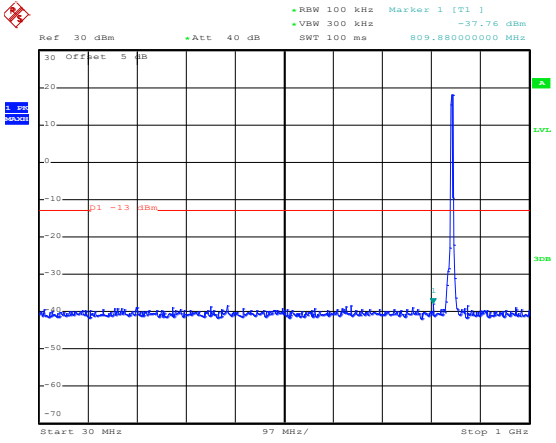
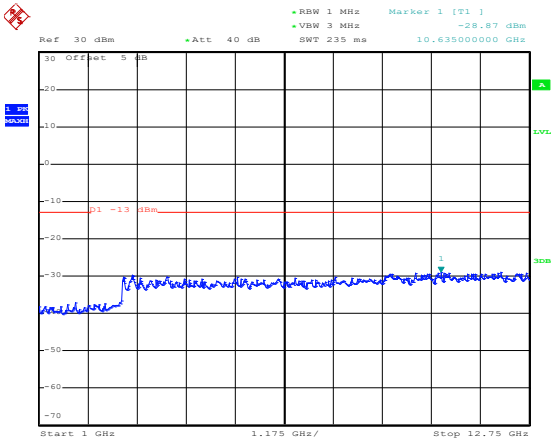
WCDMA Band V-Middle



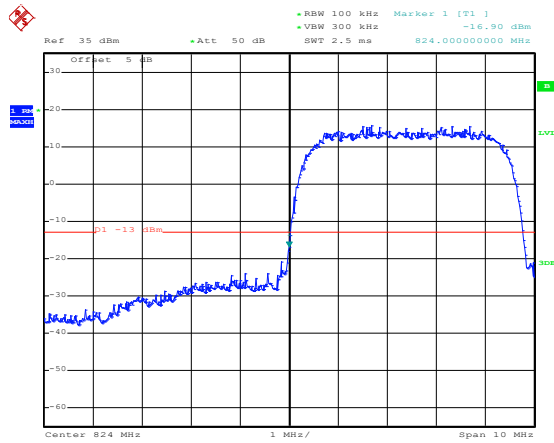
Date: 19.OCT.2022 09:07:40



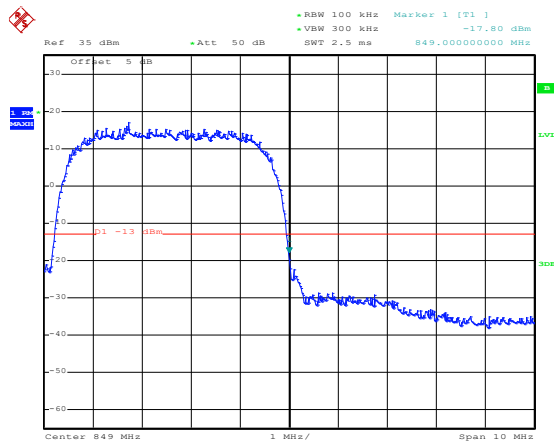
Date: 19.OCT.2022 09:09:22

	 <p>Date: 19.OCT.2022 09:09:38</p>
<p>WCDMA Band V-High</p>	 <p>Date: 19.OCT.2022 09:09:59</p>
	 <p>Date: 19.OCT.2022 09:10:21</p>

Bandedge

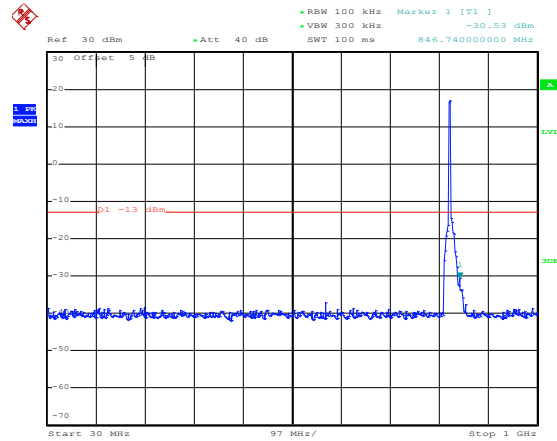


Date: 10.NOV.2022 16:48:46

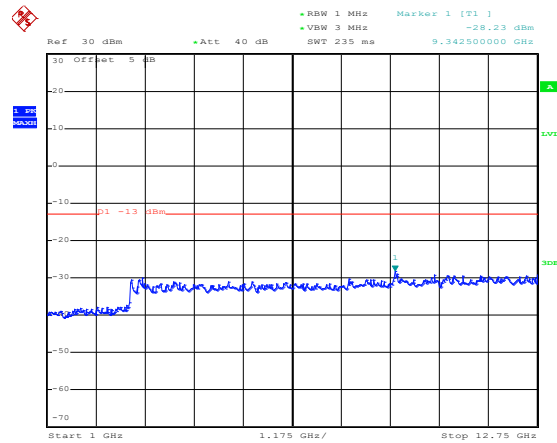


Date: 10.NOV.2022 16:49:09

HSDPA Band V-Low

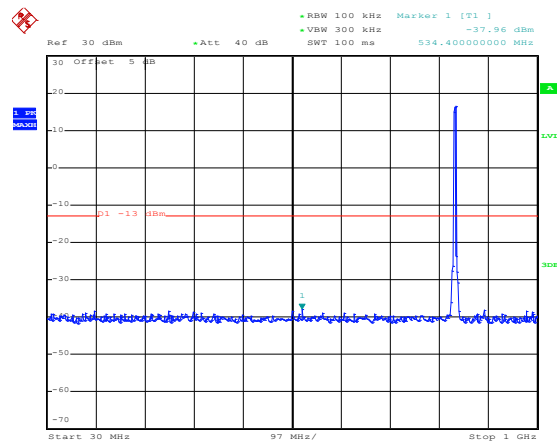


Date: 19.OCT.2022 09:11:04



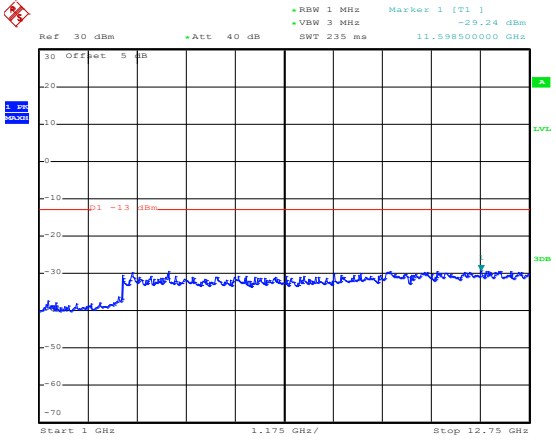
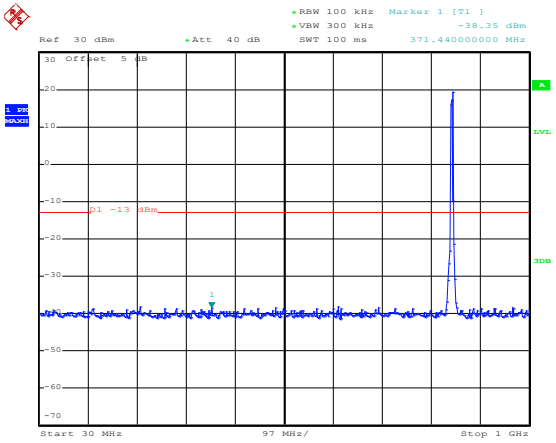
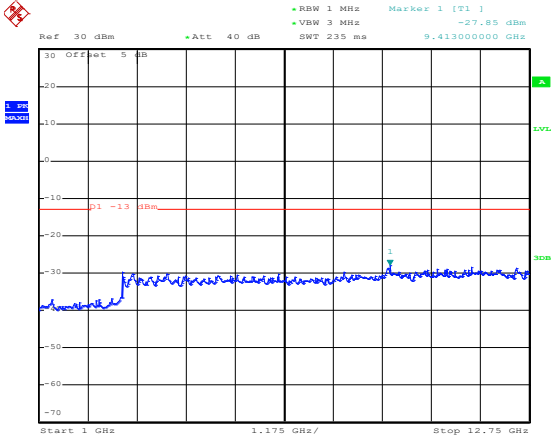
Date: 19.OCT.2022 09:11:19

HSDPA Band V-Middle

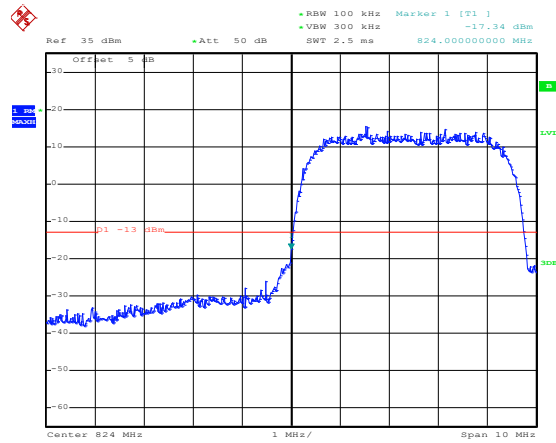


Date: 19.OCT.2022 09:11:46

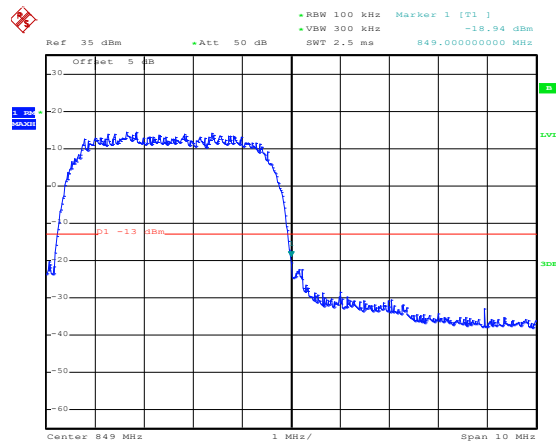


	 <p>Date: 19.OCT.2022 09:12:12</p>
<p>HSDPA Band V-High</p>	 <p>Date: 19.OCT.2022 09:12:51</p>
	 <p>Date: 19.OCT.2022 09:13:19</p>

