TEST REPORT

FCC ID: 2ADYY-B2

Product: Mobile Phone

Model No.: B2

Additional Model No.: N/A

Trade Mark: TECNO

Report No.: FCC18110006A-RF

Issued Date: Nov. 17, 2018

Issued for:

TECNO MOBILE LIMITED
ROOMS 05-15, 13A/F., SOUTH TOWER, WORLD FINANCE CENTRE, HARBOUR CITY, 17 CANTON ROAD, TSIM SHA TSUI, KOWLOON, HONG KONG

Issued By:

World Standardization Certification & Testing Group Co., Ltd.
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1. GENERAL INFORMATION

Product:	Mobile Phone
Model No.:	B2
Additional Model:	N/A
Applicant:	TECNO MOBILE LIMITED
Address:	ROOMS 05-15, 13A/F., SOUTH TOWER, WORLD FINANCE CENTRE, HARBOUR CITY, 17 CANTON ROAD, TSIM SHA TSUI, KOWLOON, HONG KONG
Manufacturer:	SHENZHEN TECNO TECHNOLOGY CO.,LTD.
Address:	1/F-4/F,7/F, BUILDING 3, TAIPINGYANG INDUSTRIAL ZONE, NO.2088, SHENYAN ROAD, YANTIAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, P.R.C
Data of receipt:	Nov. 02, 2018
Date of Test:	Nov. 02, 2018 to Nov. 14, 2018
Applicable Standards:	FCC Rules Part 22H and 24E and 27.

The above equipment has been tested by World Standardization Certification & Testing Group Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Pu Shixi **Date:** Nov. 19, 2018

(Pu Shixi)

Check By: Qin Shuiquan **Date:** Nov. 19, 2018

(Qin Shuiquan)

Approved By: Wang Fengbing **Date:** Nov. 19, 2018

(Wang Fengbing)

2. GENERAL DESCRIPTION OF EUT

Equipment Type:	Mobile Phone
Hardware version:	V1.1
Software version:	B2-F8017F-GO-180919V48
Frequency Bands:	☒GSM 850 ☒PCS 1900 (U.S. Bands) UTRA Bands: ☒UTRA Band 2 ☒UTRA Band 5
Antenna Type:	Internal Antenna
Antenna gain:	PCS 1900: -1.4dBi GSM850: -0.8dBi UTRA Band 2: -1.4dBi UTRA Band 5: -0.8dBi
Battery information:	Li-Polymer Battery : BL-30VT Voltage: 3.85V Rated Capacity: 3000mAh/11.55Wh Typical Capacity: 3050mAh/11.74Wh Limited Charge Voltage: 4.4V
Adapter Information:	Adapter: A8-501000 Input: AC 100-240V 50/60Hz 200mA Output: DC 5V⎓1.0A
Card(S):	Card 1: SIM Card Slot Card 2: SIM Card Slot
Max power:	See Table 2.1.2
Extreme Vol. Limits:	DC 3.5V to 4.35V (Normal: DC 3.8V)
Extreme Temp. Tolerance	-10℃ to +55℃

Table 2.1 The Basic Technical Specification for Working BAND(S).

OPERATION BAND(S)	Power Class	Mod.	Max Average (dBm)	Max Peak Power (dBm)
GSM850	Class 4	GMSK	33.01	33.63
DCS1900	Class 1	GMSK	29.95	30.76
UTRA BAND 2	Class 3	QPSK	22.22	23.96
UTRA BAND 5	Class 3	QPSK	22.13	23.67

3. FACILITIES AND ACCREDITATIONS

3.1. Test Facility

All measurement facilities used to collect the measurement data are located at Building A-B, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China of the World Standardization Certification & Testing Group Co., Ltd.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

Registration Number: 366353

3.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	**NVLAP (The certificate registration number is NVLAP LAB CODE:600142-0)**
Japan	**VCCI (The certificate registration number is C-4790, R-3684, G-837)**
Canada	**INDUSTRY CANADA (The certificated registration number is 7700A-1)**
China	**CNAS (The certificated registration number is L3732)**

Copies of granted accreditation certificates are available for downloading from our web site, **http://www.wsct-cert.com**

3.3. Description Of Test Channels And Test Modes

Test channels:

GSM 850			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	0.2	128	824.2
Mid Range	0.2	190	836.6
High Range	0.2	251	848.8

PCS 1900			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	0.2	512	1850.2
Mid Range	0.2	661	1880
High Range	0.2	810	1909.8

URTA BAND 2			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	5	9262	1852.4
Mid Range	5	9400	1880
High Range	5	9538	1907.6

URTA BAND 5			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	5	4132	826.4
Mid Range	5	4182	836.4
High Range	5	4233	846.6

Note 1: The worst condition was recorded in the test report if no other modes test data.

3.4. Equipment Modifications

Not available for this EUT intended for grant.

4. SUMMARY OF TEST REQUIREMENTS AND RESULTS

BAND 2(PCS 1900/ UTRA Band 2):

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	§2.1046, §24.232(c)	EIRP ≤ 2W(33dBm)	Pass
Bandwidth	§2.1049 §24.238(a)	OBW: No limit. EBW: No limit.	Pass
Band Edges	§2.1051, §24.238(a)	-13dBm	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	-13dBm	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	-13dBm	Pass
Frequency Stability	§2.1055, §24.235	the fundamental emission stays within the authorized frequency block.	Pass
Peak to average ratio	§24.232(d)	<13dB	Pass

BAND 5(GSM850/ UTRA Band 5):

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	§2.1046, §2.913(a)	EIRP ≤ 7W(38.5dBm)	Pass
Occupied Bandwidth	§2.1049	OBW: No limit.	Pass
Emission Bandwidth	22.917(b)	EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §22.917(a)(b)	KDB 971 168 D02 971168 D02 Misc OOBE License Digital Systems v01 &27.53(m) for detail the limit is upon different OBW	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917	-13dBm	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917	-13dBm	Pass
Frequency Stability	§2.1055, §22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass

5. MEASUREMENT INSTRUMENTS

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.
EMI Test Receiver	R&S	ESCI	100005	08/19/2018	08/18/2019
LISN	AFJ	LS16	16010222119	08/19/2018	08/18/2019
LISN(EUT)	Mestec	AN3016	04/10040	08/19/2018	08/18/2019
Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	08/19/2018	08/18/2019
Coaxial cable	Megalon	LMR400	N/A	08/12/2018	08/11/2019
GPIB cable	Megalon	GPIB	N/A	08/12/2018	08/11/2019
Spectrum Analyzer	R&S	FSU	100114	08/19/2018	08/18/2019
Pre Amplifier	H.P.	HP8447E	2945A02715	10/13/2018	10/12/2019
Pre-Amplifier	CDSI	PAP-1G18-38	--	10/13/2018	10/12/2019
Loop Antenna	R&S	HFH2-Z2	100296	10/13/2018	10/12/2019
Bi-log Antenna	SUNOL Sciences	JB3	A021907	09/13/2018	09/12/2019
9*6*6 Anechoic	--	--	--	08/21/2018	08/20/2019
Horn Antenna	COMPLIANCE ENGINEERING	CE18000	--	09/13/2018	09/12/2019
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	08/23/2018	08/22/2019
Power meter	Anritsu	ML2487A	6K00003613	08/23/2018	08/22/2019
Power meter	Anritsu	MA2491A	32263	08/23/2018	08/22/2019
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	04/24/2018	04/23/2019
System-Controller	CCS	N/A	N/A	N.C.R	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R	N.C.R
RF cable	Murata	MXHQ87WA3000	-	08/21/2018	08/20/2019
Loop Antenna	EMCO	6502	00042960	08/22/2018	08/21/2019
Wideband Radio Communication Tester	R&S	CMW 500	103974	08/19/2018	08/18/2019
Horn Antenna	SCHWARZBECK	BBHA 9170	1123	08/19/2018	08/18/2019
H & T Chamber	Guangzhou gongwen	GDJS-500-40	0329	08/19/2018	08/18/2019

6. EFFECTIVE (ISOTROPIC) RADIATED POWER

RF Power Output

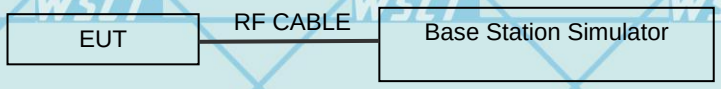
Limits

No specific RF power output requirements in part 2.1046.

Methods of Measurement

During the process of the testing, the EUT was controlled via the Base Station Simulator (CMU200) to ensure max power transmission and proper modulation.

Test Setup



GSM850 BAND:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAP	Duty cycle Factor(dB)	Frame Power(dBm)
GSM850		824.2	33.08	32.98	0.10	-9	23.98
		836.6	**33.63**	**33.01**	0.62	-9	24.01
		848.8	33.55	32.95	0.60	-9	23.95
GPRS850	1 Tx Slots	824.2	33.51	32.73	0.78	-9.03	23.70
		836.6	32.88	32.68	0.20	-9.03	23.65
		848.8	33.58	32.76	0.82	-9.03	23.73
	2 Tx Slots	824.2	31.86	31.62	0.24	-6.02	25.60
		836.6	32.51	31.56	0.95	-6.02	25.54
		848.8	32.38	31.58	0.80	-6.02	25.56
	3 Tx Slots	824.2	31.34	30.69	0.65	-4.26	26.43
		836.6	30.71	30.59	0.12	-4.26	26.33
		848.8	30.68	30.66	0.02	-4.26	26.40
	4 Tx Slots	824.2	30.41	29.98	0.43	-3.01	26.97
		836.6	30.38	29.88	0.50	-3.01	26.87
		848.8	30.60	29.9	0.70	-3.01	26.89
EPRS850	1 Tx Slots	824.2	29.63	28.75	0.88	-9.03	19.72
		836.6	28.92	28.74	0.18	-9.03	19.71
		848.8	28.80	28.72	0.08	-9.03	19.69
	2 Tx Slots	824.2	28.46	27.55	0.91	-6.02	21.53
		836.6	28.24	27.54	0.70	-6.02	21.52
		848.8	28.11	27.57	0.54	-6.02	21.55
	3 Tx Slots	824.2	26.52	26.39	0.13	-4.26	22.13
		836.6	26.58	26.42	0.16	-4.26	22.16
		848.8	27.41	26.45	0.96	-4.26	22.19
	4 Tx Slots	824.2	25.94	25.51	0.43	-3.01	22.50
		836.6	25.71	25.55	0.16	-3.01	22.54
		848.8	26.17	25.58	0.59	-3.01	22.57

Duty cycle Factor = 1 Tx Slots, 10*log(1/8)= -9.03dB, 2 Tx Slots, 10*log(2/8)= -6.02dB,
3Tx Slots, 10*log(3/8)= -4.26dB, 4 Tx Slots, 10*log(4/8)= -3.01dB

PCS1900 BAND:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAP	Duty cycle Factor(dB)	Frame Power(dBm)
GSM1900		1850.2	30.43	29.89	0.54	-9	20.89
		1880	30.44	29.90	0.54	-9	20.90
		1909.8	**30.76**	**29.95**	0.81	-9	20.95
GPRS1900	1 Tx Slots	1850.2	30.42	29.66	0.76	-9.03	20.63
		1880	30.16	29.73	0.43	-9.03	20.70
		1909.8	29.74	29.68	0.06	-9.03	20.65
	2 Tx Slots	1850.2	28.65	28.56	0.09	-6.02	22.54
		1880	29.18	28.65	0.53	-6.02	22.63
		1909.8	28.78	28.61	0.17	-6.02	22.59
	3 Tx Slots	1850.2	28.40	27.44	0.96	-4.26	23.18
		1880	27.71	27.56	0.15	-4.26	23.30
		1909.8	28.48	27.5	0.98	-4.26	23.24
	4 Tx Slots	1850.2	27.53	26.89	0.64	-3.01	23.88
		1880	27.84	27.09	0.75	-3.01	24.08
		1909.8	27.49	26.98	0.51	-3.01	23.97
EGPRS1900	1 Tx Slots	1850.2	28.12	27.15	0.97	-9.03	18.12
		1880	27.42	27.08	0.34	-9.03	18.05
		1909.8	28.02	27.12	0.90	-9.03	18.09
	2 Tx Slots	1850.2	27.01	26.57	0.44	-6.02	20.55
		1880	26.77	26.62	0.15	-6.02	20.60
		1909.8	26.97	26.65	0.32	-6.02	20.63
	3 Tx Slots	1850.2	26.15	25.52	0.63	-4.26	21.26
		1880	26.28	25.53	0.75	-4.26	21.27
		1909.8	26.08	25.57	0.51	-4.26	21.31
	4 Tx Slots	1850.2	24.97	24.48	0.49	-3.01	21.47
		1880	24.94	24.51	0.43	-3.01	21.50
		1909.8	24.78	24.56	0.22	-3.01	21.55

Duty cycle Factor = 1 Tx Slots, 10*log(1/8)= -9.03dB, 2 Tx Slots, 10*log(2/8)= -6.02dB,
3Tx Slots, 10*log(3/8)= -4.26dB, 4 Tx Slots, 10*log(4/8)= -3.01dB

UMTS BANDS:

BAND 2:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAPR (dB)
Rel 99,12.2kbps RMC		1852.4	23.36	22.1	1.26
		1880	**23.96**	**22.22**	1.74
		1907.6	22.66	22.08	0.58
Rel 5,HSDPA	Subtest-1	1852.4	23.01	22.02	0.99
		1880	23.15	22.11	1.04
		1907.6	23.19	22	1.19
	Subtest-2	1852.4	22.74	21.95	0.79
		1880	23.84	21.99	1.85
		1907.6	23.36	21.88	1.48
	Subtest-3	1852.4	22.63	21.82	0.81
		1880	22.36	21.9	0.46
		1907.6	22.69	21.8	0.89
	Subtest-4	1852.4	22.97	21.76	1.21
		1880	23.01	21.79	1.22
		1907.6	22.77	21.75	1.02
Rel 6,HSUPA	Subtest-1	1852.4	22.69	22.01	0.68
		1880	23.36	22.06	1.30
		1907.6	23.73	21.98	1.75
	Subtest-2	1852.4	22.91	21.88	1.03
		1880	22.53	21.9	0.63
		1907.6	21.98	21.79	0.19
	Subtest-3	1852.4	22.90	21.75	1.15
		1880	22.42	21.78	0.64
		1907.6	22.83	21.7	1.13
	Subtest-4	1852.4	23.29	21.62	1.67
		1880	22.84	21.71	1.13
		1907.6	22.20	21.64	0.56
	Subtest-5	1852.4	22.14	21.58	0.56
		1880	22.69	21.62	1.07
		1907.6	22.48	21.55	0.93

BAND 5:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAPR (dB)
Rel 99,12.2kbps RMC		826.4	**23.67**	**22.13**	1.54
		836.4	22.74	22.10	0.64
		846.6	23.39	22.02	1.37
Rel 5,HSDPA	Subtest-1	826.4	23.16	22.10	1.06
		836.4	22.45	22.05	0.40
		846.6	22.48	22.00	0.48
	Subtest-2	826.4	23.36	21.90	1.46
		836.4	23.10	21.86	1.24
		846.6	23.03	21.85	1.18
	Subtest-3	826.4	22.87	21.76	1.11
		836.4	22.65	21.72	0.93
		846.6	22.59	21.70	0.89
	Subtest-4	826.4	22.25	21.65	0.60
		836.4	22.75	21.62	1.13
		846.6	21.98	21.61	0.37
Rel 6,HSUPA	Subtest-1	826.4	23.16	22.07	1.09
		836.4	22.62	22.02	0.60
		846.6	22.29	22.01	0.28
	Subtest-2	826.4	22.71	21.88	0.83
		836.4	23.04	21.85	1.19
		846.6	22.83	21.90	0.93
	Subtest-3	826.4	23.54	21.81	1.73
		836.4	22.00	21.78	0.22
		846.6	22.39	21.82	0.57
	Subtest-4	826.4	21.97	21.67	0.30
		836.4	23.12	21.69	1.43
		846.6	23.04	21.76	1.28
	Subtest-5	826.4	22.94	21.60	1.34
		836.4	22.50	21.62	0.88
		846.6	22.47	21.70	0.77

Radiation power test

Test limit:
According to §22.913, The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
According to§24.232, 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), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications. According to §27.50 (h), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
See section 4.

Test procedure:

1. The setup of EUT is according with per TIA/EIA Standard 603 D:2010 or KDB971168 D01 v02r02.
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 EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100kHz,VBW=300kHz for 30MHz to 1GHz,, And the maximum value of the receiver should be recorded as (Pr).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
6.Power(EIRP)=PMea+PAg - Pcl + Ga
7. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP
= EIRP-2.15dBi.