Bandedge

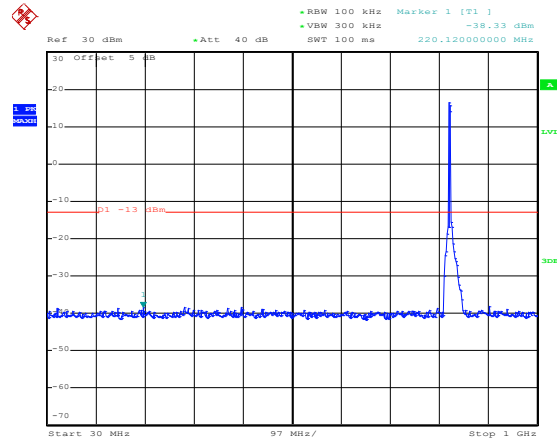


Date: 10.NOV.2022 16:49:40

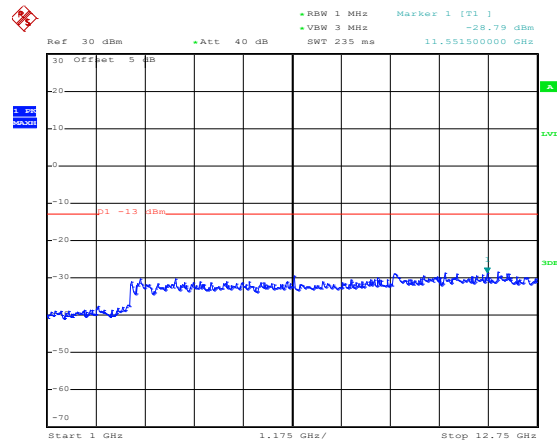


Date: 10.NOV.2022 16:49:57

HSUPA Band V-Low

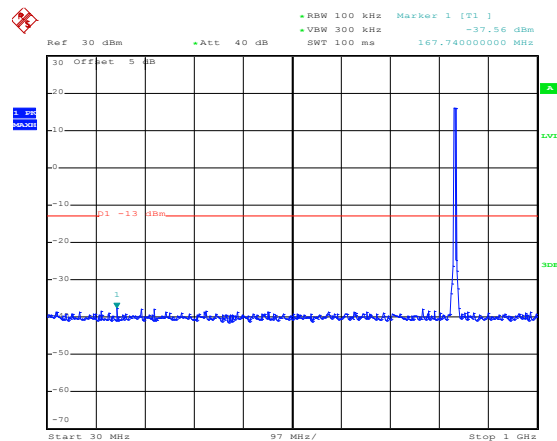


Date: 19.OCT.2022 09:15:01



Date: 19.OCT.2022 09:15:17

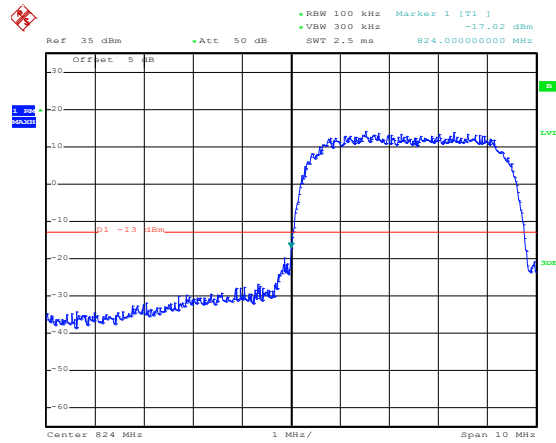
HSUPA Band V-Middle



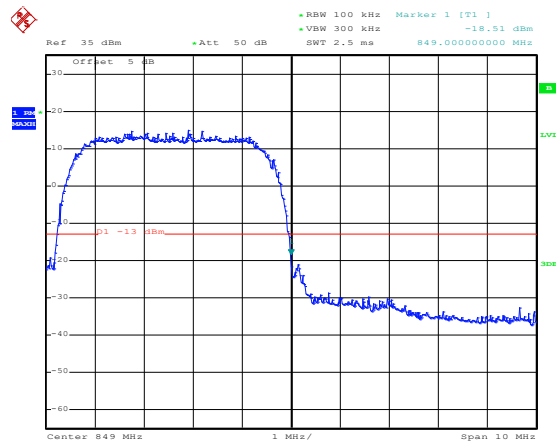
Date: 19.OCT.2022 09:15:58

	<p>Date: 19.OCT.2022 09:16:14</p>
<p>HSUPA Band V-High</p>	<p>Date: 19.OCT.2022 09:16:39</p>
	<p>Date: 19.OCT.2022 09:17:00</p>

Bandedge

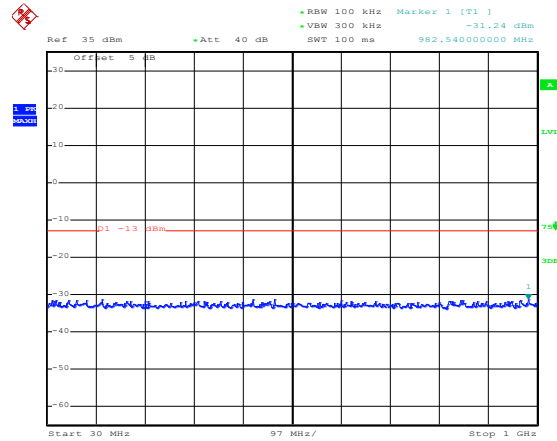


Date: 10.NOV.2022 16:50:31

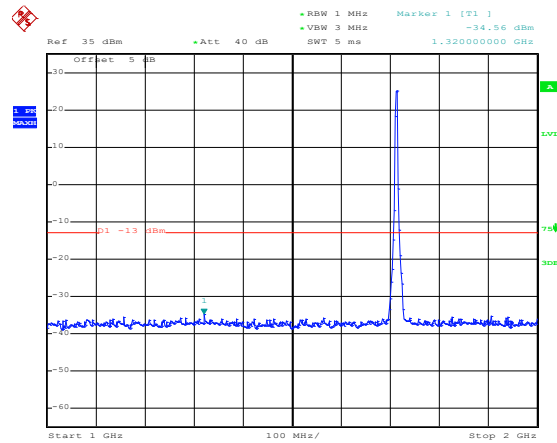


Date: 10.NOV.2022 16:51:08

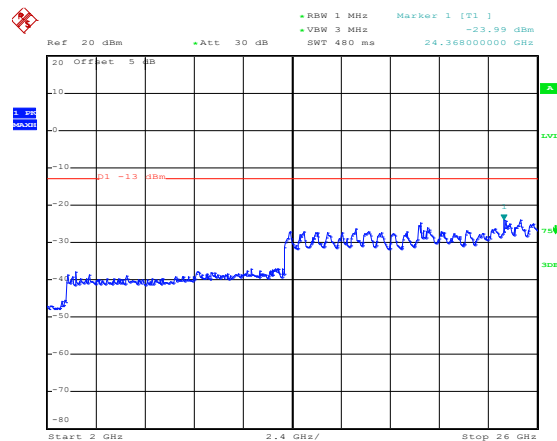
WCDMA Band IV-Low



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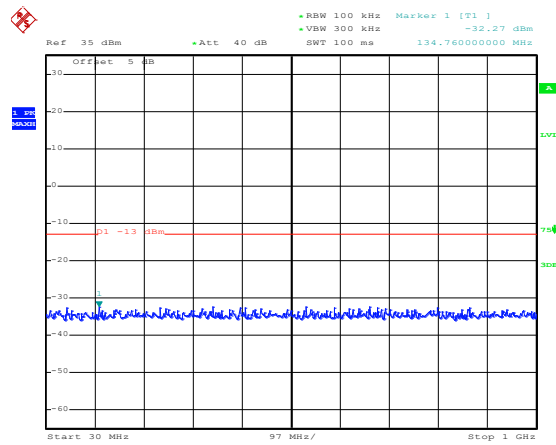


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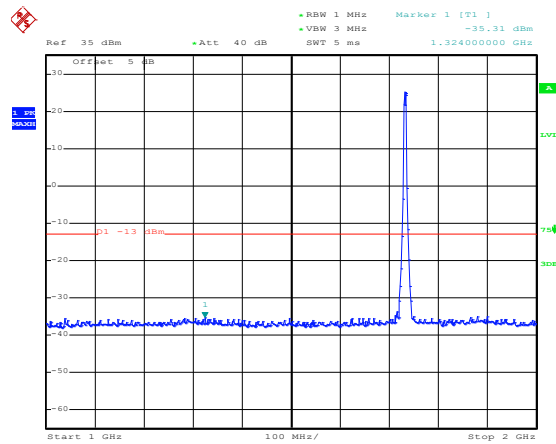


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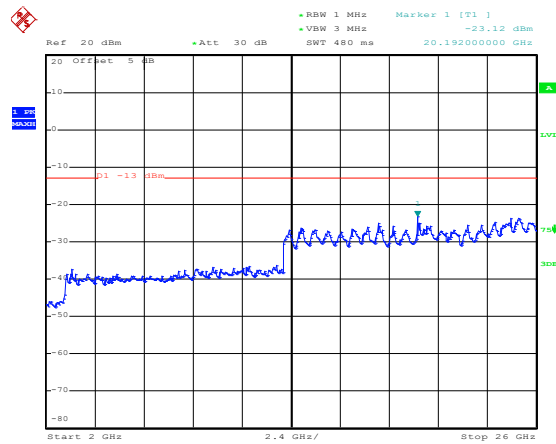
WCDMA Band IV-Middle



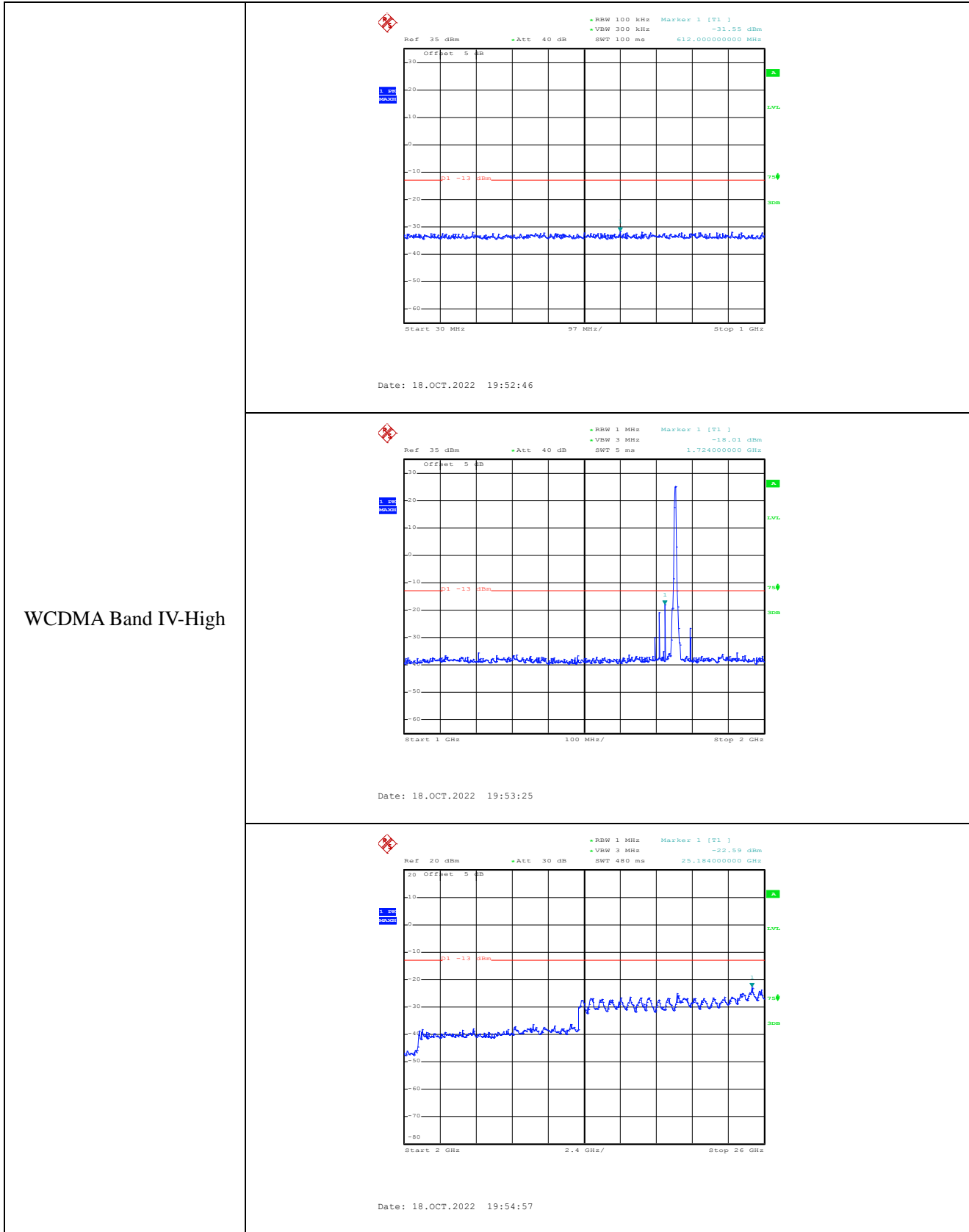
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Date: 18.OCT.2022 19:50:59