Test Results:

Note: Record the condition when max power has been detector for radiated method.(X axis)

Radiated Power (ERP) for GSM 850

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	ERP (Peak) (dBm)	Polarization
824.2	-2.80	31.21	3.34	8.34	-2.15	31.26	H
836.6	-2.55	31.23	3.39	8.34	-2.15	**31.48**	H
848.8	-3.01	31.25	3.43	8.29	-2.15	30.95	H
824.2	-15.12	31.21	3.34	8.34	-2.15	18.94	V
836.6	-14.55	31.23	3.39	8.34	-2.15	19.48	V
848.8	-14.31	31.25	3.43	8.29	-2.15	19.65	V

Radiated Power (ERP) for GPRS 850

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	ERP (Peak) (dBm)	Polarization
824.2	-6.36	31.21	3.34	8.34	-2.15	**27.70**	H
836.6	-6.63	31.23	3.39	8.34	-2.15	27.40	H
848.8	-6.68	31.25	3.43	8.29	-2.15	27.28	H
824.2	-17.06	31.21	3.34	8.34	-2.15	17.00	V
836.6	-17.78	31.23	3.39	8.34	-2.15	16.25	V
848.8	-16.60	31.25	3.43	8.29	-2.15	17.36	V

Radiated Power (ERP) for EGPRS 850

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	ERP (Peak) (dBm)	Polarization
824.2	-9.88	31.21	3.34	8.34	-2.15	**24.18**	H
836.6	-10.07	31.23	3.39	8.34	-2.15	23.96	H
848.8	-10.03	31.25	3.43	8.29	-2.15	23.93	H
824.2	-20.13	31.21	3.34	8.34	-2.15	13.93	V
836.6	-19.32	31.23	3.39	8.34	-2.15	14.71	V
848.8	-20.03	31.25	3.43	8.29	-2.15	13.93	V

Radiated Power (E.I.R.P) for PCS 1900

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
1850.2	-9.89	33.31	3.92	8.27	0	**27.77**	H
1880.0	-10.43	33.35	3.96	8.25	0	27.21	H
1909.8	-10.12	33.38	4.01	8.21	0	27.46	H
1850.2	-17.39	33.31	3.92	8.27	0	20.27	V
1880	-16.67	33.35	3.96	8.25	0	20.97	V
1909.8	-16.74	33.38	4.01	8.21	0	20.84	V

Radiated Power (E.I.R.P) for GPRS 1900

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
1850.2	-12.83	33.31	3.92	8.27	0	**24.83**	H
1880.0	-13.39	33.35	3.96	8.25	0	24.25	H
1909.8	-13.65	33.38	4.01	8.21	0	23.93	H
1850.2	-18.86	33.31	3.92	8.27	0	18.80	V
1880.0	-18.70	33.35	3.96	8.25	0	18.94	V
1909.8	-18.66	33.38	4.01	8.21	0	18.92	V

Radiated Power (E.I.R.P) for EGPRS 1900

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
1850.2	-16.32	33.31	3.92	8.27	0	21.34	H
1880.0	-15.76	33.35	3.96	8.25	0	**21.88**	H
1909.8	-16.22	33.38	4.01	8.21	0	21.36	H
1850.2	-22.56	33.31	3.92	8.27	0	15.10	V
1880.0	-21.75	33.35	3.96	8.25	0	15.89	V
1909.8	-22.48	33.38	4.01	8.21	0	15.10	V

Radiated Power (E.I.R.P) for UTRA Band 2

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
1852.4	-16.78	33.31	3.92	8.27	0	**20.88**	H
1880	-17.63	33.35	3.96	8.25	0	20.01	H
1907.6	-17.10	33.38	4.01	8.21	0	20.48	H
1852.4	-22.13	33.31	3.92	8.27	0	15.53	V
1880	-21.99	33.35	3.96	8.25	0	15.65	V
1907.6	-22.35	33.38	4.01	8.21	0	15.23	V

Radiated Power (ERP) for UTRA Band 5

Frequency (MHz)	P_{Mea} (dBm)	PAg (dB)	Pcl (dB)	Ga (dBi)	Correction (dB)	ERP (Peak) (dBm)	Polarization
826.4	-13.76	31.21	3.34	8.34	-2.15	20.30	H
836.4	-13.42	31.23	3.39	8.34	-2.15	**20.61**	H
846.6	-14.14	31.25	3.43	8.29	-2.15	19.82	H
826.4	-23.29	31.21	3.34	8.34	-2.15	10.77	V
836.4	-23.19	31.23	3.39	8.34	-2.15	10.84	V
846.6	-24.05	31.25	3.43	8.29	-2.15	9.91	V

Note: EIRP=PMea + PAg - Pcl + Ga.
Each channel is scanned 10 times, and the peak value of each channel is recorded.

7. SPURIOUS EMISSION (Conducted and Radiated)

7.1. Measurement Result (Pre-measurement)

GSM850:

Test Channel	BW(MHz)	UL Channel	Frequency(MHz)	Judgment
Low Range	0.2	128	824.2	Pass
Middle Range	0.2	190	836.6	Pass
High Range	0.2	251	848.8	Pass

PCS 1900：

Test Channel	BW(MHz)	UL Channel	Frequency(MHz)	Judgment
Low Range	0.2	512	1850.2	Pass
Middle Range	0.2	661	1880.0	Pass
High Range	0.2	810	1909.8	Pass

UTRA BANDS

BAND 2:

Test Channel	BW(MHz)	UL Channel	Frequency(MHz)	Judgment
Low Range	5	9262	1852.4	Pass
Middle Range	5	9400	1880.0	Pass
High Range	5	9538	1907.6	Pass

BAND 5:

Test Channel	BW(MHz)	UL Channel	Frequency(MHz)	Judgment
Low Range	5	4132	826.4	Pass
Middle Range	5	4182	836.4	Pass
High Range	5	4233	846.6	Pass

Test Plot(s)

Conducted method

Test limit:

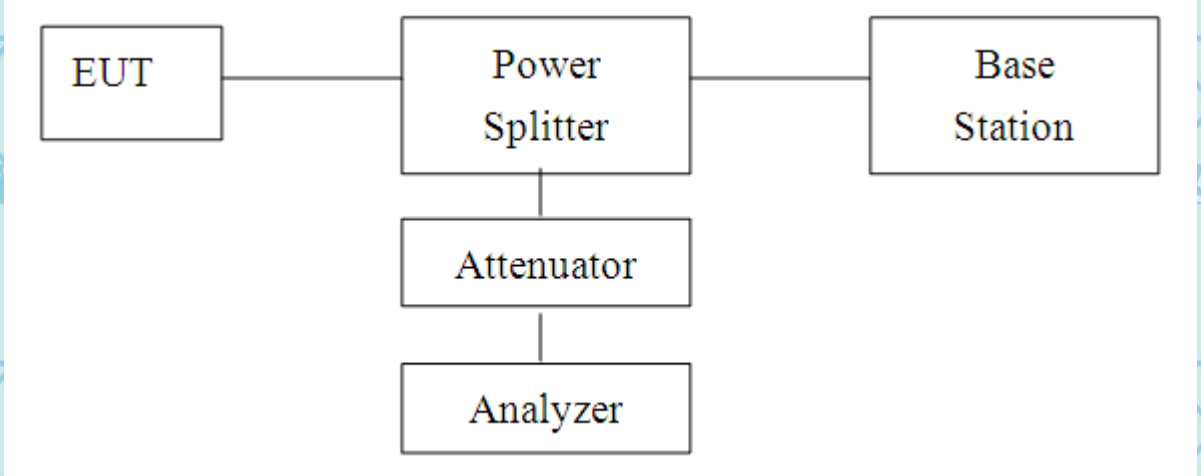
The spurious (unwanted) emission limits specified in the individual FCC rule parts applicable to licensed digital transmitters (typically referred to under the heading 'emission limits') normally apply to any and all emissions that are present outside of the authorized frequency band/block and apply to emissions in both the out-of-band and spurious domains. In some rule parts, the unwanted emission limits are specified by an emission mask that defines the applicable limit as a function of the frequency range relative to the authorized frequency block.

Typically, unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least X + 10log(P) dB, where P represents the transmitter power expressed in watts and X is a specified scalar value (e.g., 43). This specification can be interpreted in one of two equivalent ways. First, the required attenuation can be construed to be relative to the mean carrier power, with the resultant of the equation X + 10log(P) being expressed in dBc (dB relative to the maximum carrier power). Alternatively, the specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., 10log(P) – {X + 10log(P)}], resulting in an absolute level of -X dBW [or (-X + 30) dBm]. See section 4.

Test procedure:

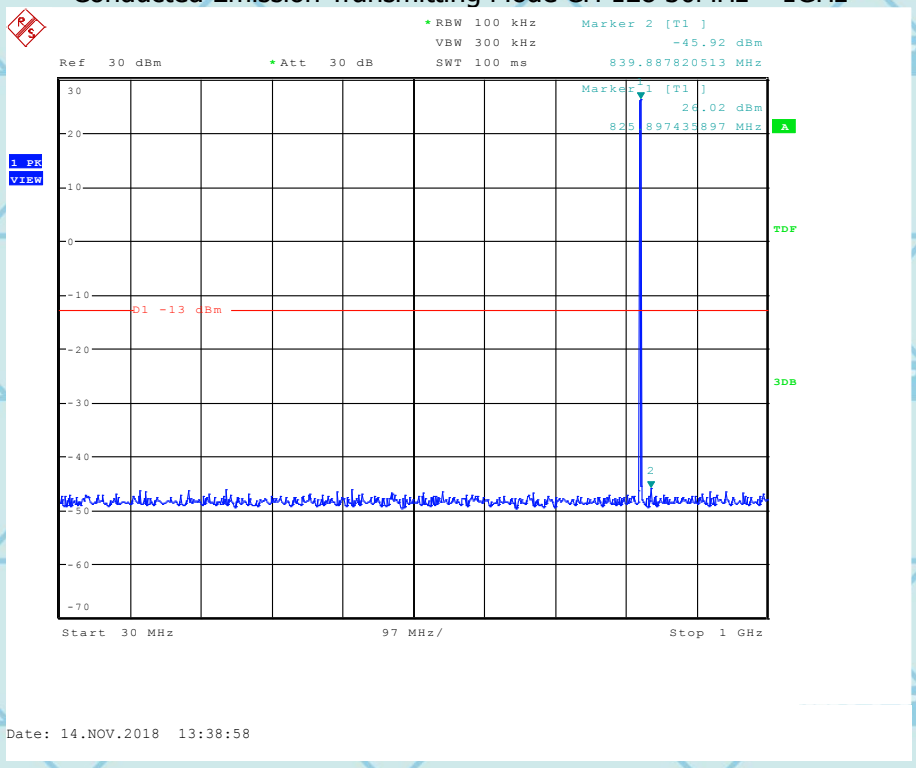
The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

Conducted Emission Test-Up:

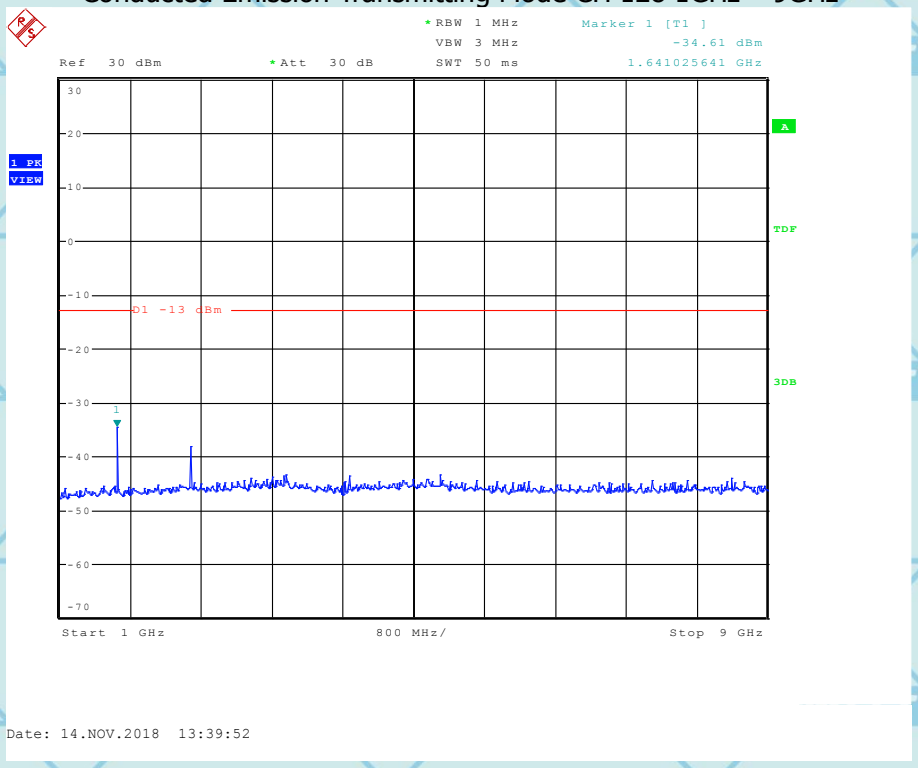


CONDUCTED EMISSION IN GSM850 BAND

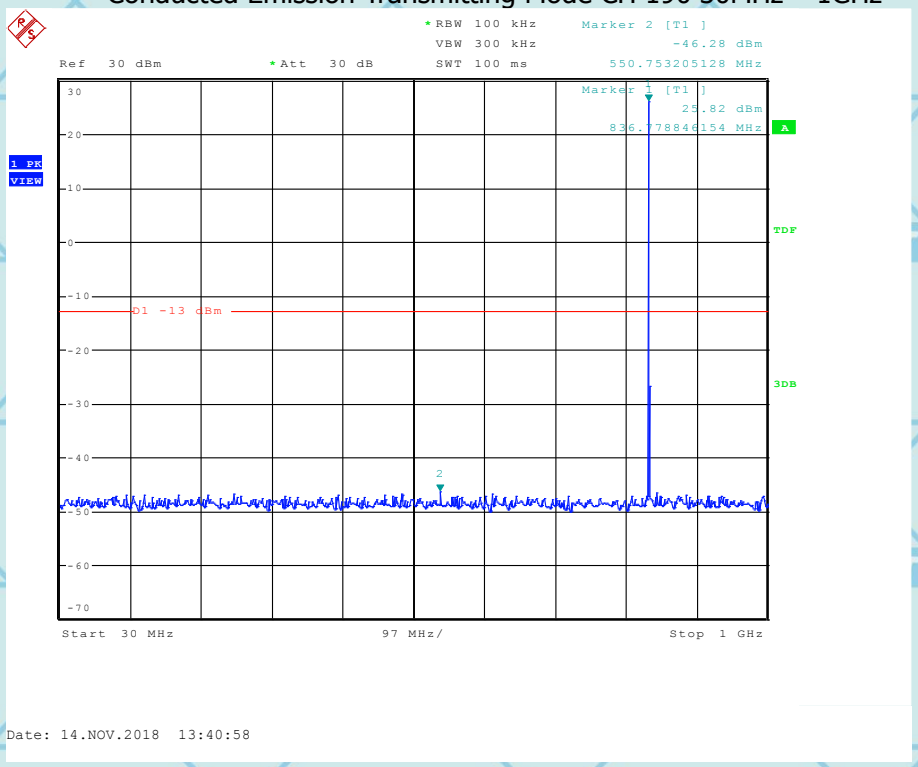
Conducted Emission Transmitting Mode CH 128 30MHz – 1GHz



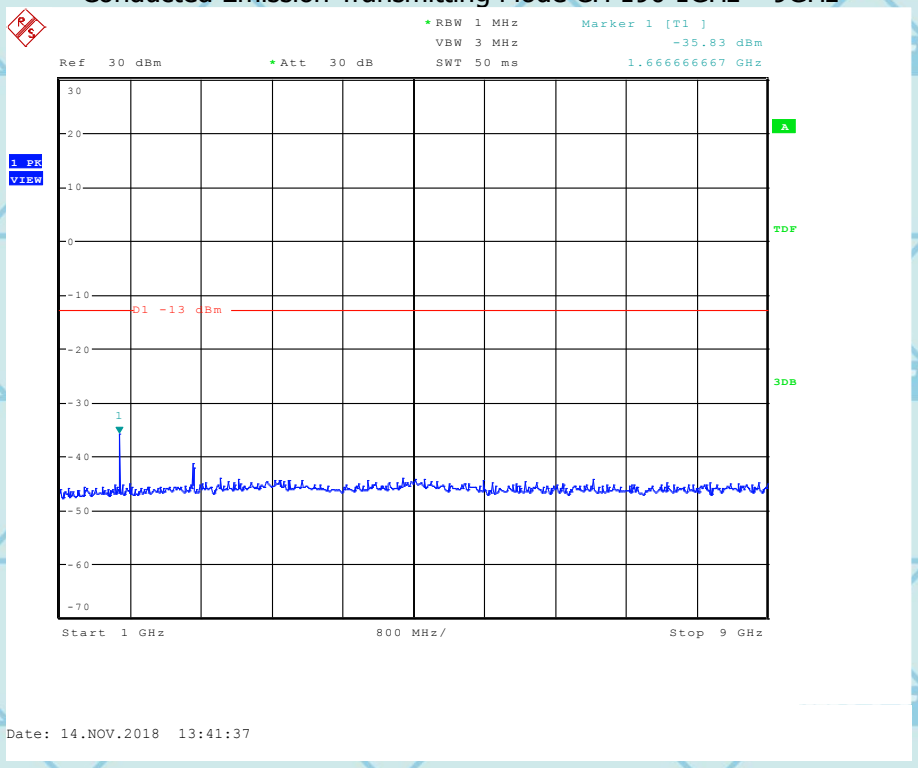
Conducted Emission Transmitting Mode CH 128 1GHz – 9GHz



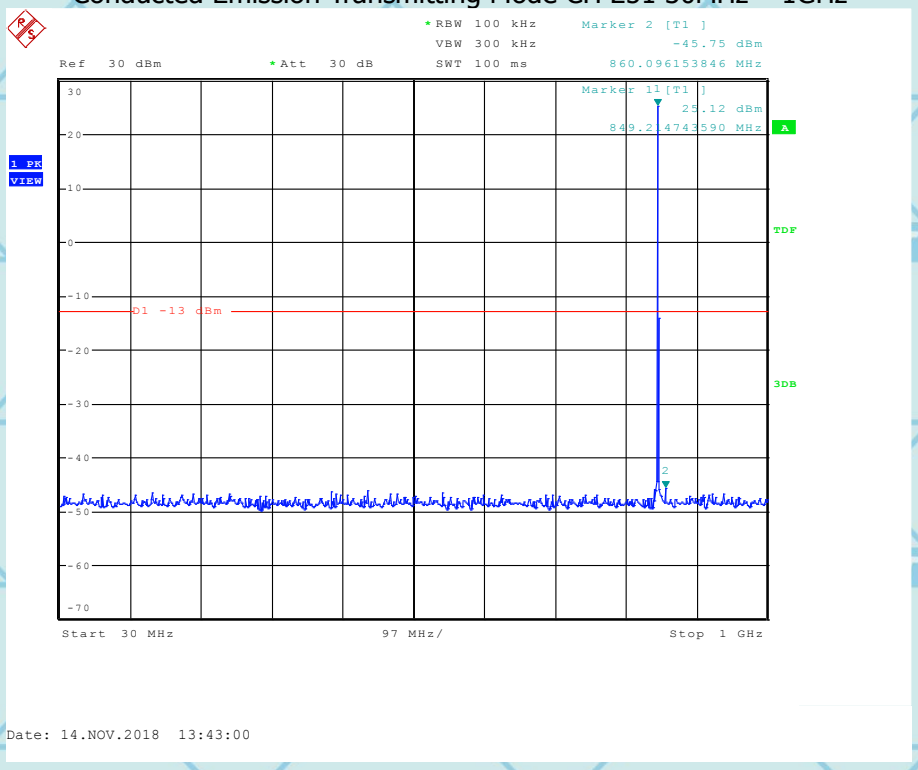
Conducted Emission Transmitting Mode CH 190 30MHz – 1GHz



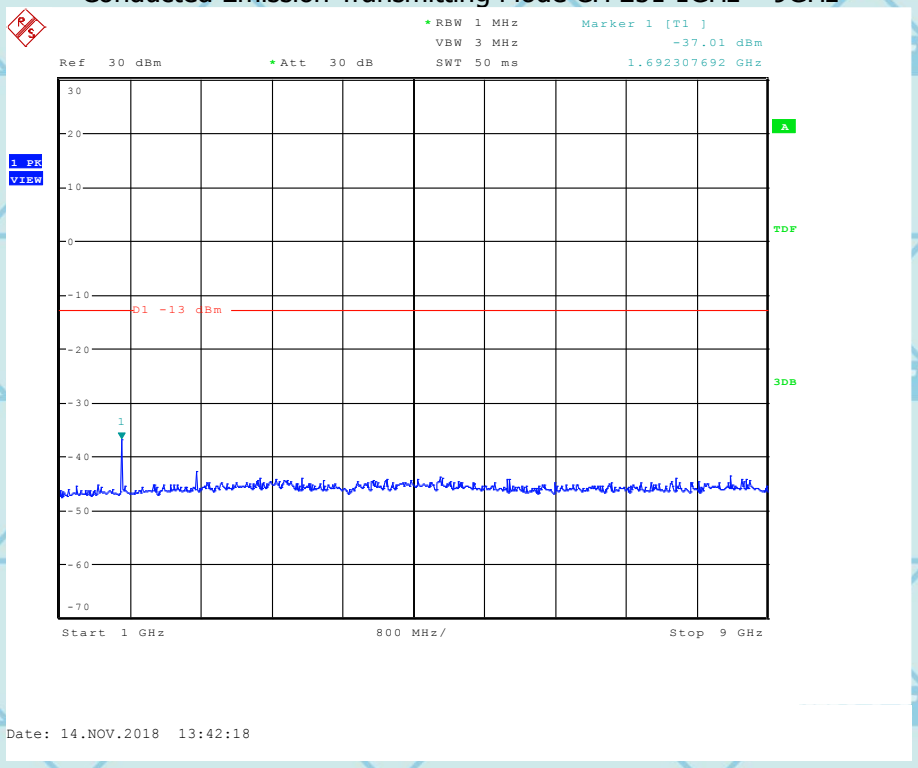
Conducted Emission Transmitting Mode CH 190 1GHz – 9GHz



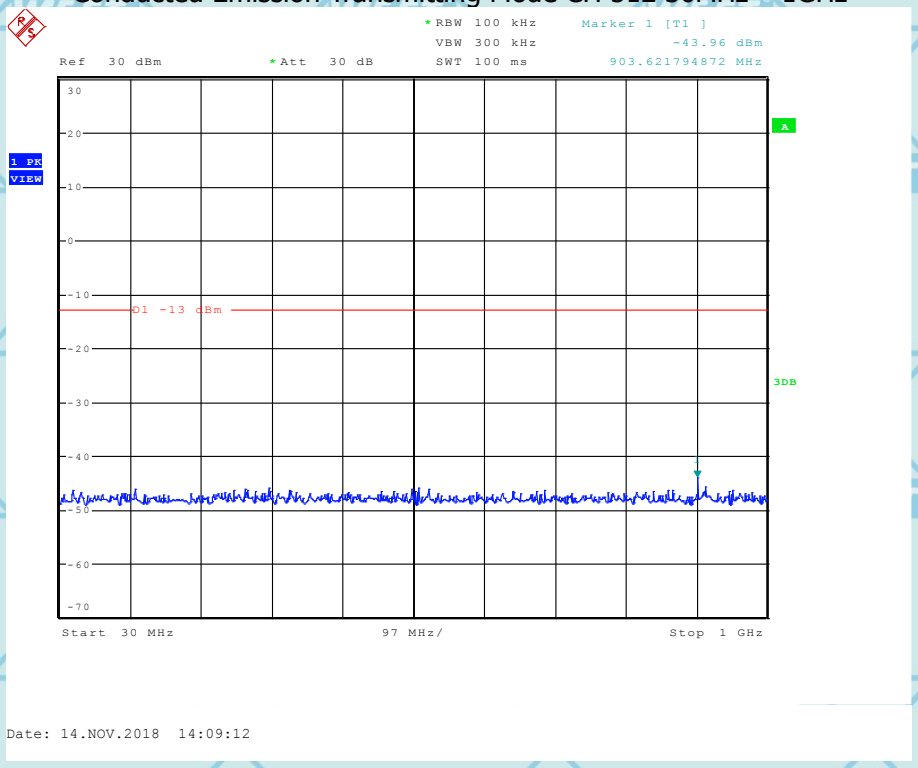
Conducted Emission Transmitting Mode CH 251 30MHz – 1GHz



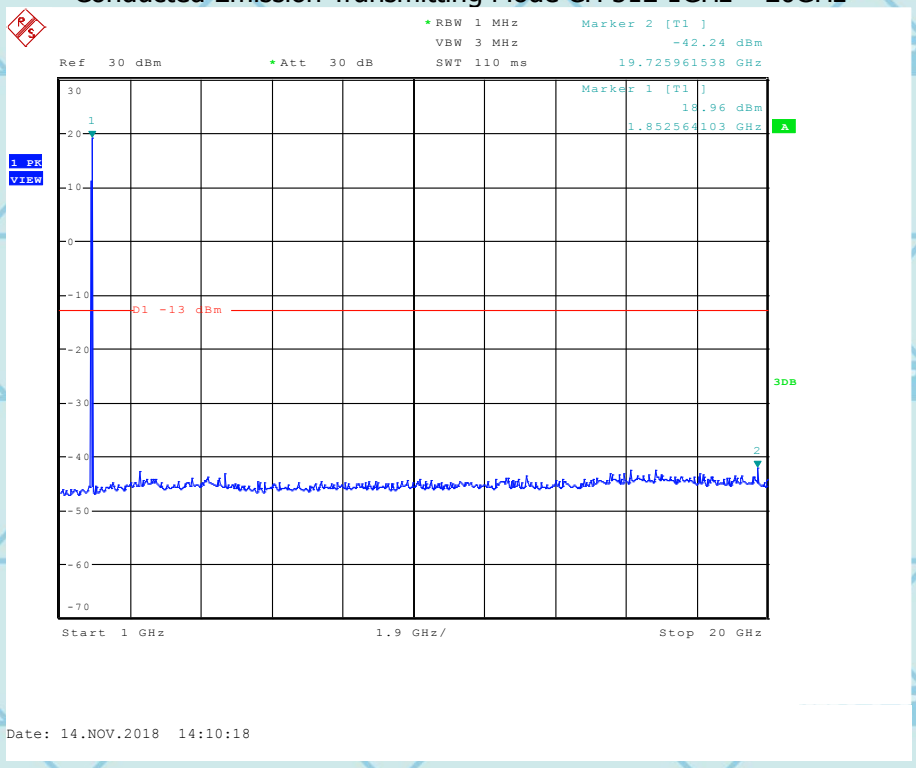
Conducted Emission Transmitting Mode CH 251 1GHz – 9GHz



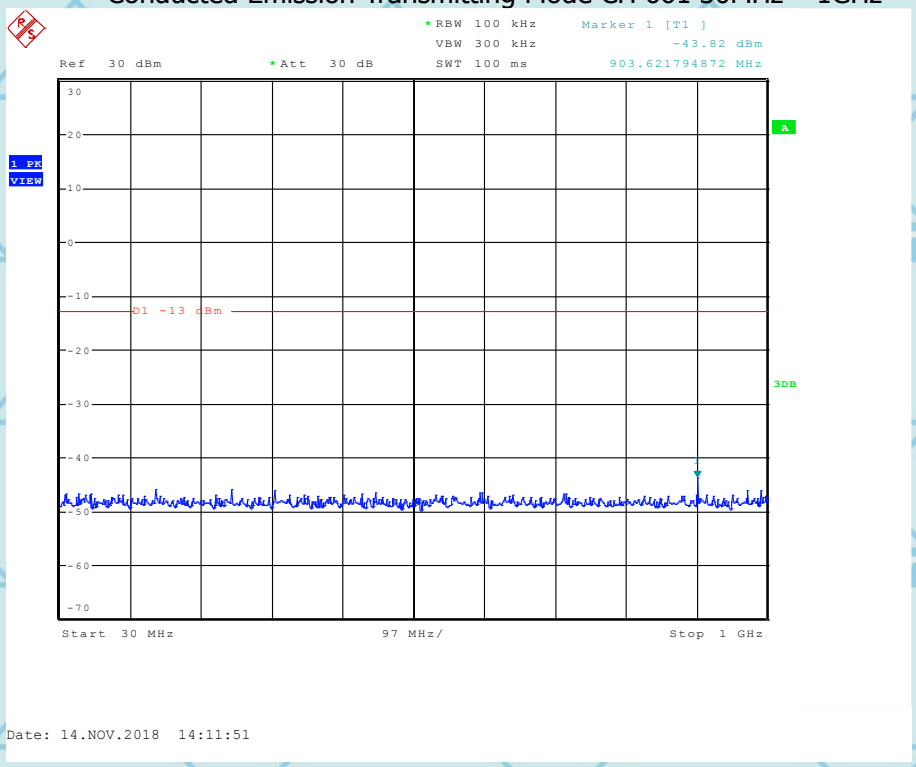
CONDUCTED EMISSION IN PCS1900 BAND
Conducted Emission Transmitting Mode CH 512 30MHz – 1GHz



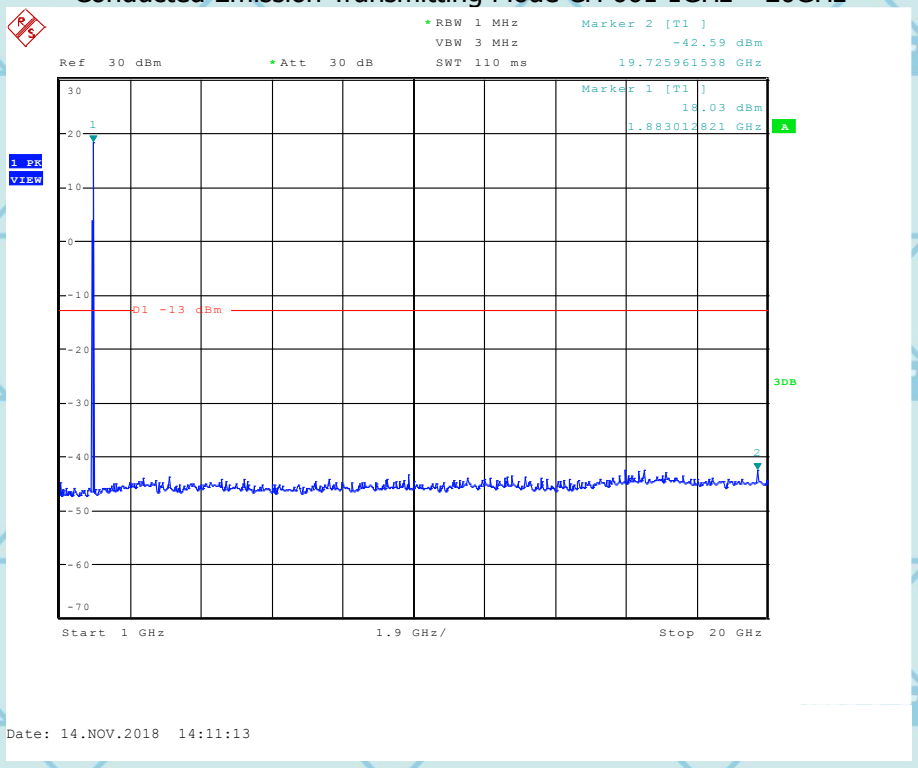
Conducted Emission Transmitting Mode CH 512 1GHz – 20GHz



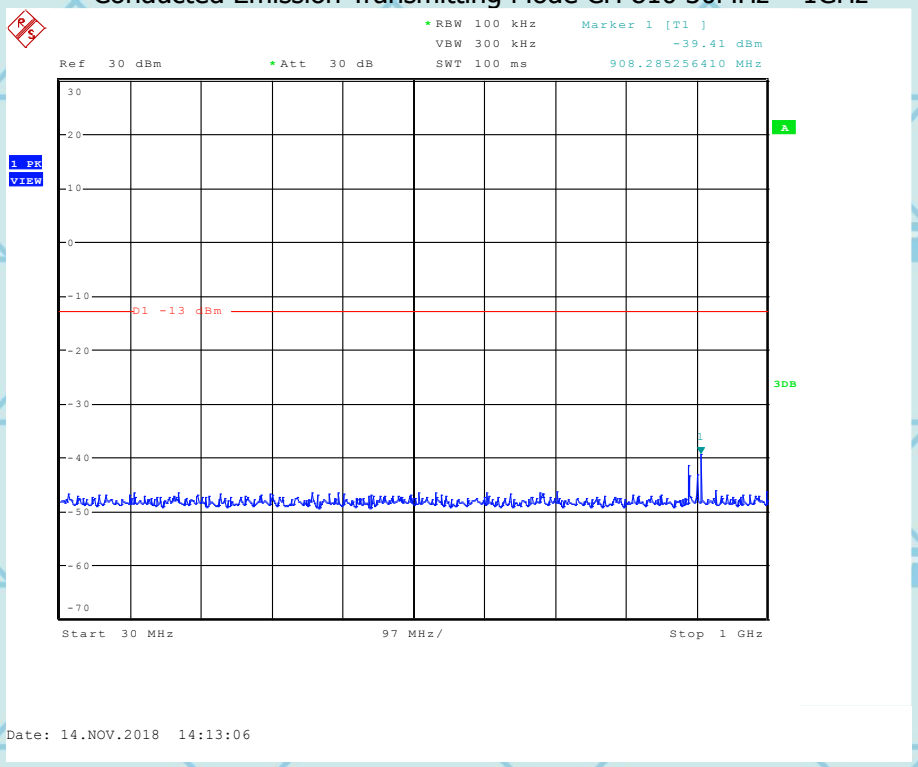
Conducted Emission Transmitting Mode CH 661 30MHz – 1GHz