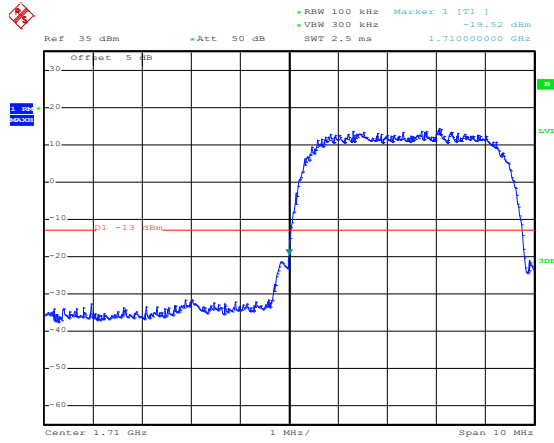


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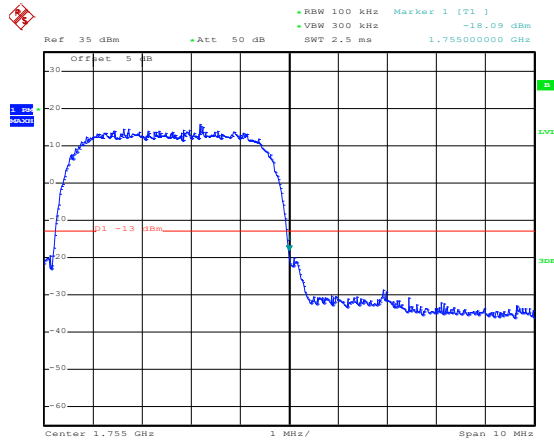




Bandedge

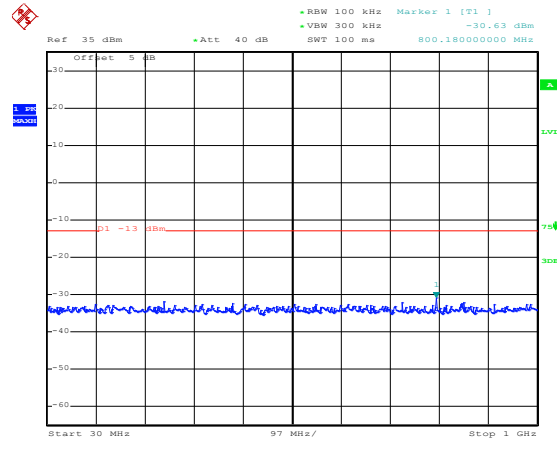


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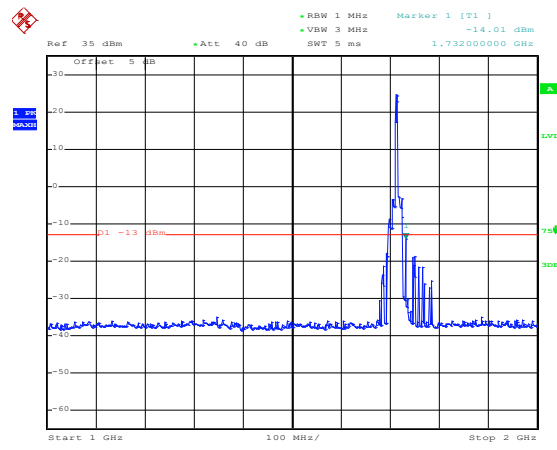


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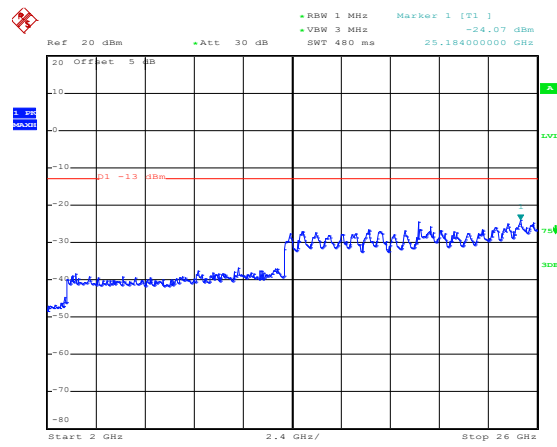
HSDPA Band IV-Low



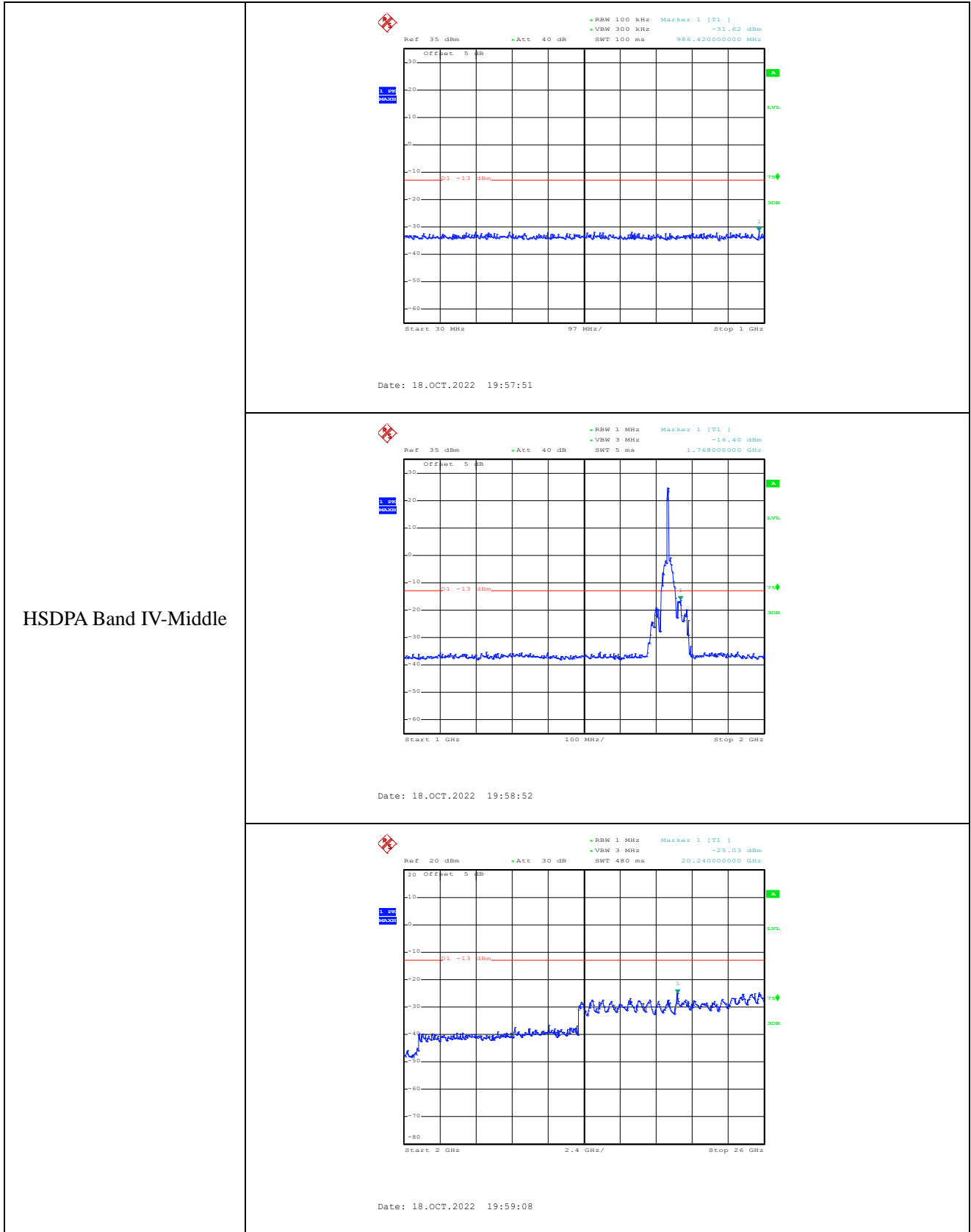
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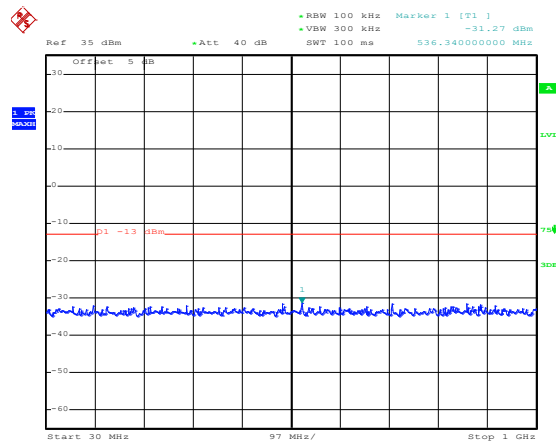
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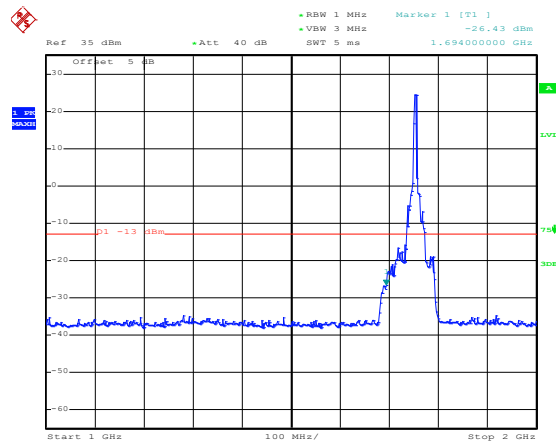
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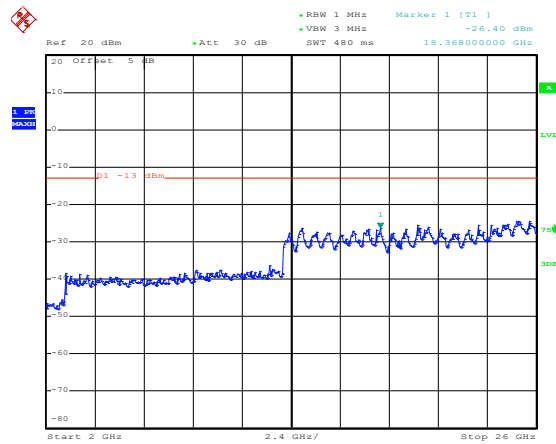
HSDPA Band IV-High