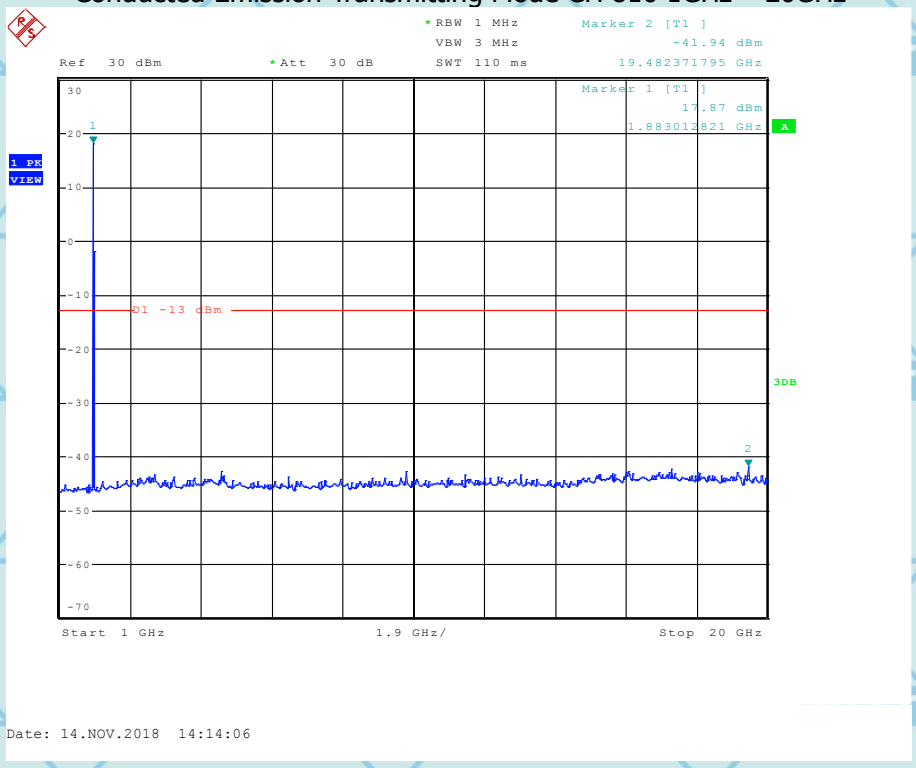
Conducted Emission Transmitting Mode CH 661 1GHz – 20GHz



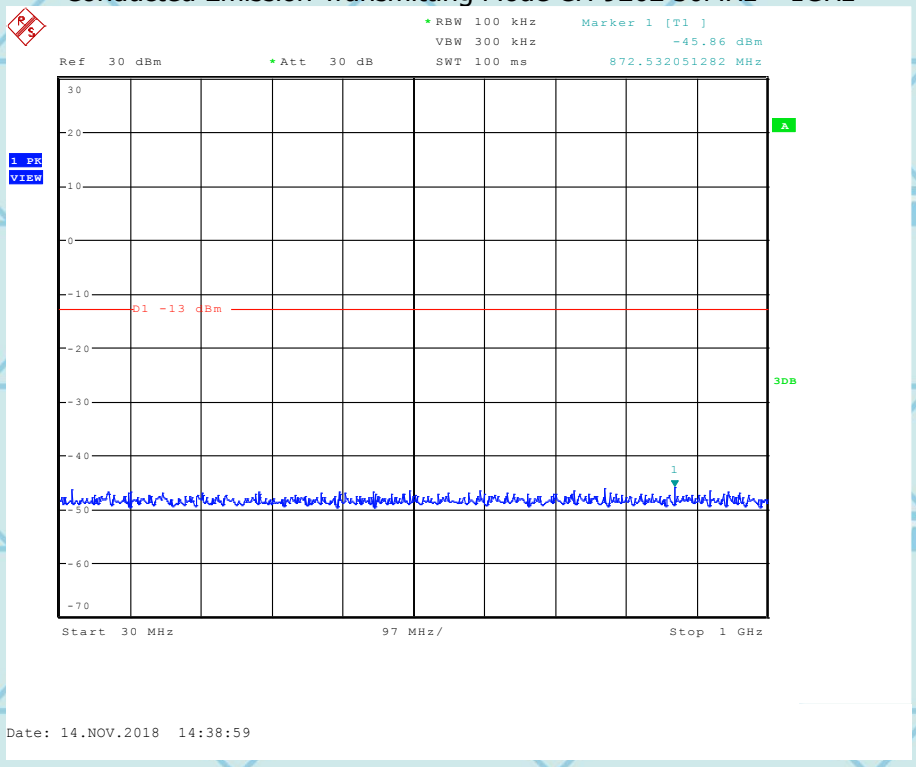
Conducted Emission Transmitting Mode CH 810 30MHz – 1GHz



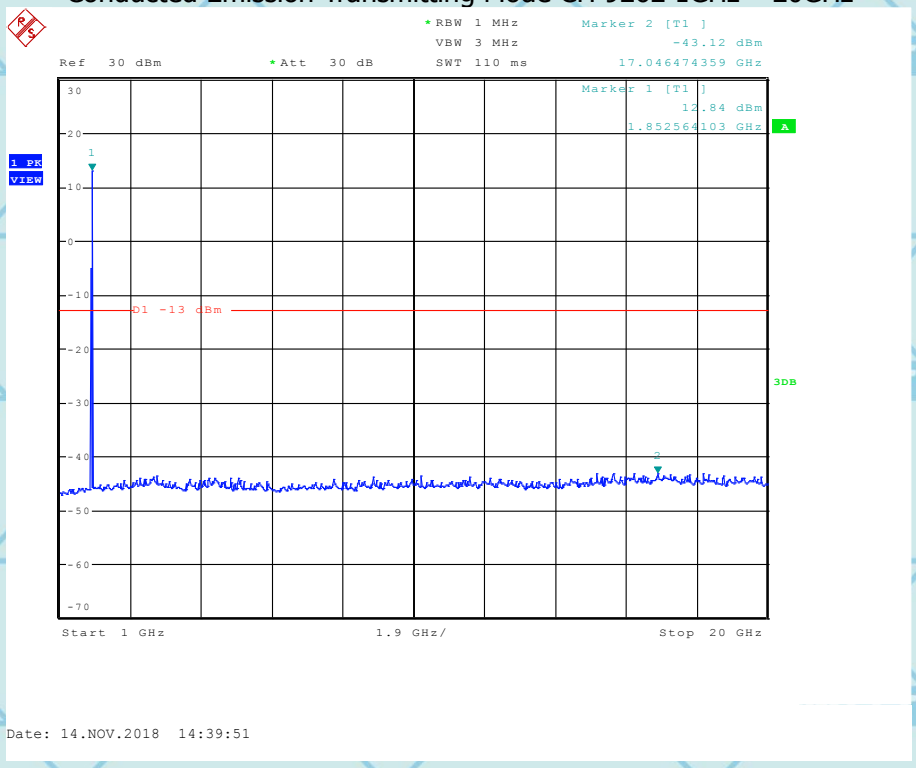
Conducted Emission Transmitting Mode CH 810 1GHz – 20GHz



CONDUCTED EMISSION IN WCDMA Band II
Conducted Emission Transmitting Mode CH 9262 30MHz – 1GHz

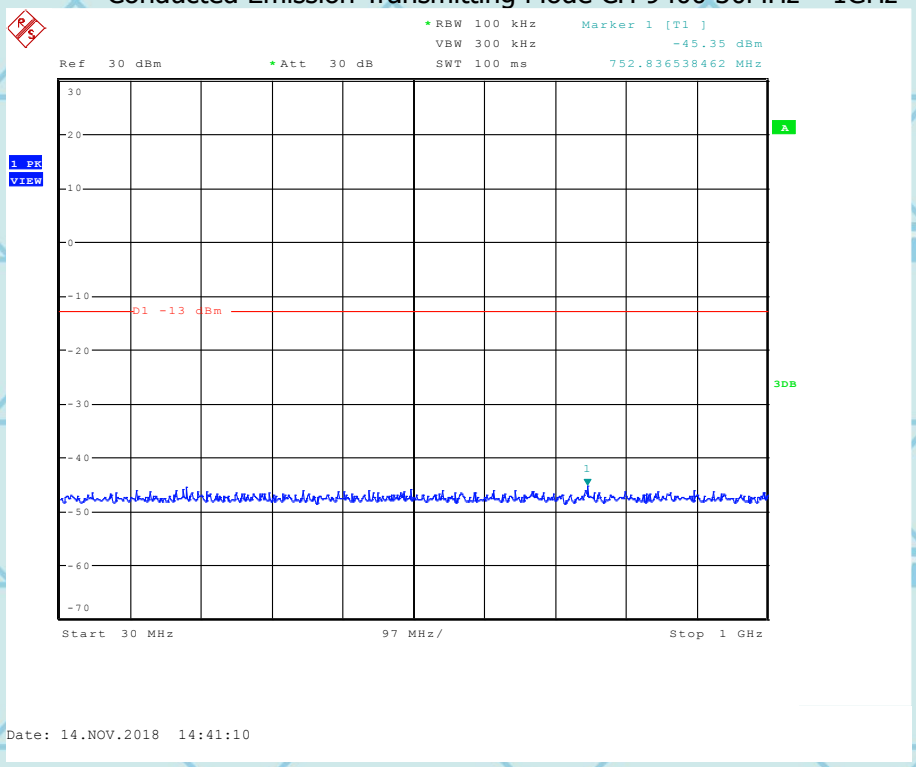


Conducted Emission Transmitting Mode CH 9262 1GHz – 20GHz



Date: 14.NOV.2018 14:39:51

Conducted Emission Transmitting Mode CH 9400 30MHz – 1GHz



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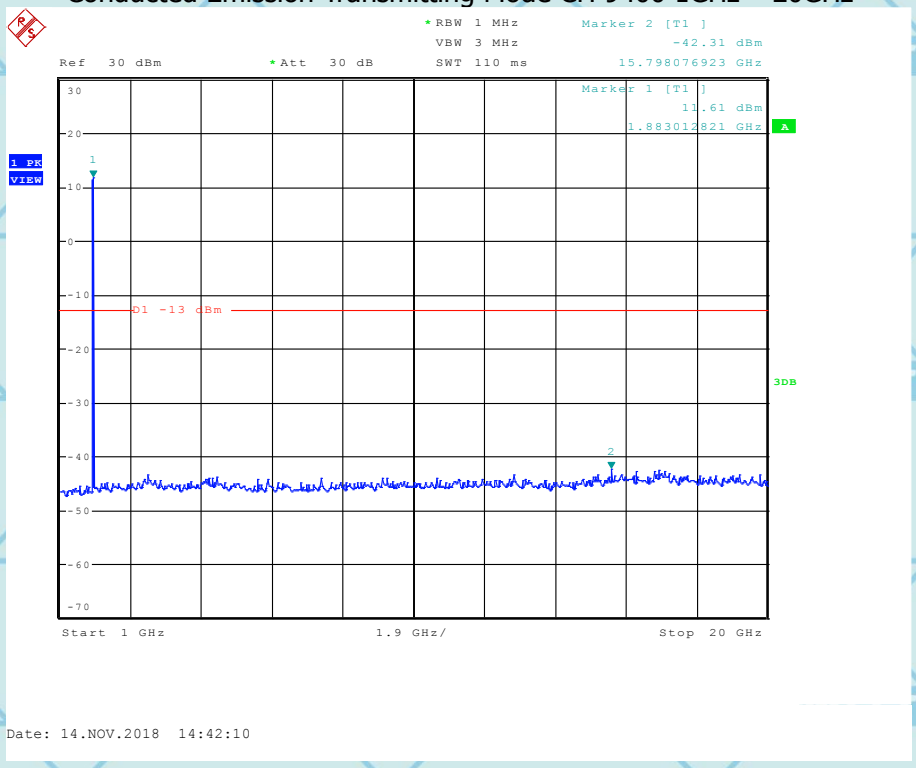
Conducted Emission Transmitting Mode CH 9400 1GHz – 20GHz



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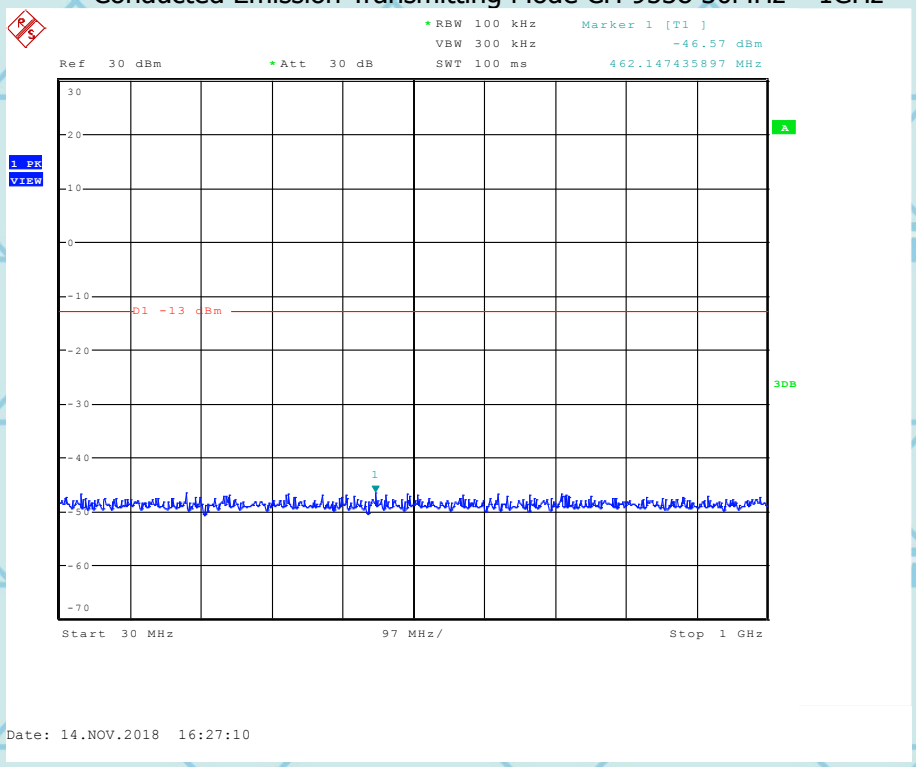
Conducted Emission Transmitting Mode CH 9538 30MHz – 1GHz



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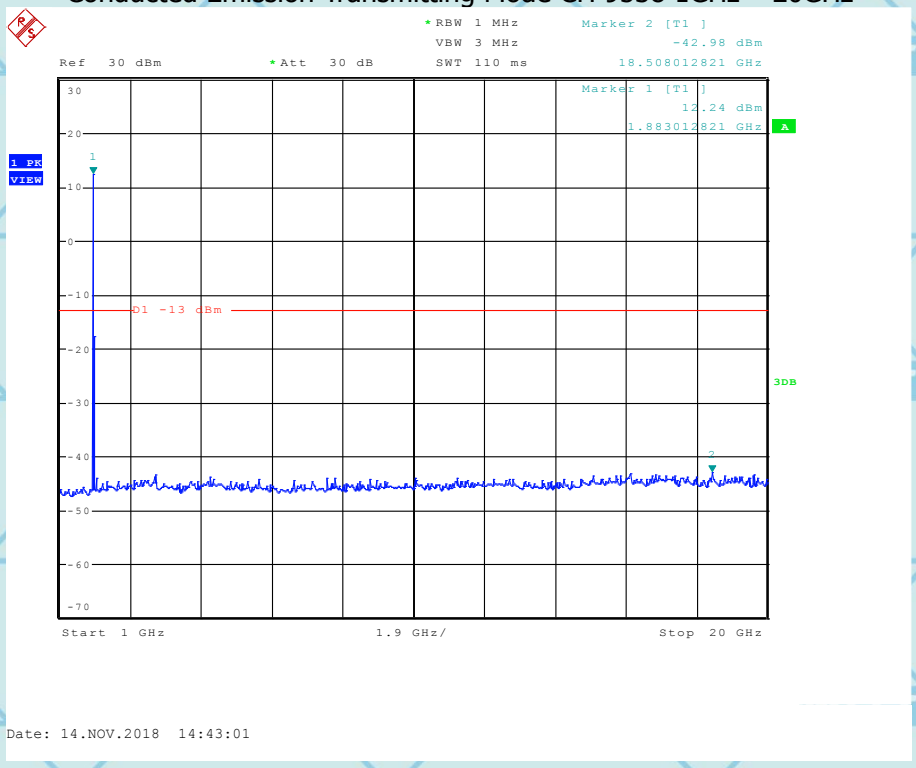
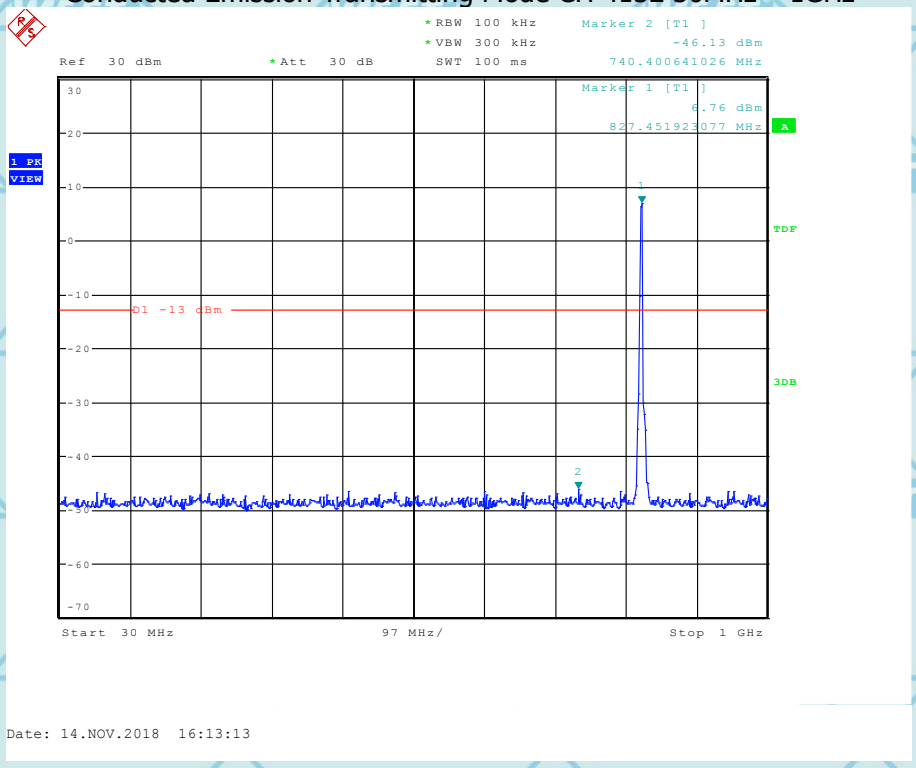
Conducted Emission Transmitting Mode CH 9538 1GHz – 20GHz

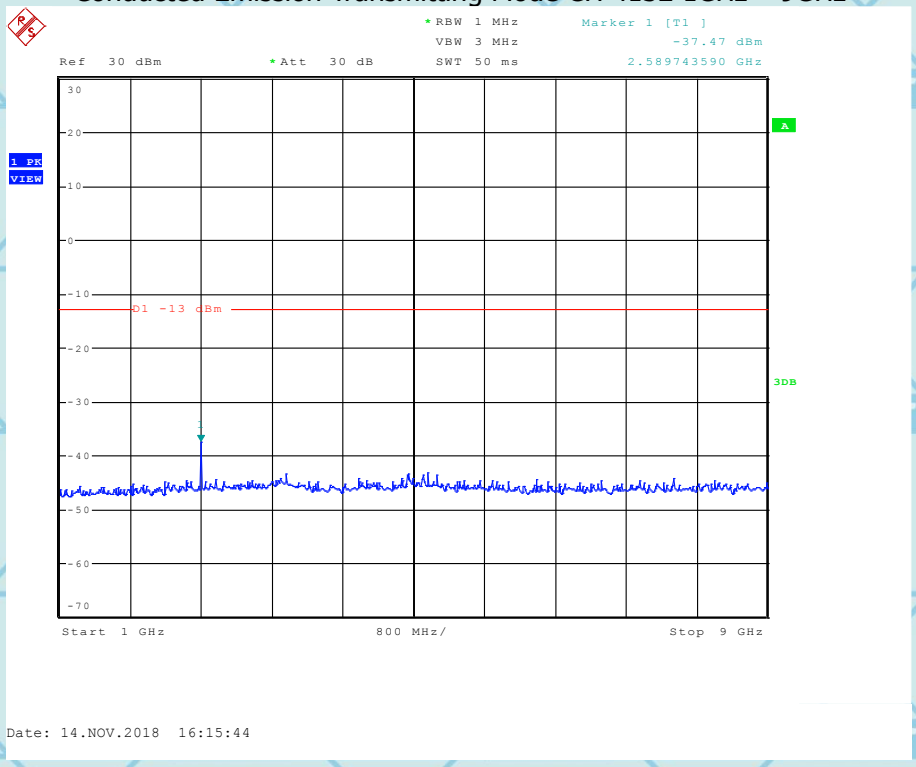


CONDUCTED EMISSION IN WCDMA Band V

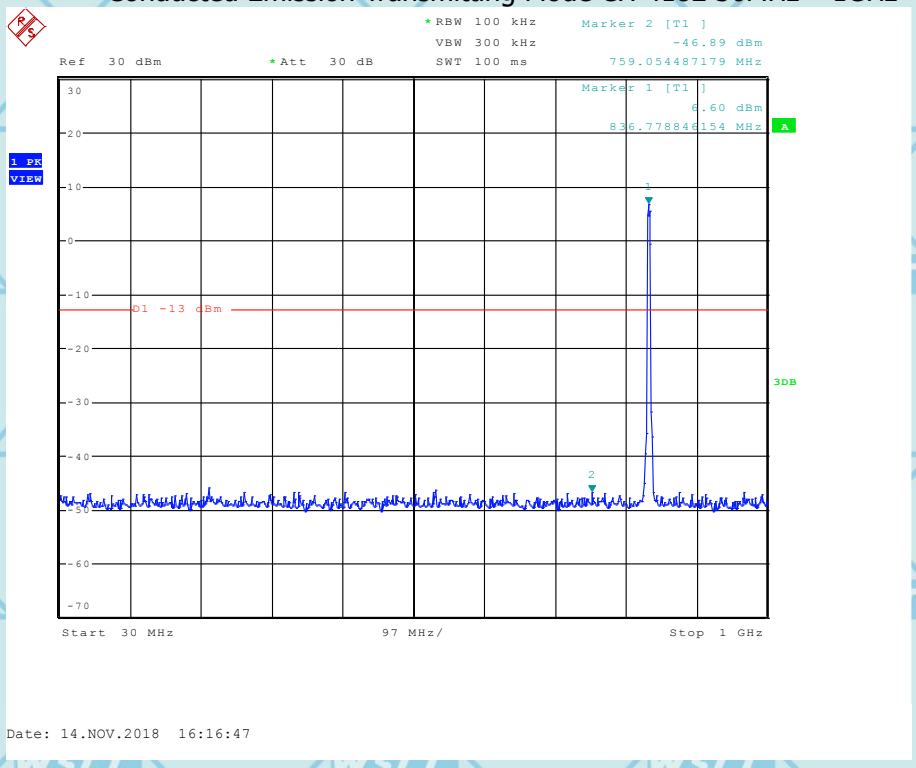
Conducted Emission Transmitting Mode CH 4132 30MHz – 1GHz



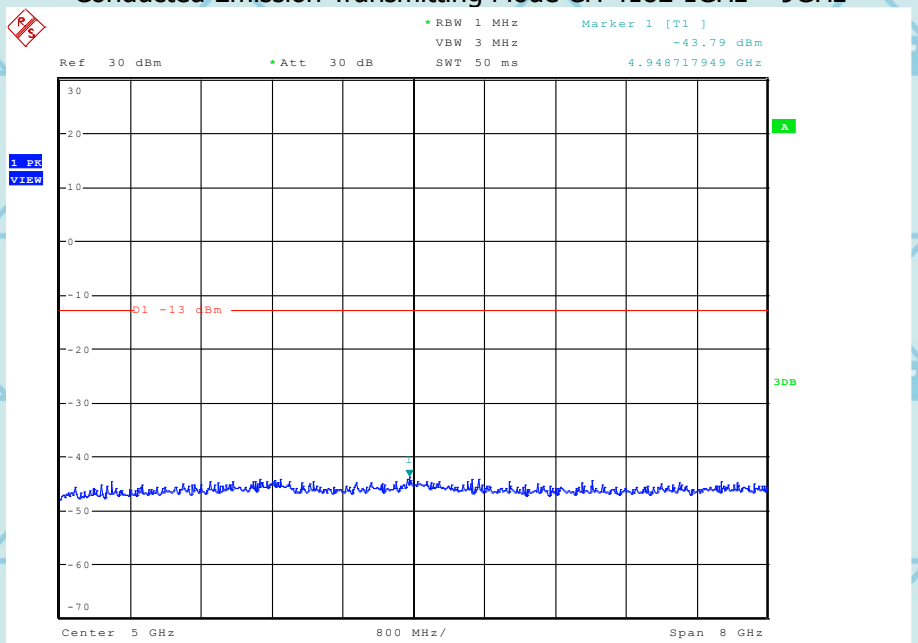
Conducted Emission Transmitting Mode CH 4132 1GHz – 9GHz



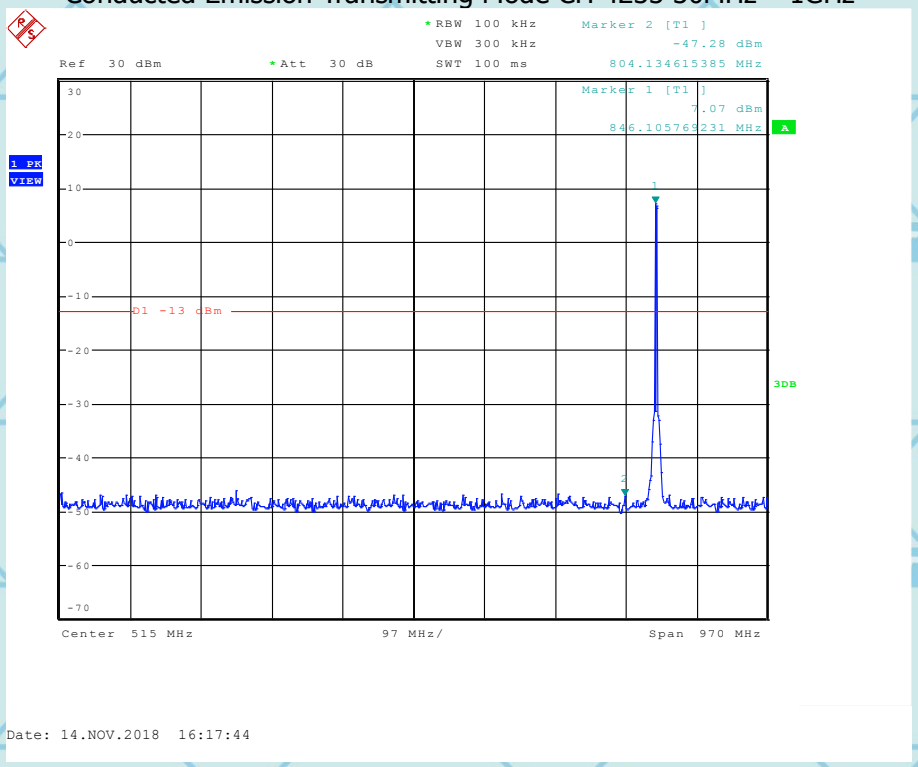
Conducted Emission Transmitting Mode CH 4182 30MHz – 1GHz



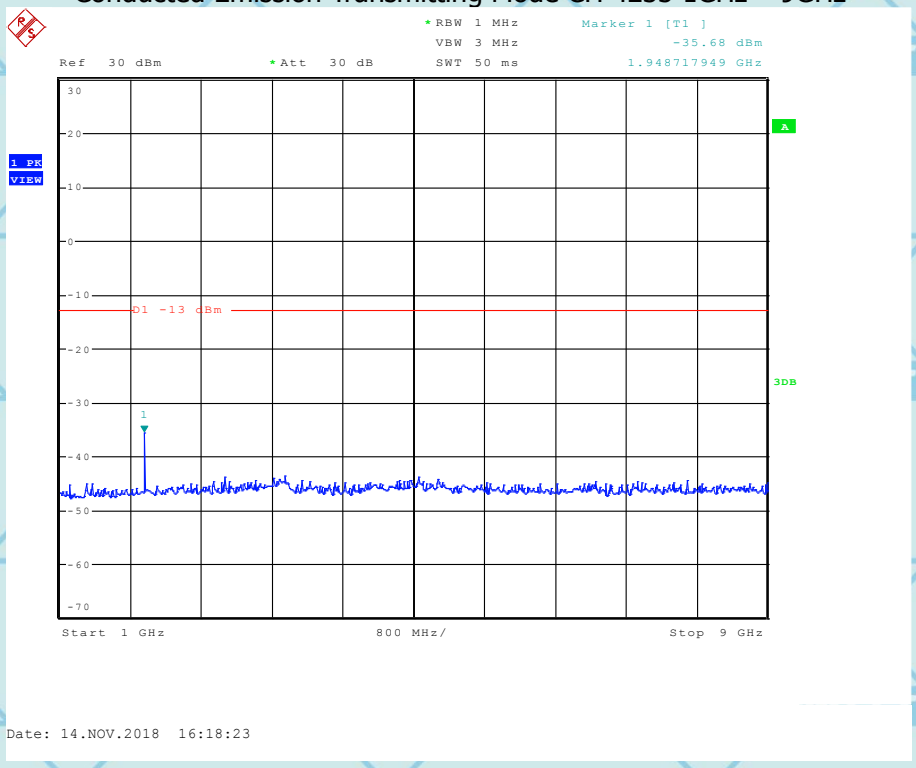
Conducted Emission Transmitting Mode CH 4182 1GHz – 9GHz



Conducted Emission Transmitting Mode CH 4233 30MHz – 1GHz



Conducted Emission Transmitting Mode CH 4233 1GHz – 9GHz



Radiated method

Test limit:

The spurious (unwanted) emission limits specified in the individual FCC rule parts applicable to licensed digital transmitters (typically referred to under the heading 'emission limits') normally apply to any and all emissions that are present outside of the authorized frequency band/block and apply to emissions in both the out-of-band and spurious domains. In some rule parts, the unwanted emission limits are specified by an emission mask that defines the applicable limit as a function of the frequency range relative to the authorized frequency block.

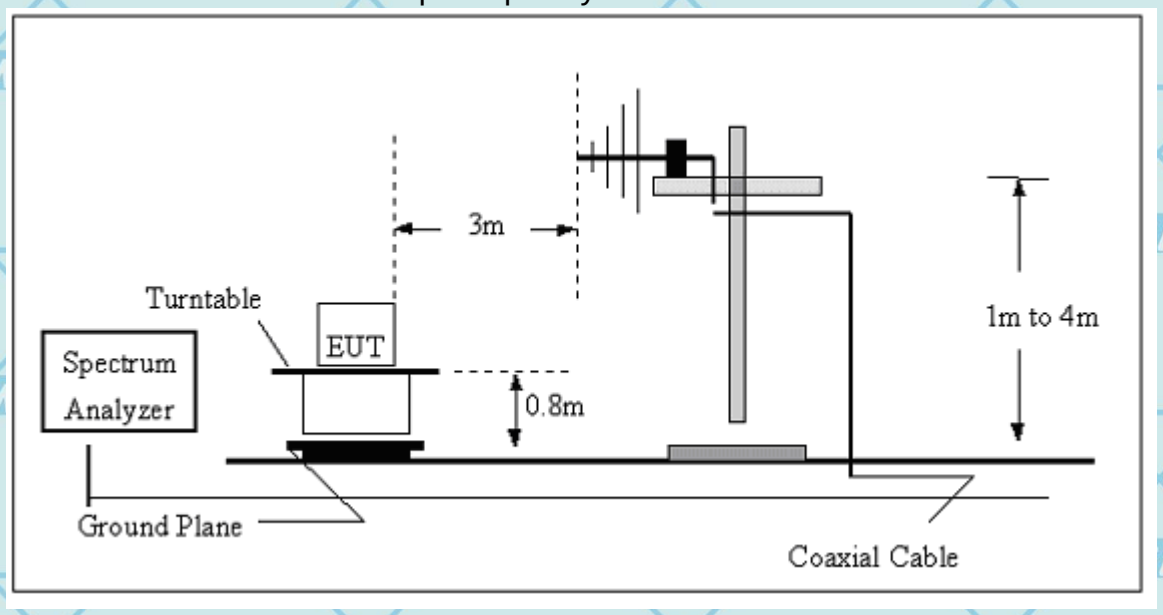
Typically, unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least X + 10log(P) dB, where P represents the transmitter power expressed in watts and X is a specified scalar value (e.g., 43). This specification can be interpreted in one of two equivalent ways. First, the required attenuation can be construed to be relative to the mean carrier power, with the resultant of the equation X + 10log(P) being expressed in dBc (dB relative to the maximum carrier power). Alternatively, the specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., 10log(P) – {X + 10log(P)}], resulting in an absolute level of -X dBW [or (-X + 30) dBm]. See section 4.

Test procedure:

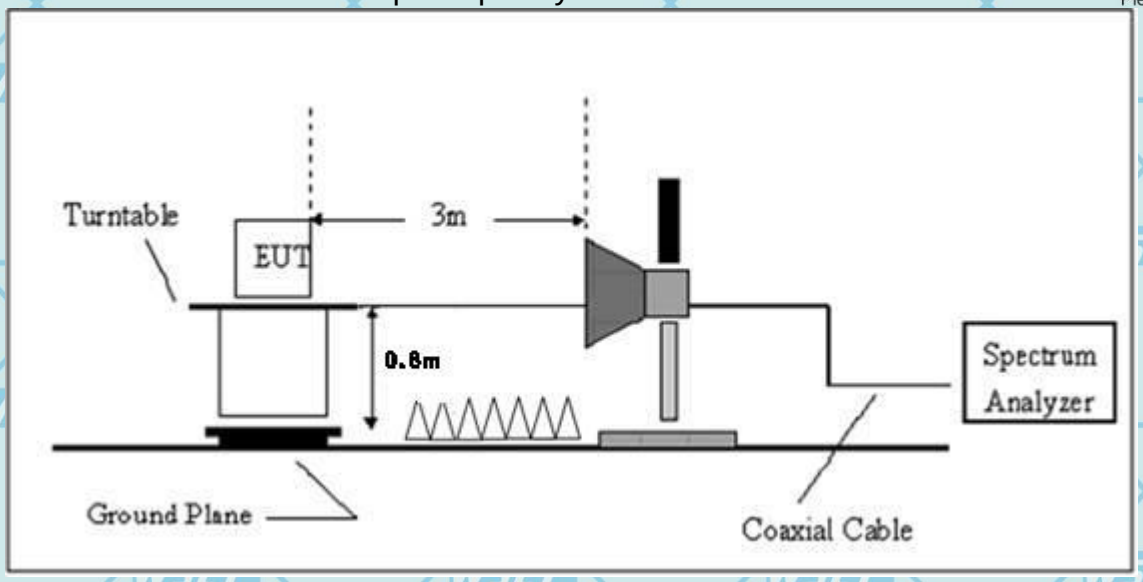
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

Test setup:

（A）Radiated Emission Test-Up Frequency 30MHz~1GHz



（B）Radiated Emission Test-Up Frequency Above 1GHz



Note:

1, *Below 30MHz no Spurious found.*

2, UE is poistioned at 3 axis at the pre-scan stage, and only the measurement of the worst case(bandwidth:20MHz /Full RB /QPSK) is reported in this part.