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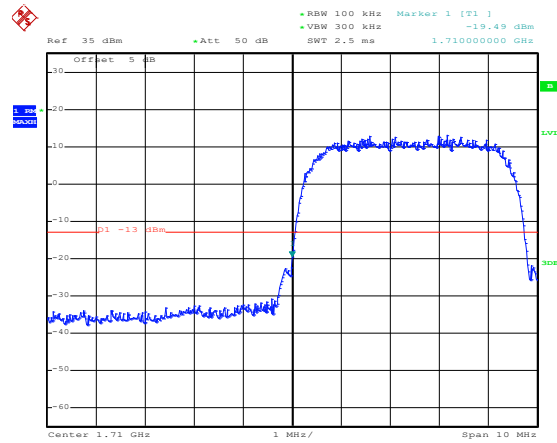


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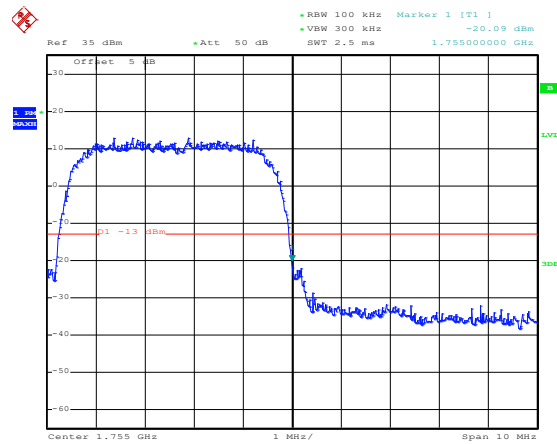


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Bandedge

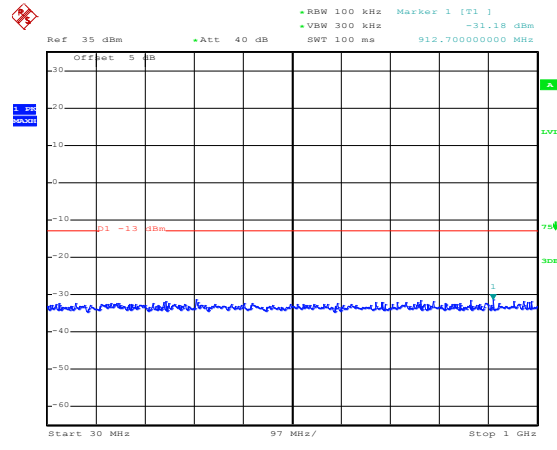


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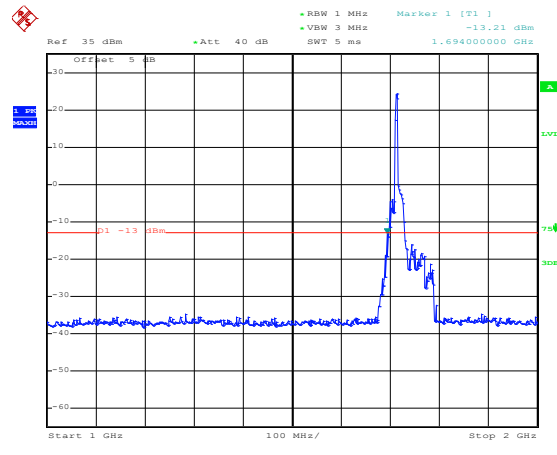


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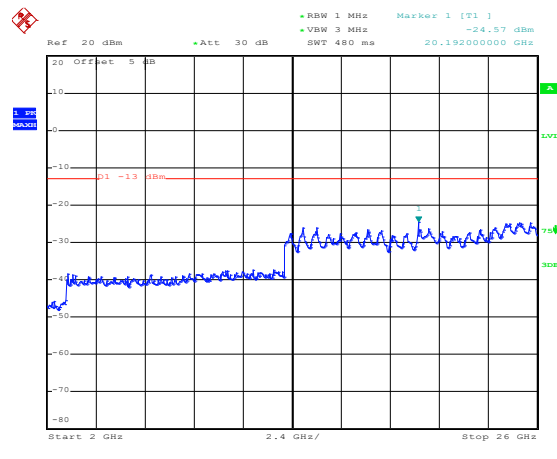
HSUPA Band IV-Low



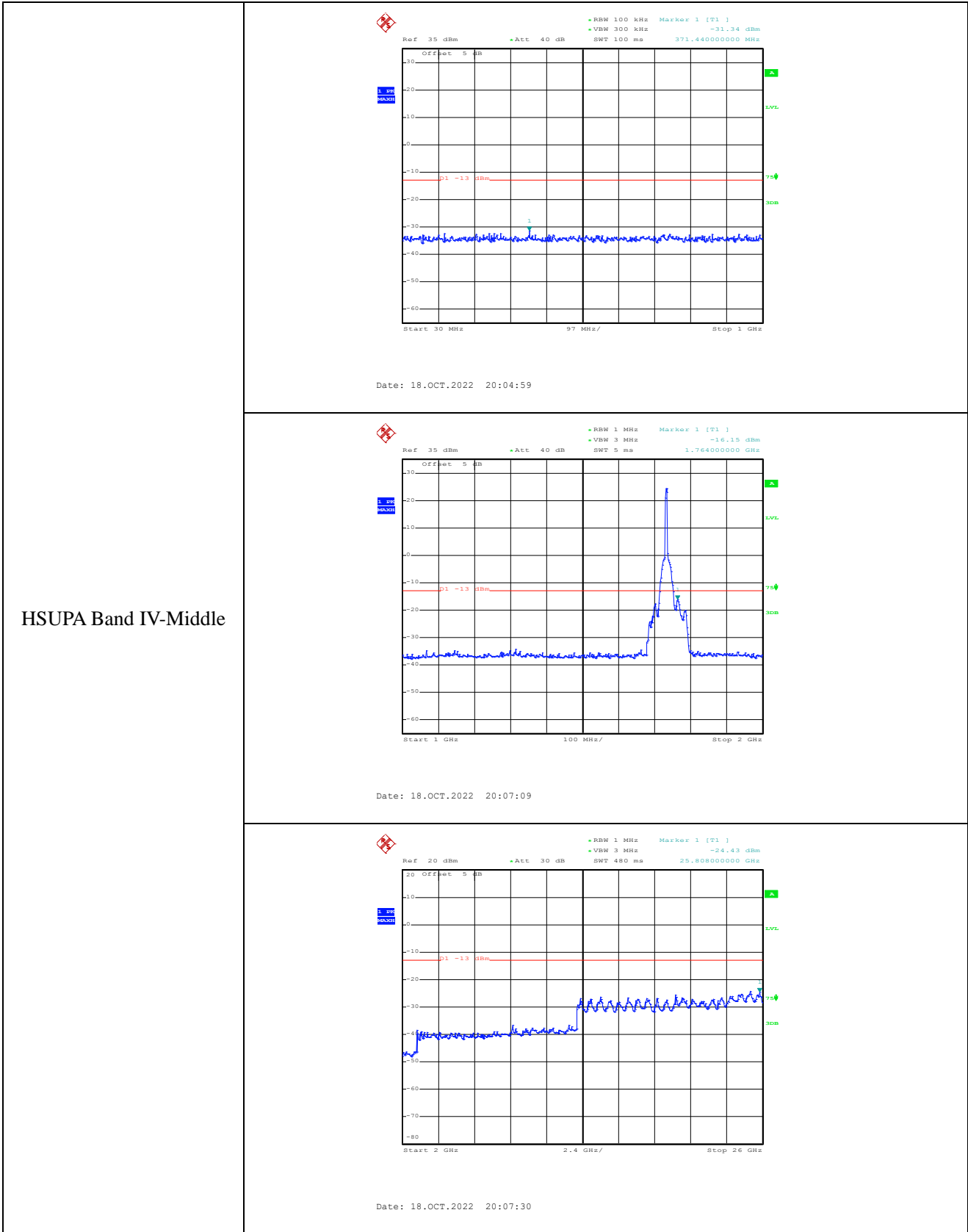
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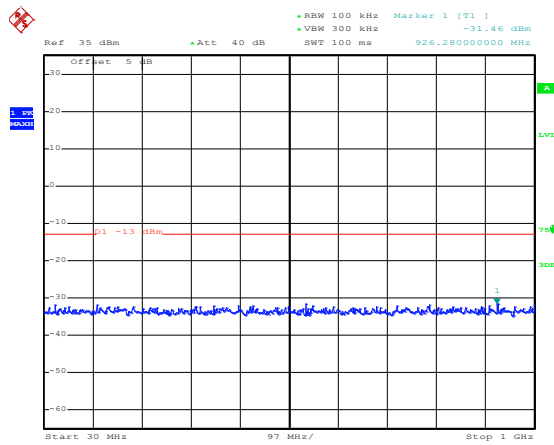
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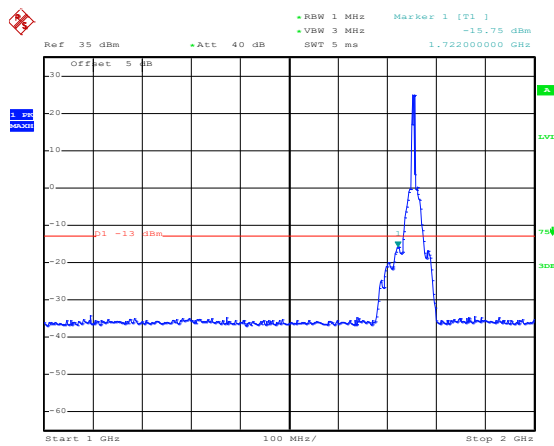
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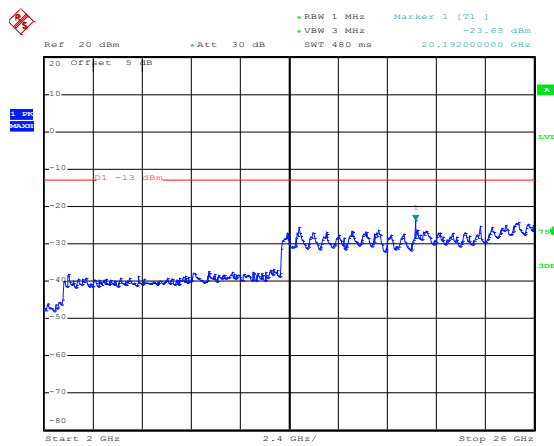
HSUPA Band IV-High