List of final test modes:
GSM850:

Mode	UL Channel	Frequency	Judgement
1	128	824.2	Pass
2	190	836.6	Pass
3	251	848.8	Pass

PCS1900

Mode	UL Channel	Frequency	Judgement
1	512	1850.2	Pass
2	661	1880	Pass
3	810	1909.8	Pass

UTRA BANDS
BAND 2:

Mode	UL Channel	Frequency	Judgement
1	9262	1852.4	Pass
2	9400	1880	Pass
3	9538	1907.6	Pass

BAND 5:

Mode	UL Channel	Frequency	Judgement
1	4132	826.4	Pass
2	4182	836.4	Pass
3	4233	846.6	Pass

Test record:
Note:

1. The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss. The measurement results are obtained as described below:
   Power=P_{Mea}+A_{Rpl}
2. ARpl =Antenna gain-Cable loss

GSM850:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
1648.4	-45.98	6.35	-52.33	-13	Horizontal
1648.4	-44.70	7.15	-51.85	-13	Vertical
2472.6	-45.73	6.35	-52.08	-13	Horizontal
2472.6	-49.70	6.84	-56.54	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
1673.2	-45.98	6.37	-52.35	-13	Horizontal
1673.2	-44.79	7.16	-51.95	-13	Vertical
2509.8	-45.58	6.37	-51.95	-13	Horizontal
2509.8	-49.78	6.85	-56.63	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
1697.6	-46.32	6.38	-52.70	-13	Horizontal
1697.6	-43.85	7.17	-51.02	-13	Vertical
2546.4	-45.59	6.38	-51.97	-13	Horizontal
2546.4	-49.07	6.86	-55.93	-13	Vertical

PCS1900:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3700.4	-47.20	7.12	-54.32	-13	Horizontal
3700.4	-44.95	6.93	-51.88	-13	Vertical
5550.6	-45.93	6.85	-52.78	-13	Horizontal
5550.6	-50.48	6.46	-56.94	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3760	-44.97	7.14	-52.11	-13	Horizontal
3760	-42.94	6.95	-49.89	-13	Vertical
5640	-44.78	6.86	-51.64	-13	Horizontal
5640	-47.90	6.48	-54.38	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3819.6	-46.45	7.15	-53.60	-13	Horizontal
3819.6	-44.36	6.96	-51.32	-13	Vertical
5729.4	-44.98	6.88	-51.86	-13	Horizontal
5729.4	-49.13	6.49	-55.62	-13	Vertical

UTRA BANDS
BAND 2:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3704.8	-60.72	7.23	-67.95	-13	Horizontal
3704.8	-58.10	7.36	-65.46	-13	Vertical
5557.2	-59.26	7.81	-67.07	-13	Horizontal
5557.2	-63.39	7.46	-70.85	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3760	-60.70	7.24	-67.94	-13	Horizontal
3760	-58.10	7.38	-65.48	-13	Vertical
5640	-59.12	7.83	-66.95	-13	Horizontal
5640	-62.94	7.47	-70.41	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
3815.2	-60.32	7.25	-67.57	-13	Horizontal
3815.2	-57.94	7.40	-65.34	-13	Vertical
5722.8	-59.13	7.85	-66.98	-13	Horizontal
5722.8	-63.64	7.47	-71.11	-13	Vertical

BAND 5:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
1652.8	-59.47	7.23	-66.70	-13	Horizontal
1652.8	-57.47	7.16	-64.63	-13	Vertical
2479.2	-58.13	7.68	-65.81	-13	Horizontal
2479.2	-62.64	6.93	-69.57	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1672.8	-59.64	7.24	-66.88	-13	Horizontal
1672.8	-57.78	7.18	-64.96	-13	Vertical
2509.2	-58.17	7.82	-65.99	-13	Horizontal
2509.2	-62.44	6.96	-69.40	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dB)	PMea(dBm)	Limit（dBm）	Polarity
1693.2	-58.87	7.24	-66.11	-13	Horizontal
1693.2	-57.83	7.21	-65.04	-13	Vertical
2539.8	-58.63	7.84	-66.47	-13	Horizontal
2539.8	-62.62	7.05	-69.67	-13	Vertical

8. OCCUPIED BANDWIDTH& Emission Bandwidth

Test limit:

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission, shall be measured when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the user. [¡ì2.1049(h)]

Many of the individual rule parts specify a relative OBW in lieu of the 99% OBW. In such cases, the OBW 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 by at least X dB below the transmitter power, where the value of X is typically specified as 26.

The relative OBW must be measured and reported when it is specified in the applicable rule part; otherwise, the 99% OBW shall be measured and reported. The test report shall specify which OBW is reported.

A spectrum/signal analyzer or other instrument providing a spectral display is recommended for these measurements and the video bandwidth shall be set to a value at least three times greater than the IF/resolution bandwidth to avoid any amplitude smoothing. Video filtering shall not be used during occupied bandwidth tests.

The OBW shall be measured for all operating conditions that will affect the bandwidth results (e.g. variable modulations, coding, or channel bandwidth settings). See section 4.

Test procedure:

Occupied bandwidth – relative measurement procedure

The reference value is the highest level of the spectral envelope of the modulated signal.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.

b) The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to prevent the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.

e) The dynamic range of the spectrum analyzer at the selected RBW shall be at least 10 dB below the target “-X dB down” requirement (i.e., if the requirement calls for measuring the –26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference value).

f) Set the detection mode to peak, and the trace mode to max hold.

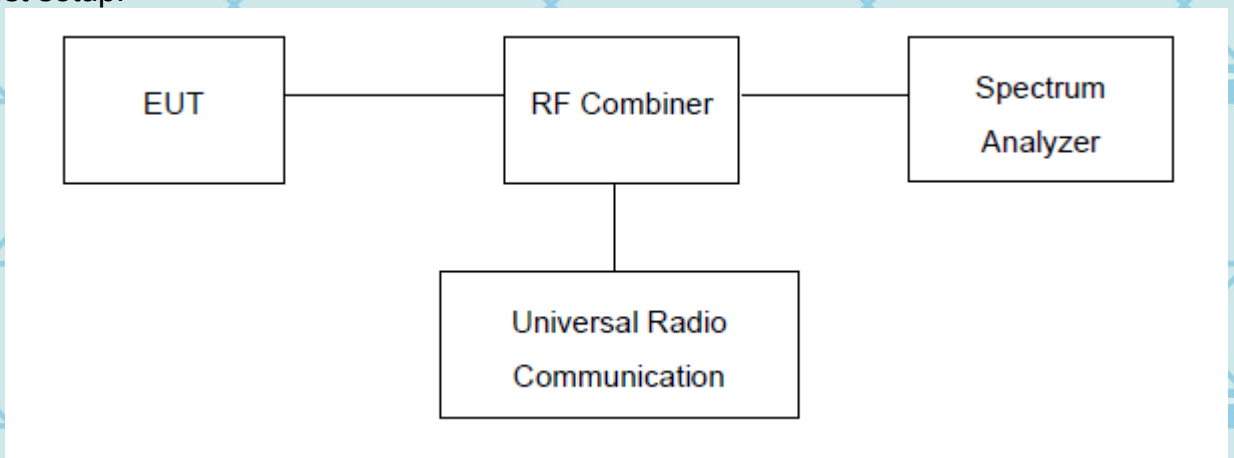
g) Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

h) Determine the “-X dB down amplitude” as equal to (Reference Value – X). Alternatively, this calculation can be performed by the analyzer by using the marker-delta function.

i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB

down amplitude" determined in step g). If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
j) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).
Occupied bandwidth – power bandwidth (99%) measurement procedure
The following procedure shall be used for measuring (99 %) power bandwidth
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.
e) Set the detection mode to peak, and the trace mode to max hold..
f) Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.
g) If the instrument does not have a 99 % power bandwidth function, the trace data points are to be recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % power bandwidth is the difference between these two frequencies.
h) The OBW shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Test setup:



Measurement Result

GSM850:

Frequency	OBW(99%)	26dB BW
824.2	246.8KHz	314.1KHz
836.6	246.8KHz	315.7KHz
848.8	245.2KHz	309.3KHz

PCS1900:

Frequency	OBW(99%)	26dB BW
1850.2	245.2KHz	314.1KHz
1880	246.8KHz	314.1KHz
1909.8	245.2KHz	312.5KHz

GPRS850:

Frequency	OBW(99%)	26dB BW
824.2	245.2KHz	319.6KHz
836.6	245.2KHz	315.7KHz
848.8	245.2KHz	322.1KHz

GPRS 1900:

Frequency	OBW(99%)	26dB BW
1850.2	243.6KHz	322.1KHz
1880	243.6KHz	318.9KHz
1909.8	245.2KHz	318.9KHz

EGPRS850:

Frequency	OBW(99%)	26dB BW
824.2	248.4KHz	318.9KHz
836.6	243.6KHz	317.3KHz
848.8	243.6KHz	315.7KHz

EGPRS 1900:

Frequency	OBW(99%)	26dB BW
1850.2	242.0KHz	310.9KHz
1880	242.0KHz	309.3KHz
1909.8	248.4KHz	318.9KHz

UTRA BANDS
BAND 2:

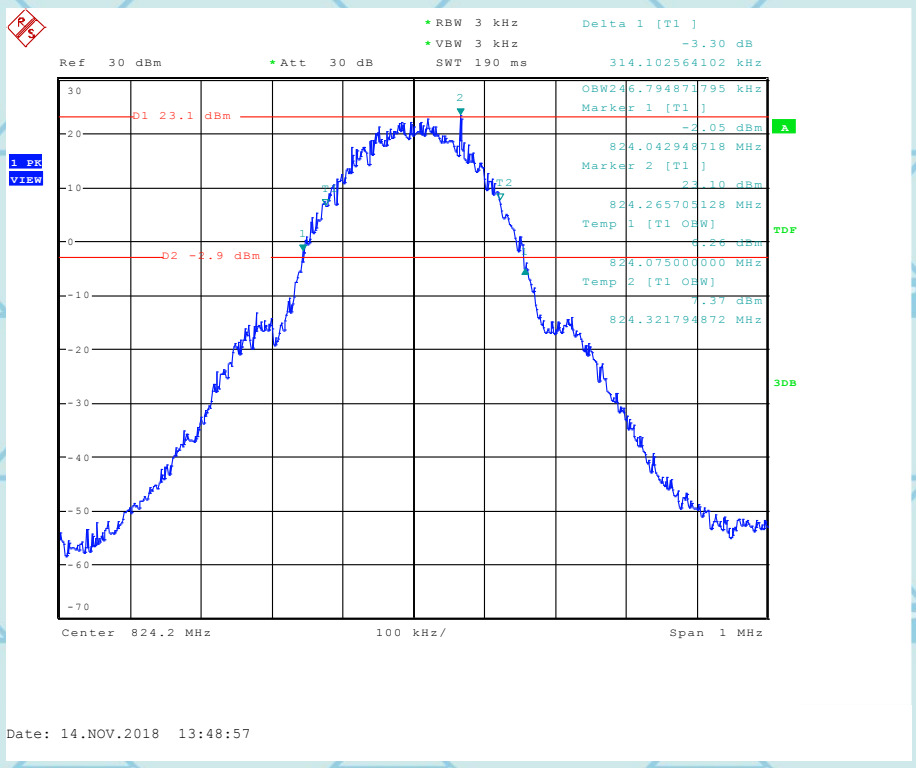
Frequency	OBW(99%)	26dB BW
1852.4	4.151MHz	4.712MHz
1880	4.167MHz	4.712MHz
1907.6	4.167MHz	4.712MHz

BAND 5:

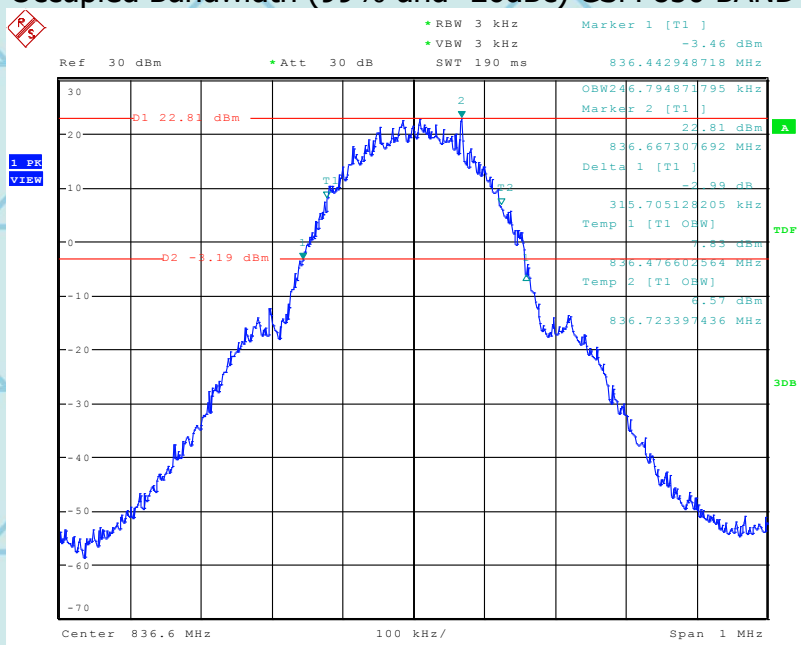
Frequency	OBW(99%)	26dB BW
826.4	4.183MHz	4.696MHz
836.4	4.151MHz	4.679MHz
846.6	4.167MHz	4.663MHz

Test Plot(s)