Date: 18.OCT.2022 20:08:15



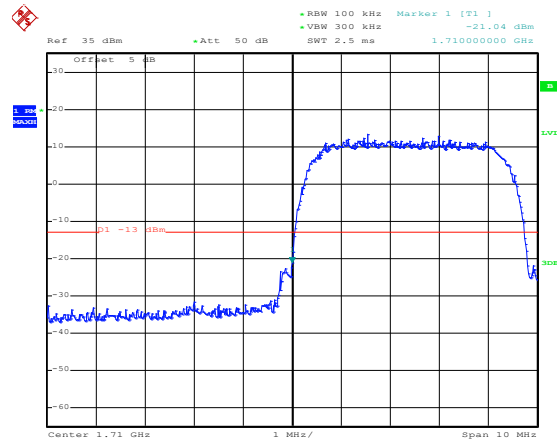
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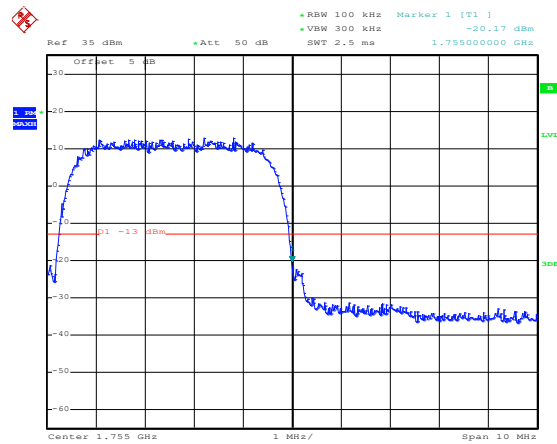
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Bandedge

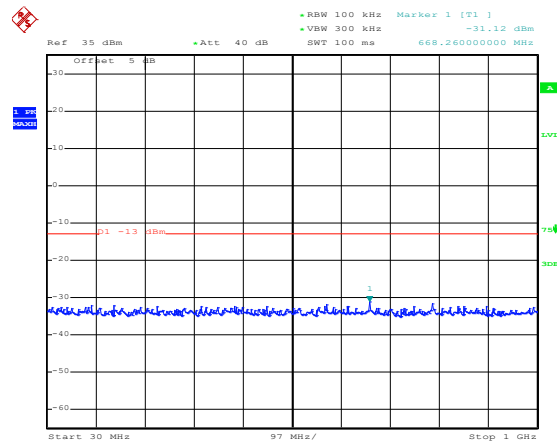


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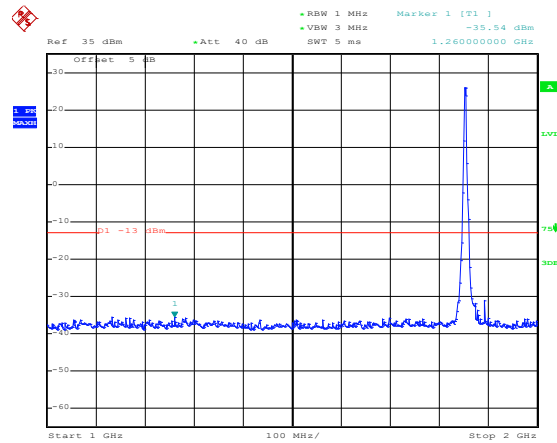


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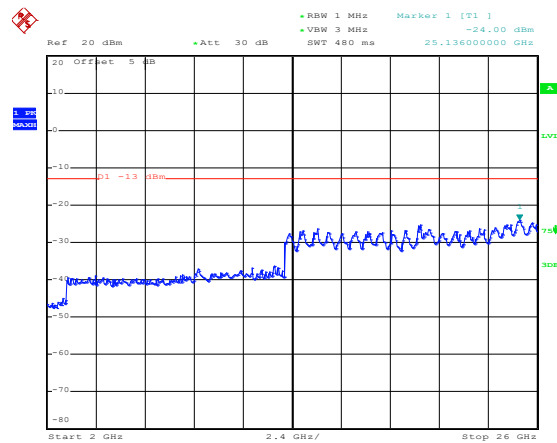
WCDMA Band II-Low



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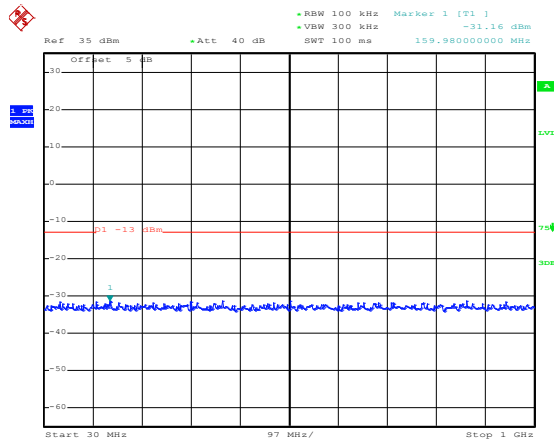


Date: 18.OCT.2022 18:49:50

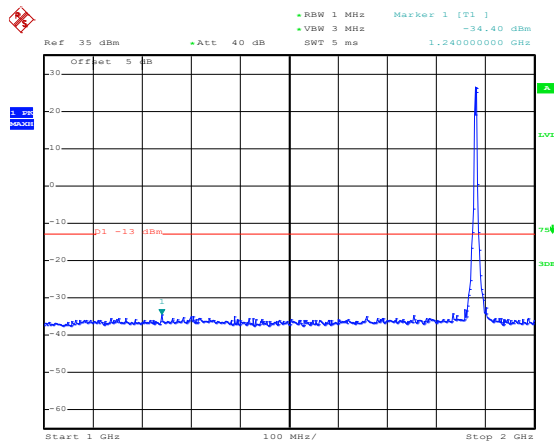


Date: 18.OCT.2022 18:50:13

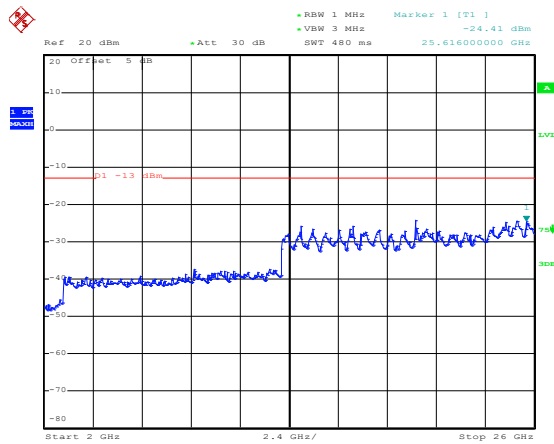
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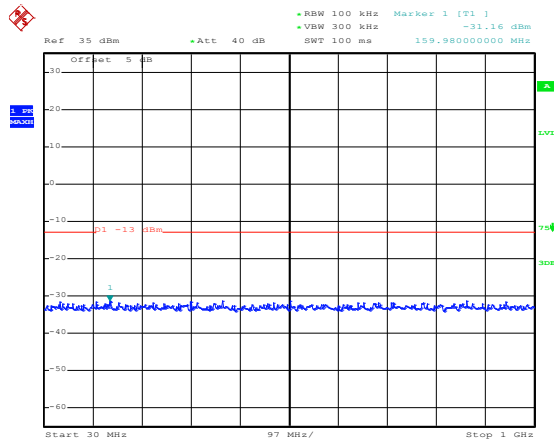


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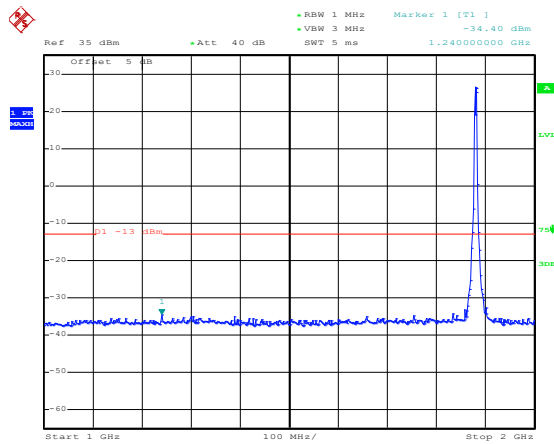


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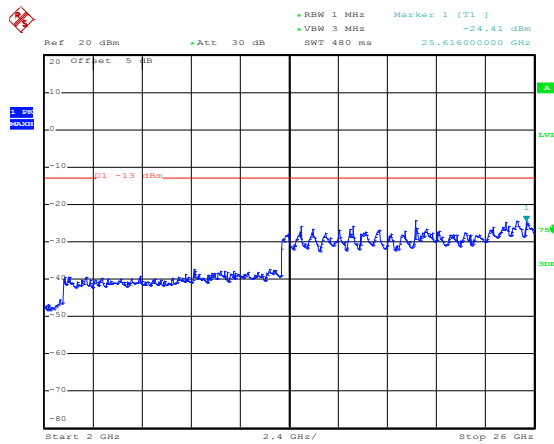
WCDMA Band II-Low



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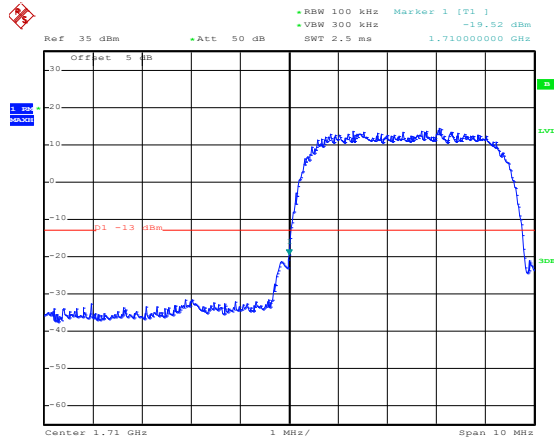


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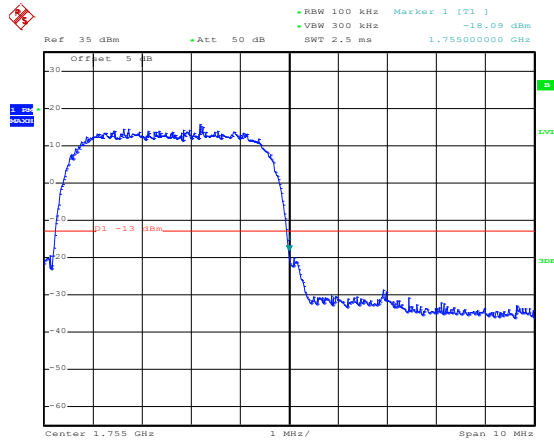