Occupied Bandwidth (99% and -26dBc) GSM 850 BAND CH 128

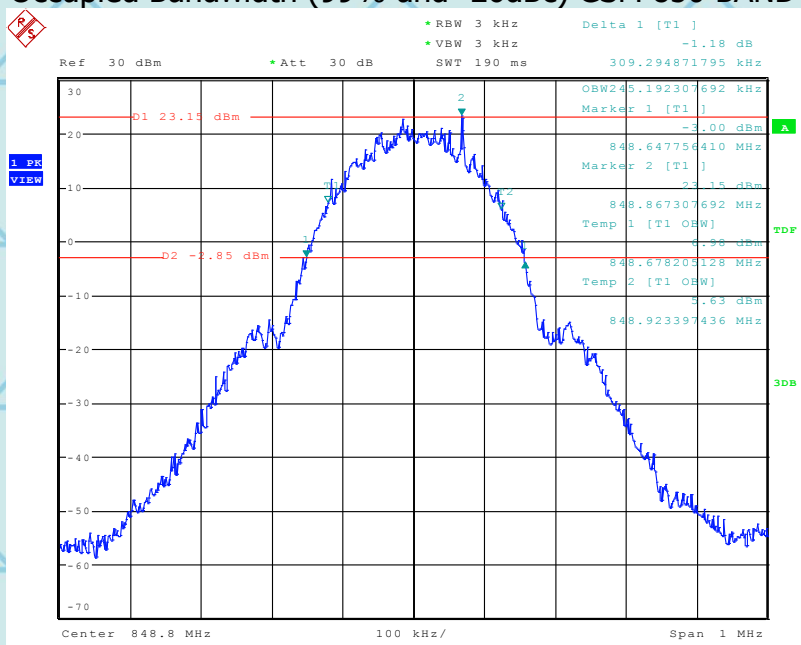


Occupied Bandwidth (99% and -26dBc) GSM 850 BAND CH 190



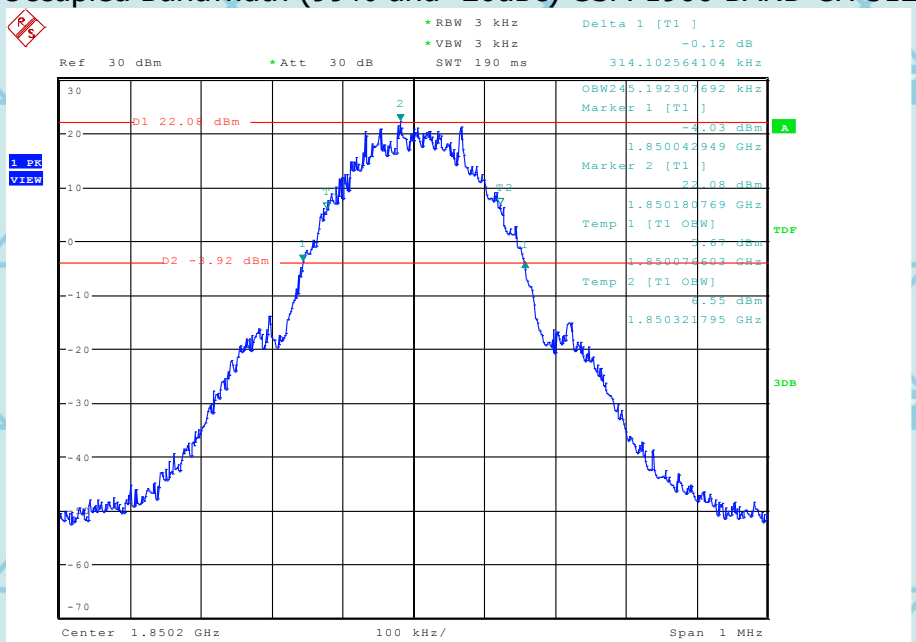
Date: 14.NOV.2018 13:51:33

Occupied Bandwidth (99% and -26dBc) GSM 850 BAND CH 251



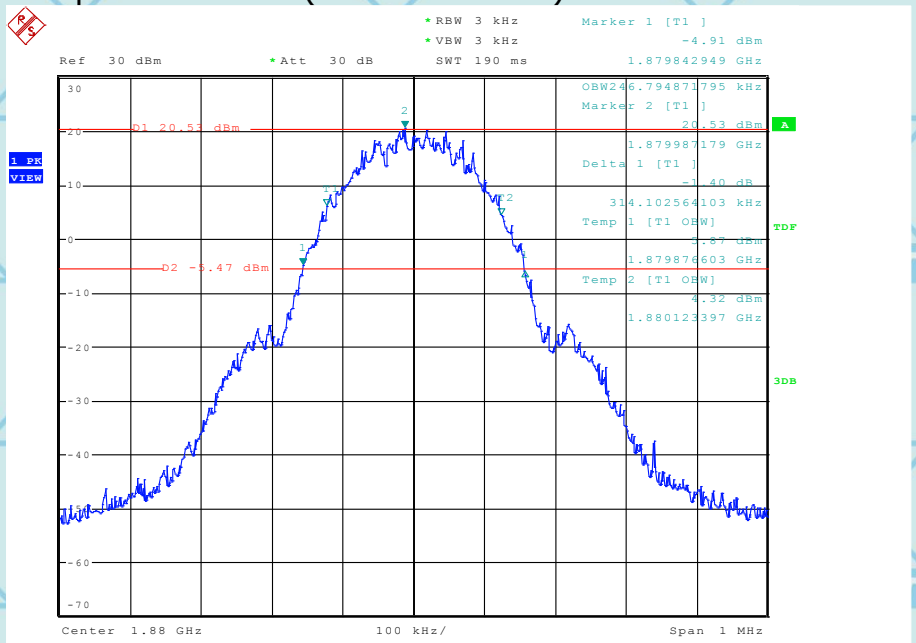
Date: 14.NOV.2018 13:53:17

Occupied Bandwidth (99% and -26dBc) GSM 1900 BAND CH 512



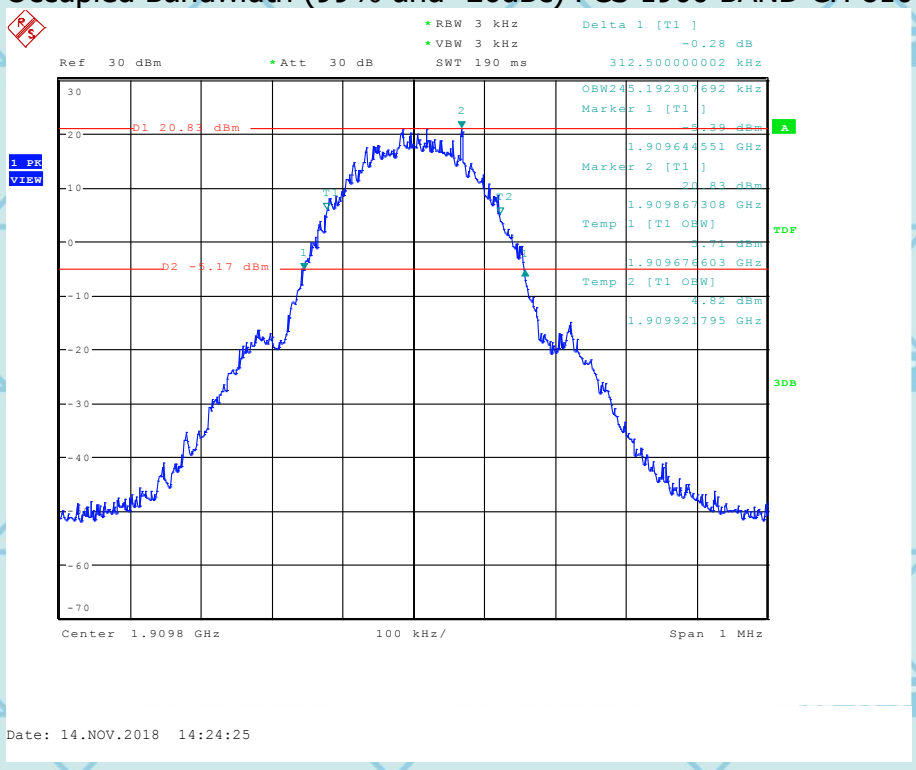
Date: 14.NOV.2018 14:18:54

Occupied Bandwidth (99% and -26dBc) PCS 1900 BAND CH 661



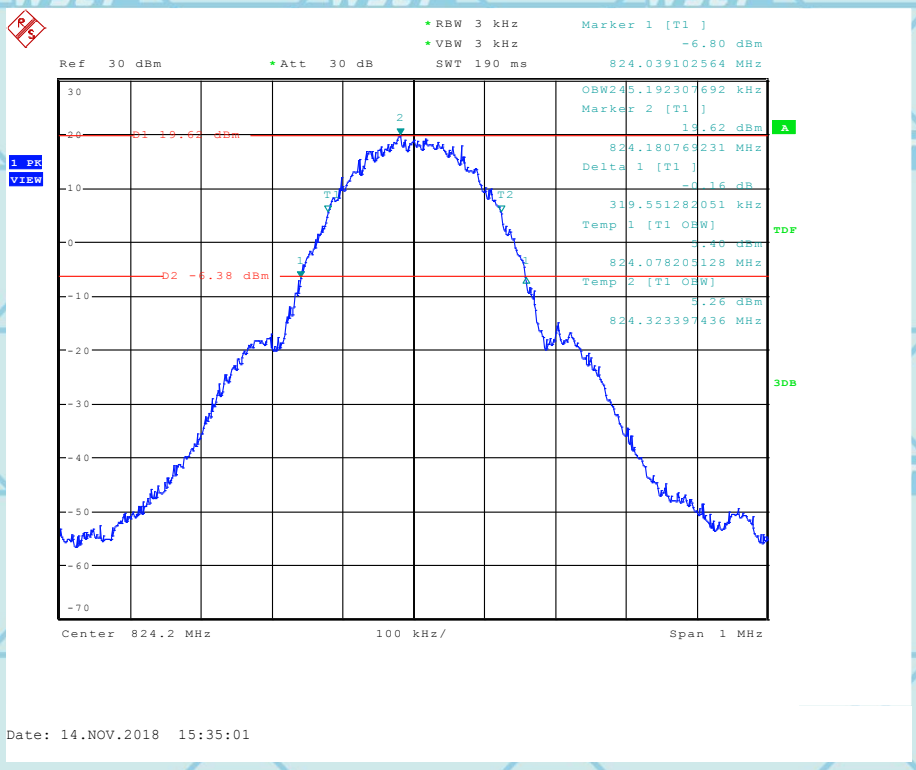
Date: 14.NOV.2018 14:21:14

Occupied Bandwidth (99% and -26dBc) PCS 1900 BAND CH 810



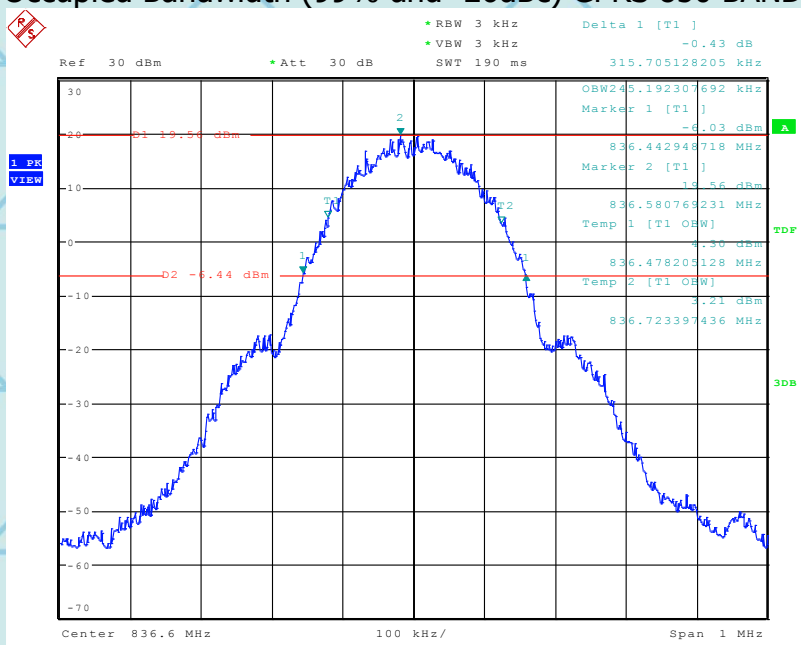
Date: 14.NOV.2018 14:24:25

Occupied Bandwidth (99% and -26dBc) GPRS 850 BAND CH 128

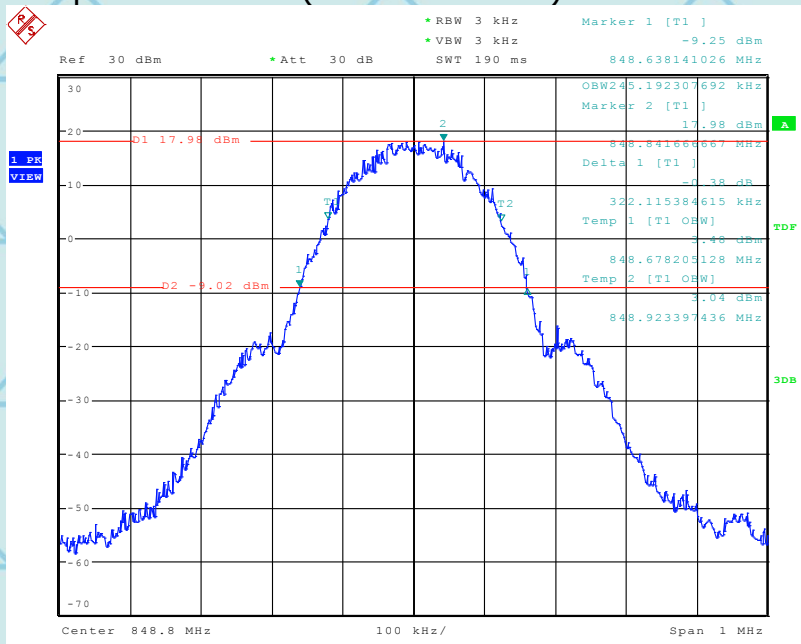


Date: 14.NOV.2018 15:35:01

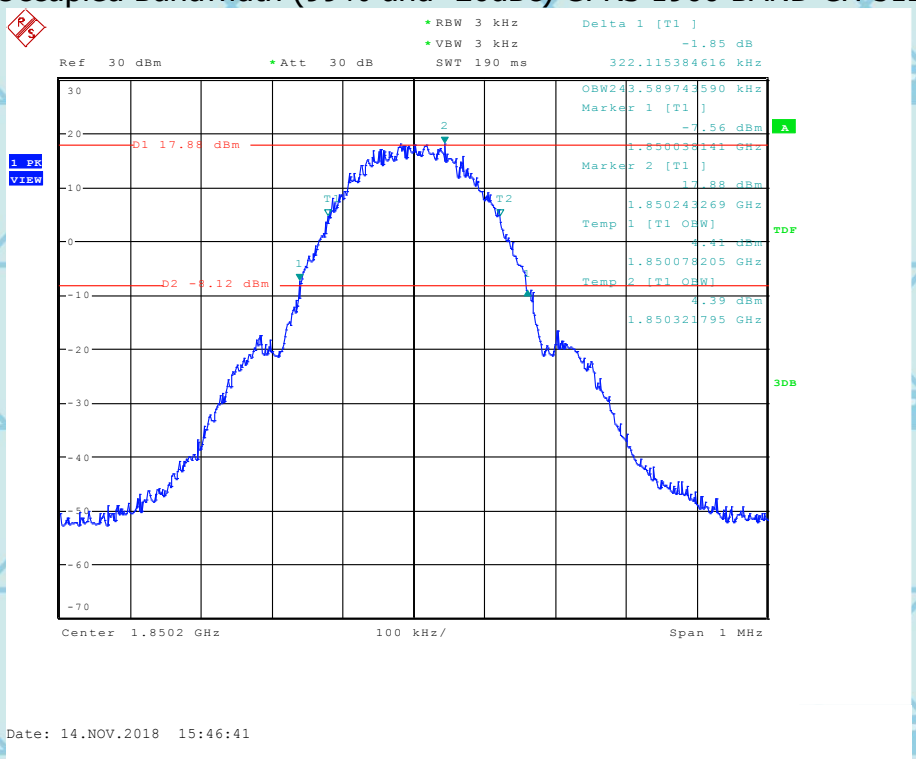
Occupied Bandwidth (99% and -26dBc) GPRS 850 BAND CH 190