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Bandedge

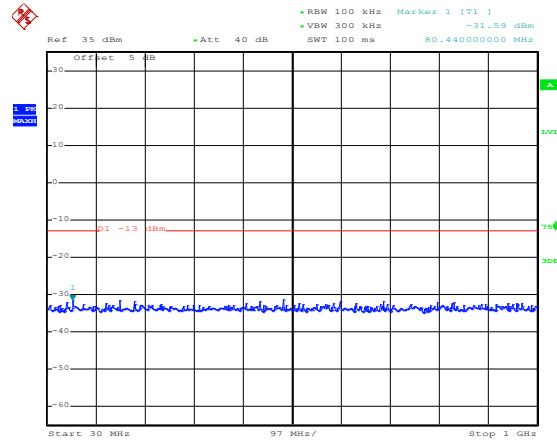


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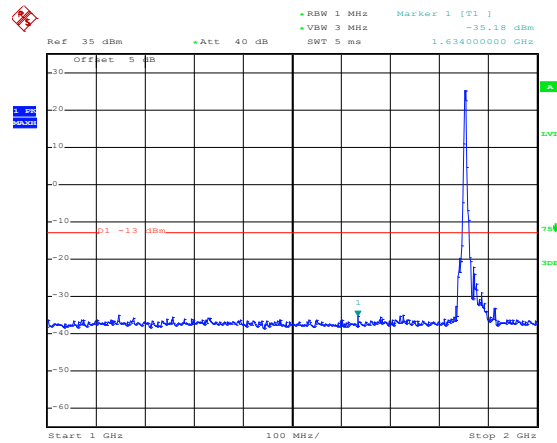


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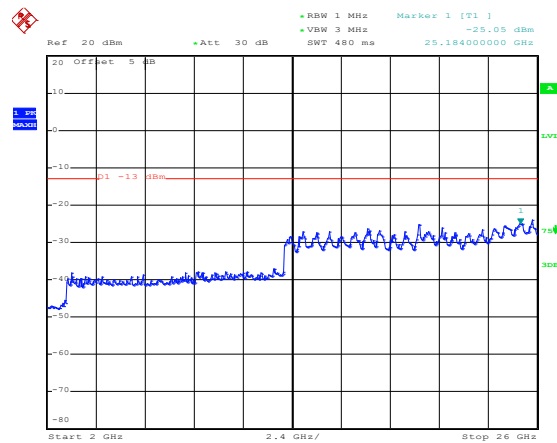
HSDPA Band II-Low



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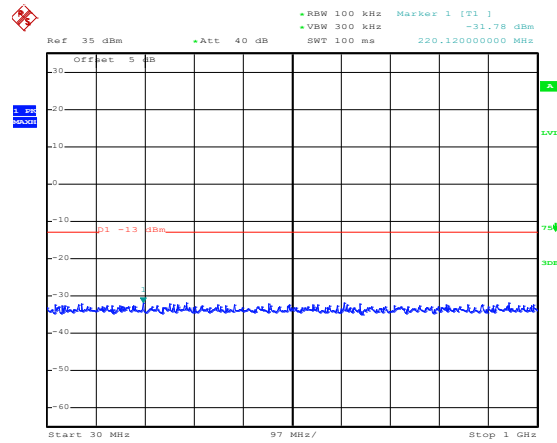


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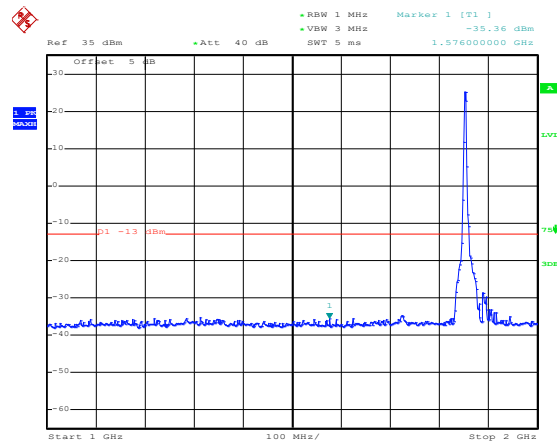


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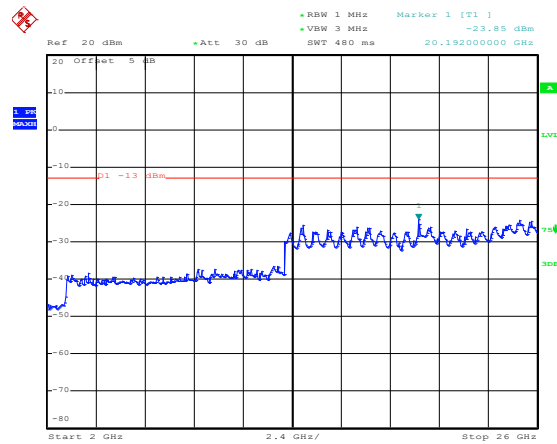
HSDPA Band II-Low



Date: 18.OCT.2022 19:04:46

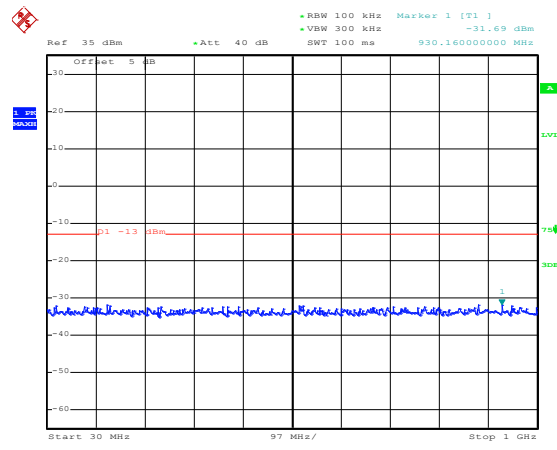


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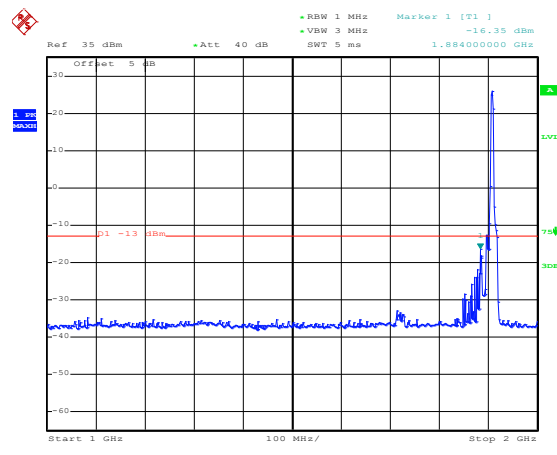


Date: 18.OCT.2022 19:06:09

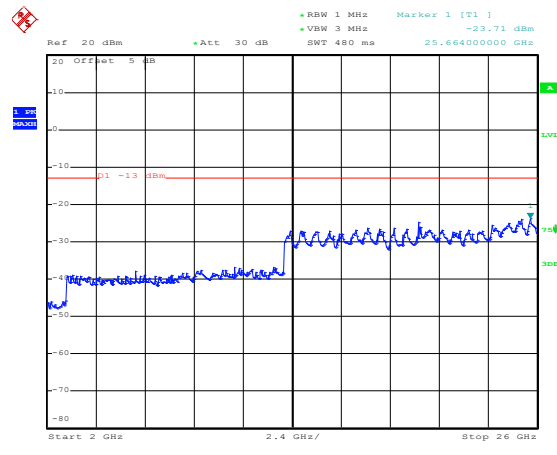
HSDPA Band II-Low



Date: 18.OCT.2022 19:07:01



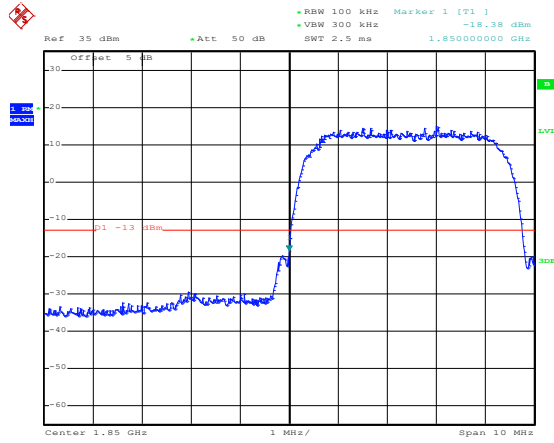
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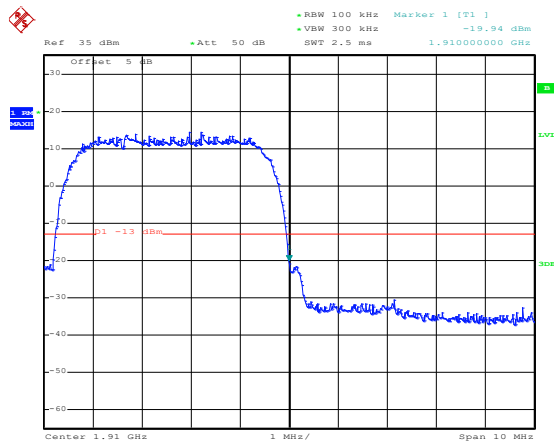
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Bandedge

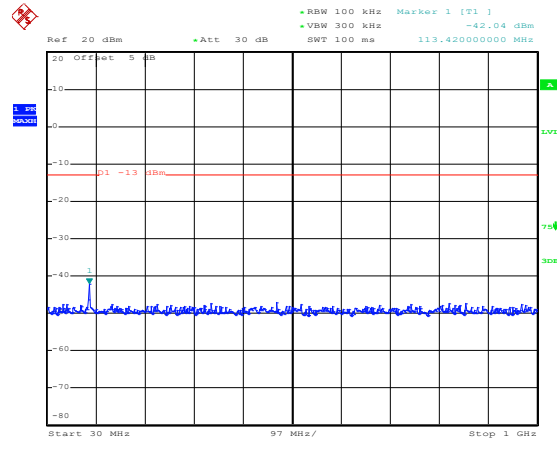


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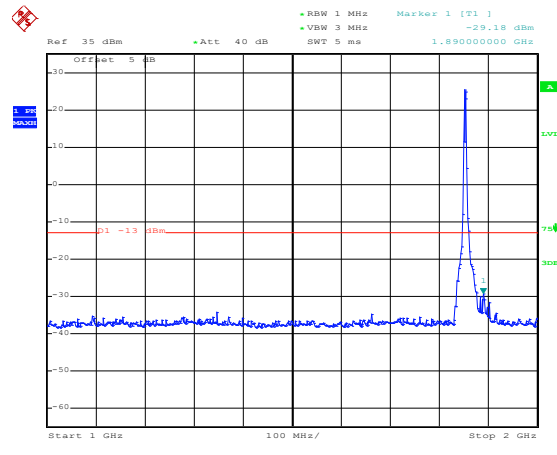


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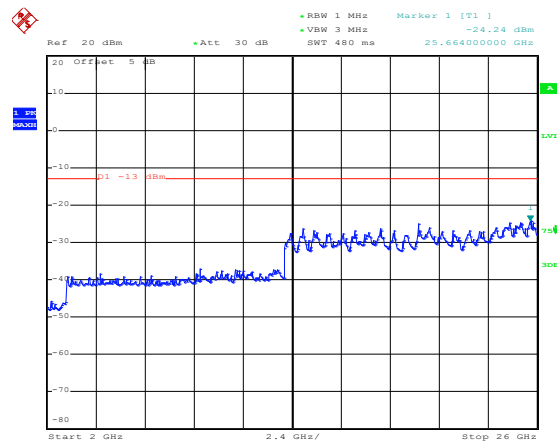
HSUPA Band II-Low



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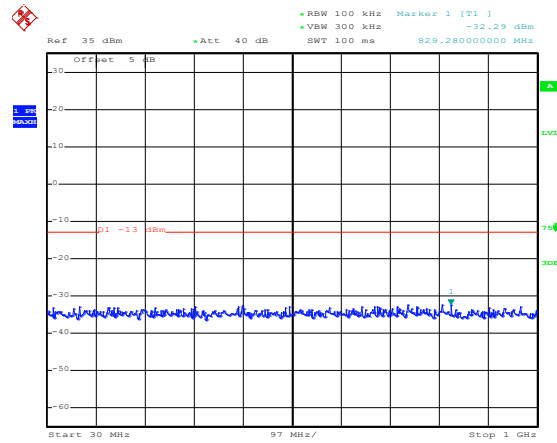


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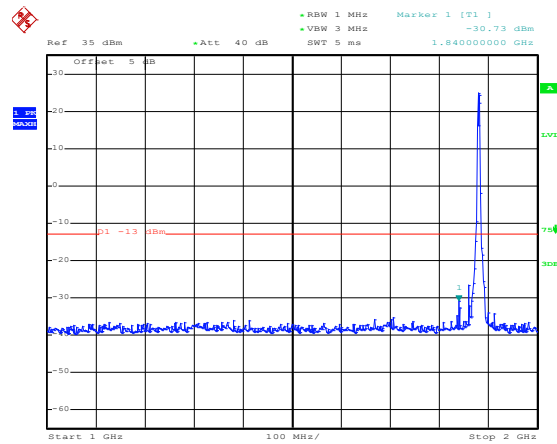


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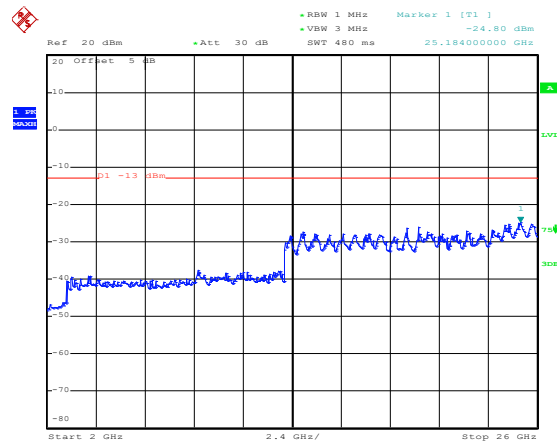
HSUPA Band II-Low



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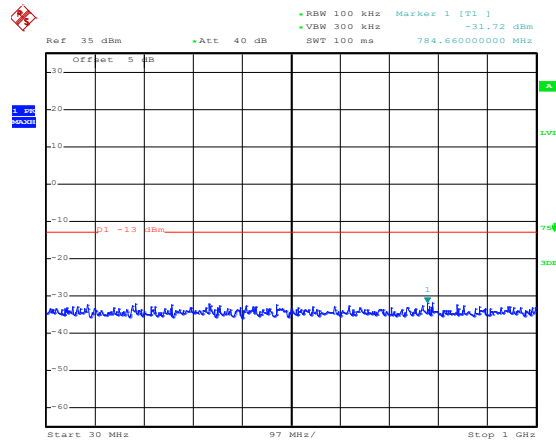


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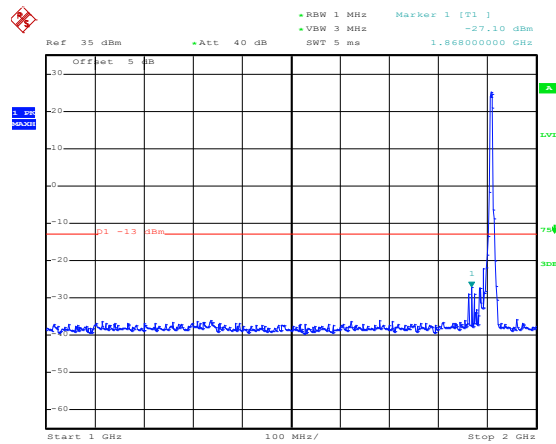


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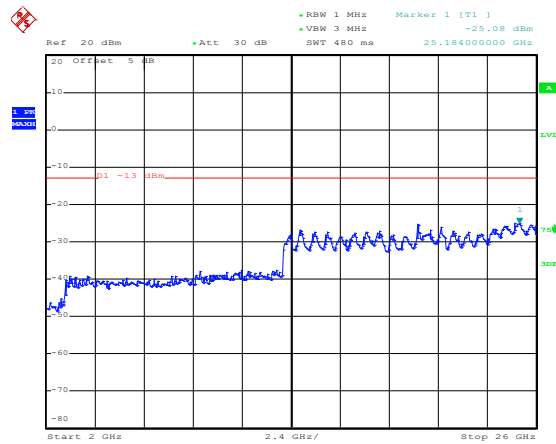
HSUPA Band II-Low



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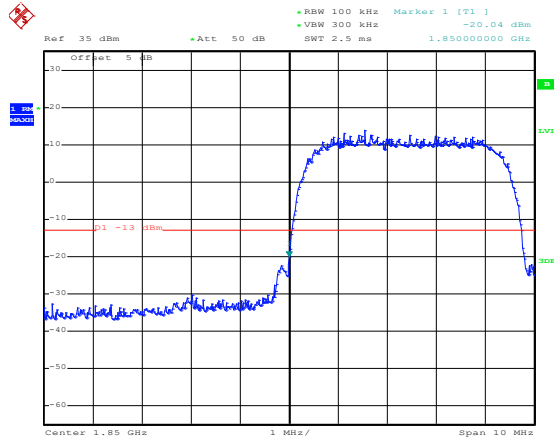


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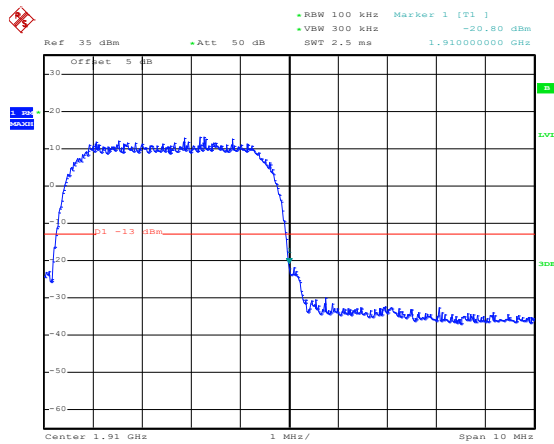


Date: 18.OCT.2022 19:13:52

Bandedge



Date: 10.NOV.2022 16:33:46



Date: 10.NOV.2022 16:34:13

## APPENDIX E

### Frequency Stability

Note: 1. Worst case at GSM850/PCS1900/WCDMA B2/B4/B5 middle channel

2. Normal Voltage NV=DC3.85V; Low Voltage LV=DC3.5V;High Voltage HV=DC4.4V

➤ Frequency stability V.S. Temperature measurement

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	62	0.0745	2.50	Pass
	-20	52	0.0616		
	-10	42	0.0497		
	0	34	0.0405		
	10	28	0.0340		
	20	21	0.0248		
	30	28	0.0340		
	40	34	0.0405		
	50	40	0.0478		
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	56	0.0299	2.50	Pass
	-20	52	0.0278		
	-10	45	0.0241		
	0	38	0.0205		
	10	33	0.0176		
	20	29	0.0155		
	30	35	0.0184		
	40	38	0.0205		
	50	43	0.0229		

Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	62	0.0736	2.50	Pass
	-20	52	0.0616		
	-10	46	0.0552		
	0	39	0.0469		
	10	34	0.0405		
	20	28	0.0331		
	30	32	0.0386		
	40	36	0.0432		
	50	40	0.0478		
Reference Frequency: WCDMA Band IV Middle channel=1412 channel=1733.6MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	66	0.0382	2.50	Pass
	-20	59	0.0342		
	-10	48	0.0280		
	0	43	0.0248		
	10	35	0.0204		
	20	28	0.0160		
	30	33	0.0191		
	40	41	0.0235		
	50	48	0.0275		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Power supplied (Vdc)	Temperature ( °C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
NV	-30	58	0.0307	2.50	Pass
	-20	42	0.0225		
	-10	32	0.0172		
	0	28	0.0147		
	10	20	0.0106		
	20	16	0.0086		
	30	20	0.0106		
	40	24	0.0127		
	50	31	0.0164		

## ➤ Frequency stability V.S. Voltage measurement

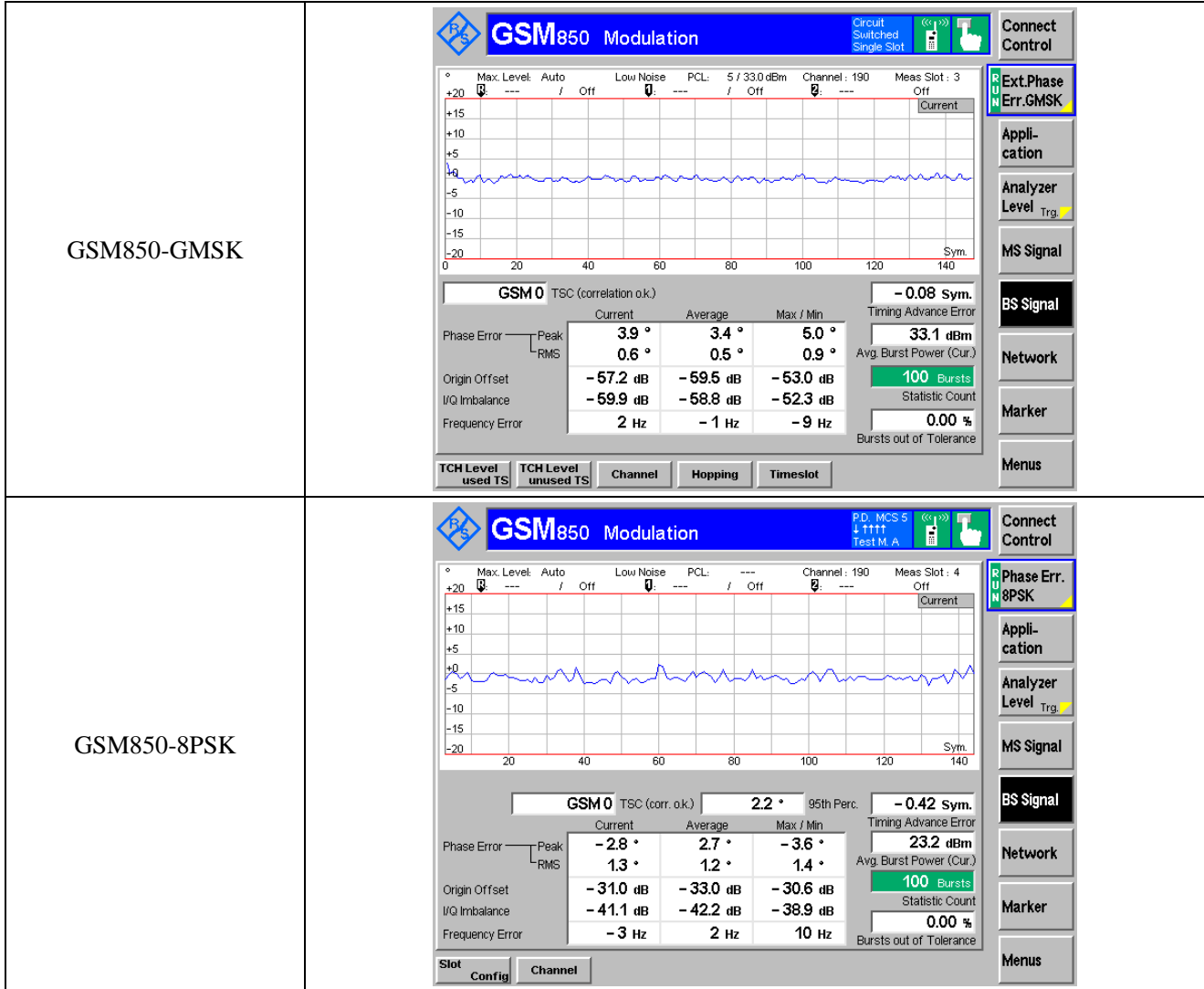
Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	73	0.0873	2.50	Pass
	NV	64	0.0763		
	LV	53	0.0634		
Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	46	0.0552	2.50	Pass
	NV	40	0.0478		
	LV	35	0.0423		

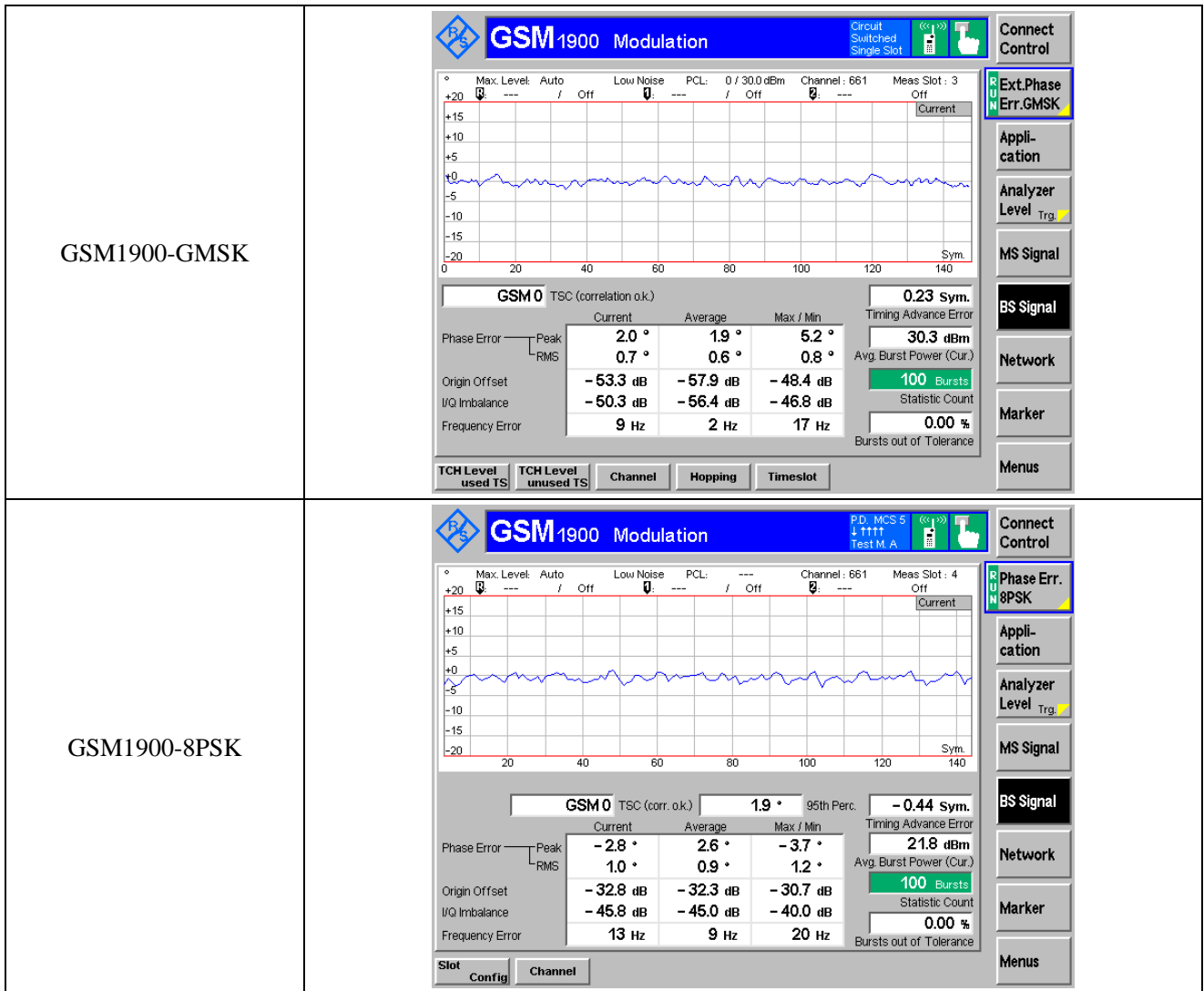


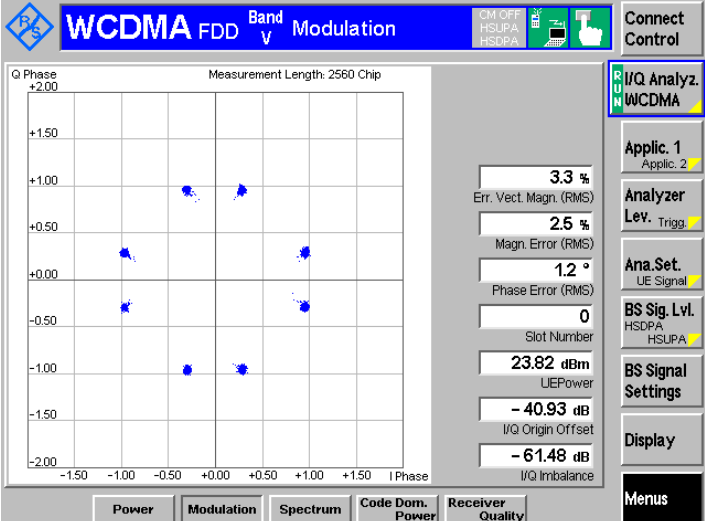
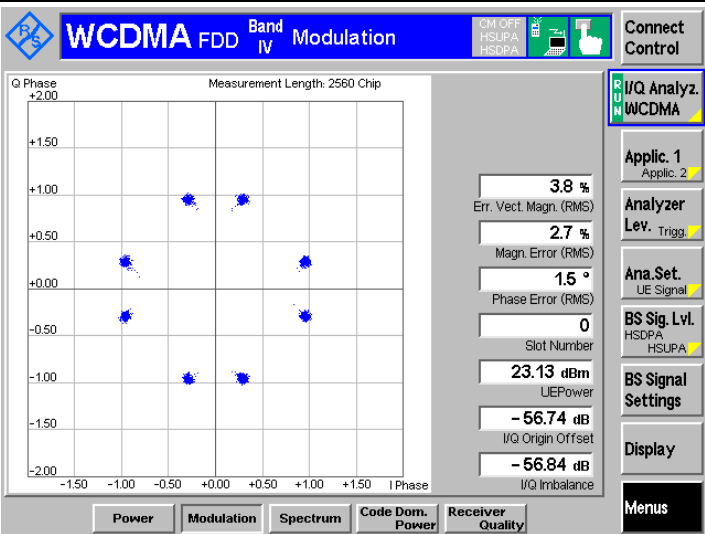
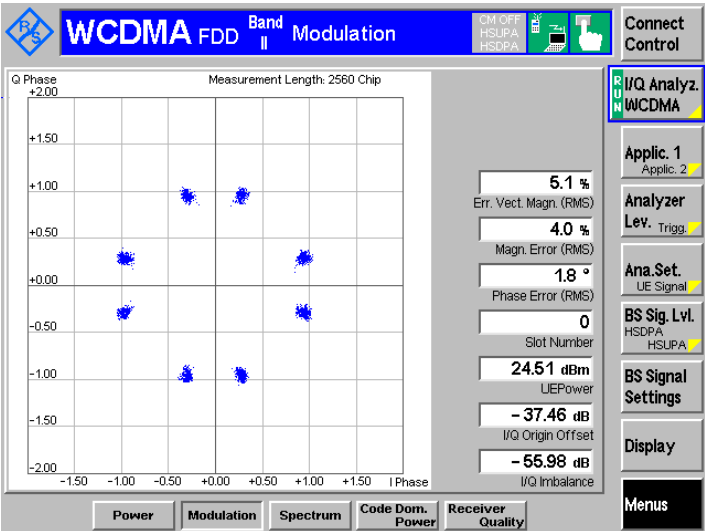
Reference Frequency: WCDMA Band V Middle channel=4183 channel=836.6MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	
		Hz	ppm	Result	
25	HV	43	0.0515	2.50	Pass
	NV	48	0.0579		
	LV	56	0.0671		
Reference Frequency: WCDMA Band IV Middle channel=1412 channel=1733.6MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	44	0.0253	2.50	Pass
	NV	39	0.0226		
	LV	33	0.0191		
Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Temperature ( °C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	HV	54	0.0286	2.50	Pass
	NV	50	0.0266		
	LV	44	0.0233		

## APPENDIX F

### Modulation characteristics





<p>WCDMA B5</p>	 <p>WCDMA FDD Band V Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 3.3 %</p> <p>Magn. Error (RMS): 2.5 %</p> <p>Phase Error (RMS): 1.2 °</p> <p>Slot Number: 0</p> <p>UE Power: 23.82 dBm</p> <p>I/Q Origin Offset: -40.93 dB</p> <p>I/Q Imbalance: -61.48 dB</p>
<p>WCDMA B4</p>	 <p>WCDMA FDD Band IV Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 3.8 %</p> <p>Magn. Error (RMS): 2.7 %</p> <p>Phase Error (RMS): 1.5 °</p> <p>Slot Number: 0</p> <p>UE Power: 23.13 dBm</p> <p>I/Q Origin Offset: -56.74 dB</p> <p>I/Q Imbalance: -56.84 dB</p>
<p>WCDMA B2</p>	 <p>WCDMA FDD Band II Modulation</p> <p>Measurement Length: 2560 Chip</p> <p>Q Phase</p> <p>I Phase</p> <p>Err. Vect. Magn. (RMS): 5.1 %</p> <p>Magn. Error (RMS): 4.0 %</p> <p>Phase Error (RMS): 1.8 °</p> <p>Slot Number: 0</p> <p>UE Power: 24.51 dBm</p> <p>I/Q Origin Offset: -37.46 dB</p> <p>I/Q Imbalance: -55.98 dB</p>

## APPENDIX PHOTOGRAPHS

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Please refer to “ANNEX”

\*\*\*\*\* END OF REPORT \*\*\*\*\*