Occupied Bandwidth (99% and -26dBc) GPRS 850 BAND CH 251

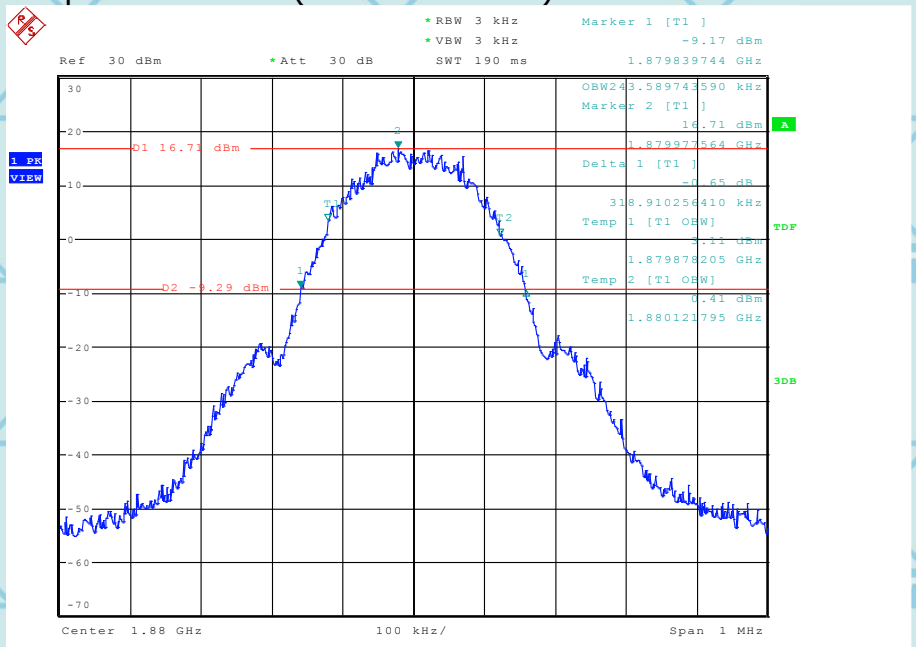


Occupied Bandwidth (99% and -26dBc) GPRS 1900 BAND CH 512



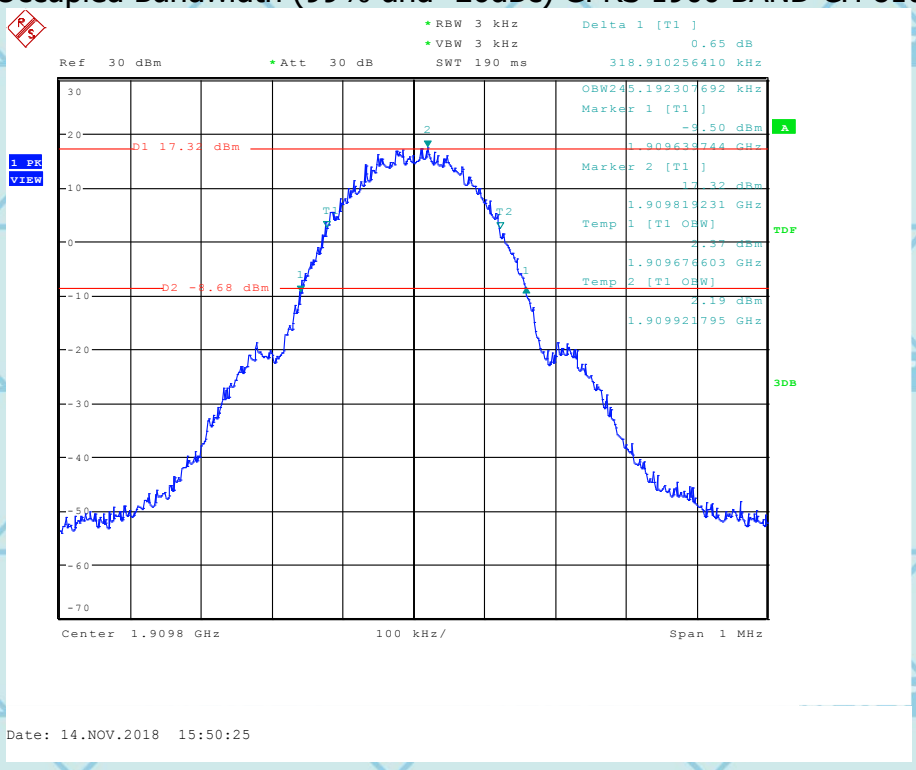
Date: 14.NOV.2018 15:46:41

Occupied Bandwidth (99% and -26dBc) GPRS 1900 BAND CH 661



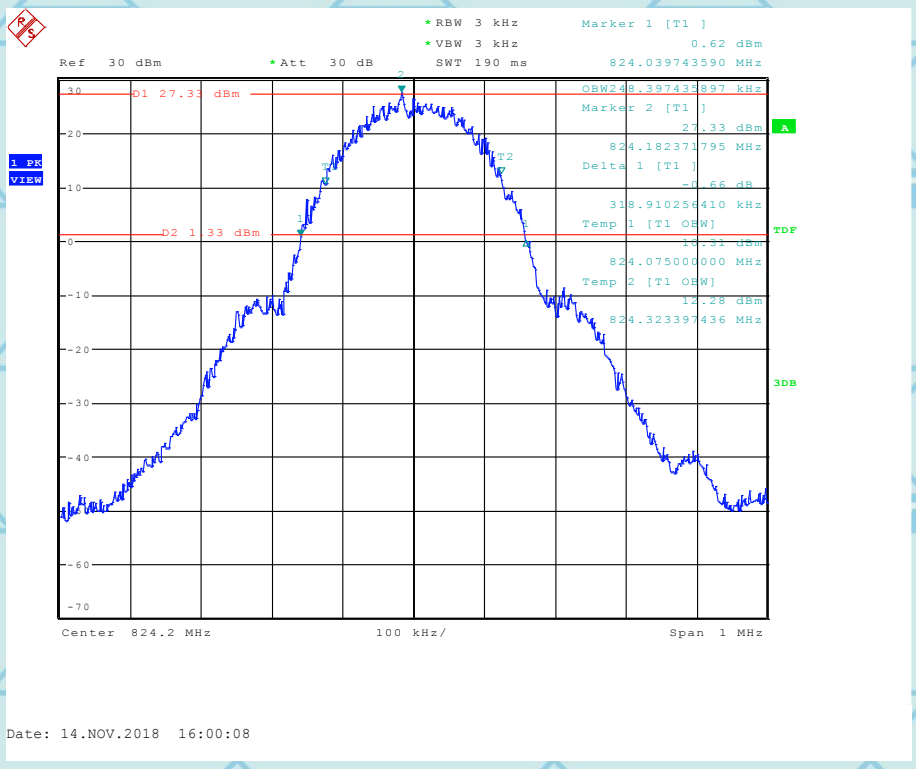
Date: 14.NOV.2018 15:48:20

Occupied Bandwidth (99% and -26dBc) GPRS 1900 BAND CH 810



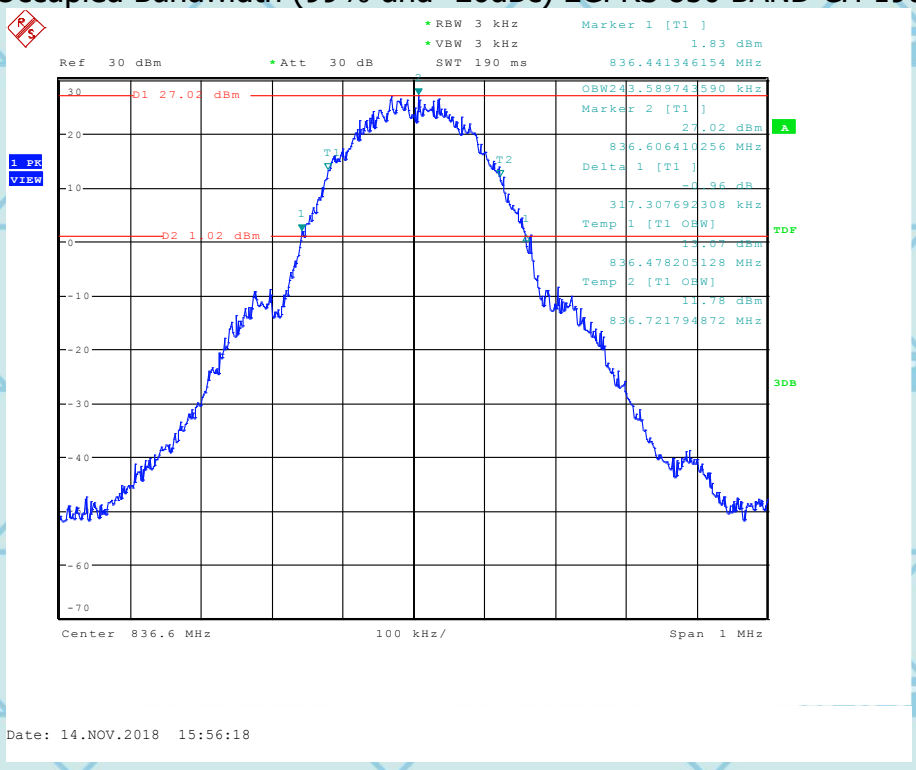
Date: 14.NOV.2018 15:50:25

Occupied Bandwidth (99% and -26dBc) EGPRS 850 BAND CH 128

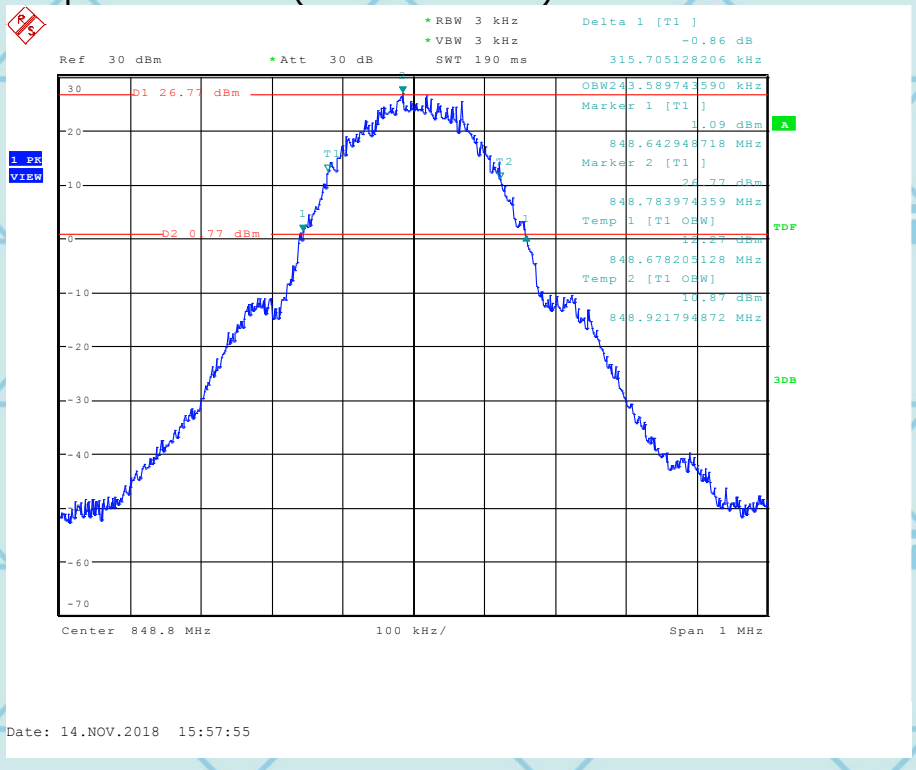


Date: 14.NOV.2018 16:00:08

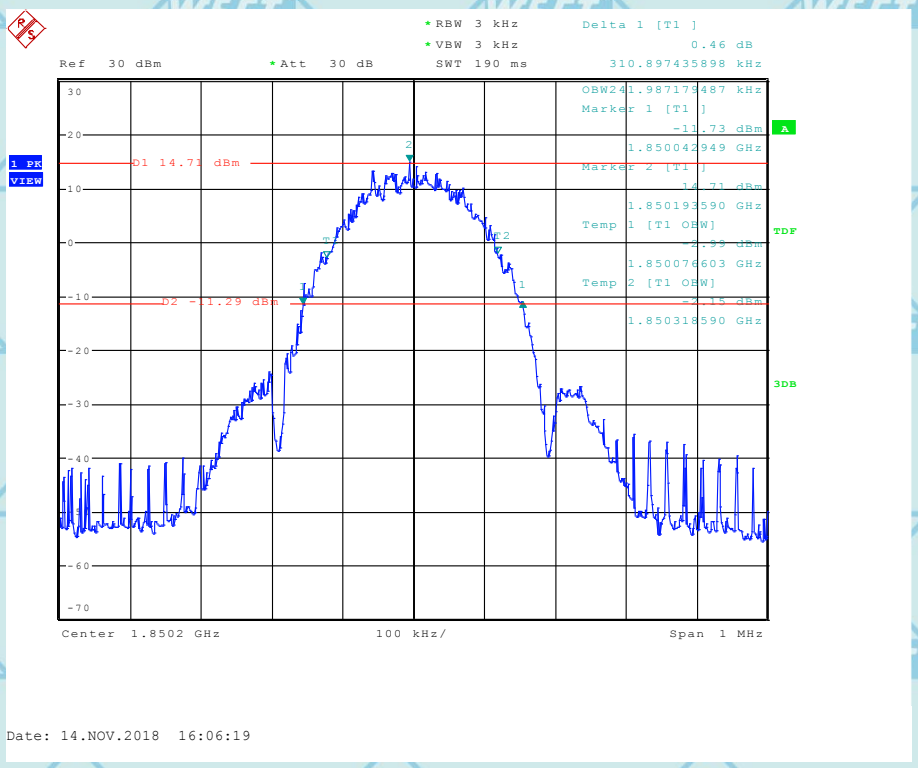
Occupied Bandwidth (99% and -26dBc) EGPRS 850 BAND CH 190



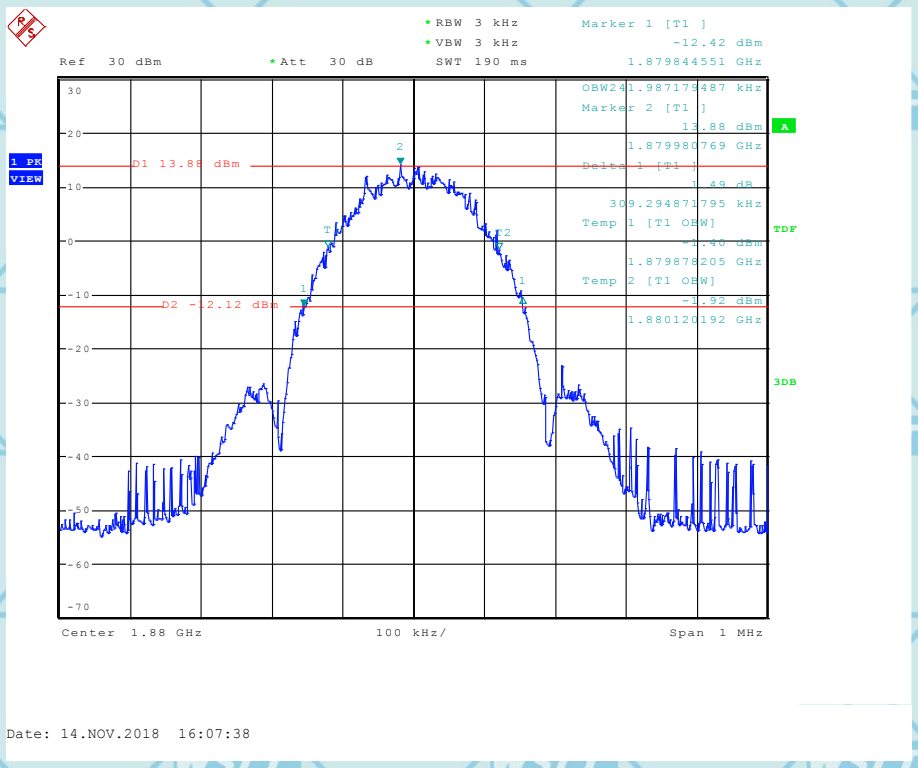
Occupied Bandwidth (99% and -26dBc) EGPRS 850 BAND CH 251



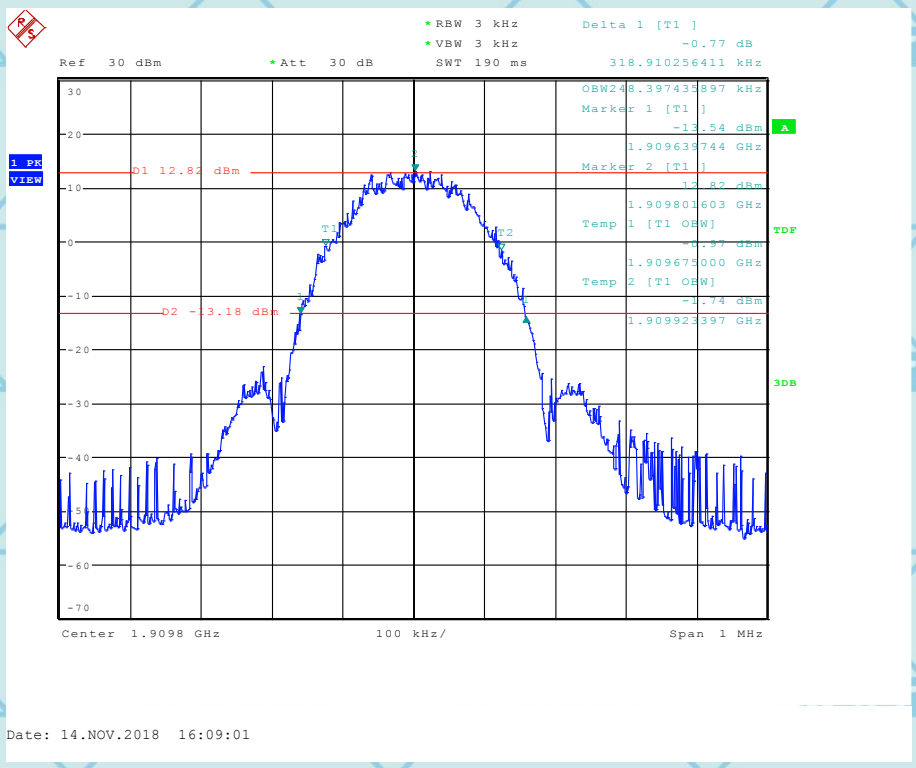
Occupied Bandwidth (99% and -26dBc) EGPRS 1900 BAND CH 512



Occupied Bandwidth (99% and -26dBc) EGPRS 1900 BAND CH 661

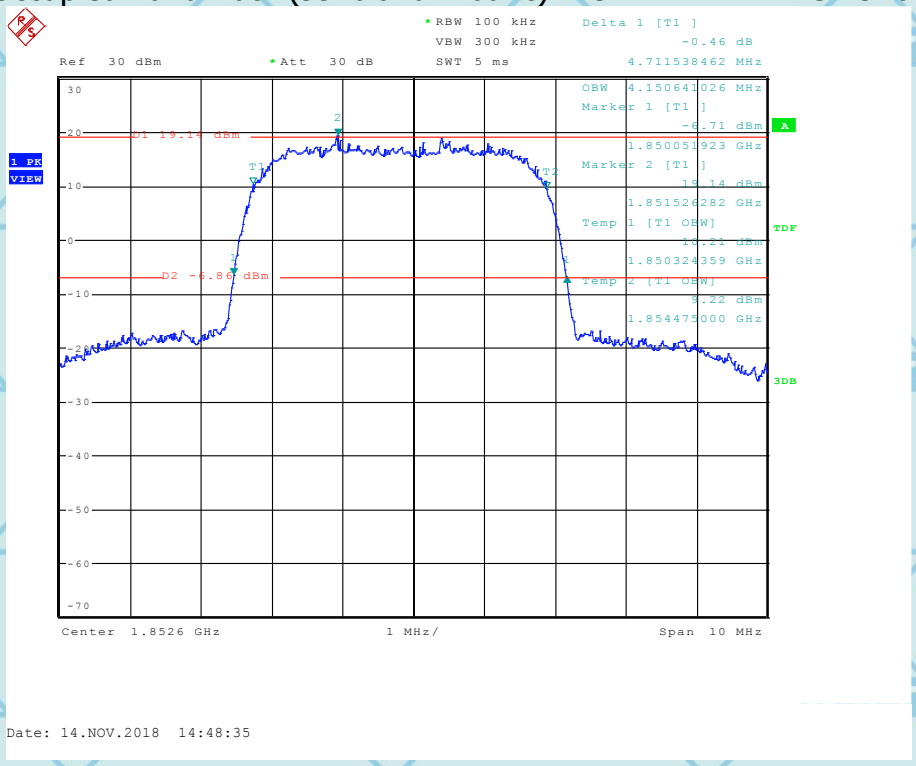


Occupied Bandwidth (99% and -26dBc) EGPRS 1900 BAND CH 810

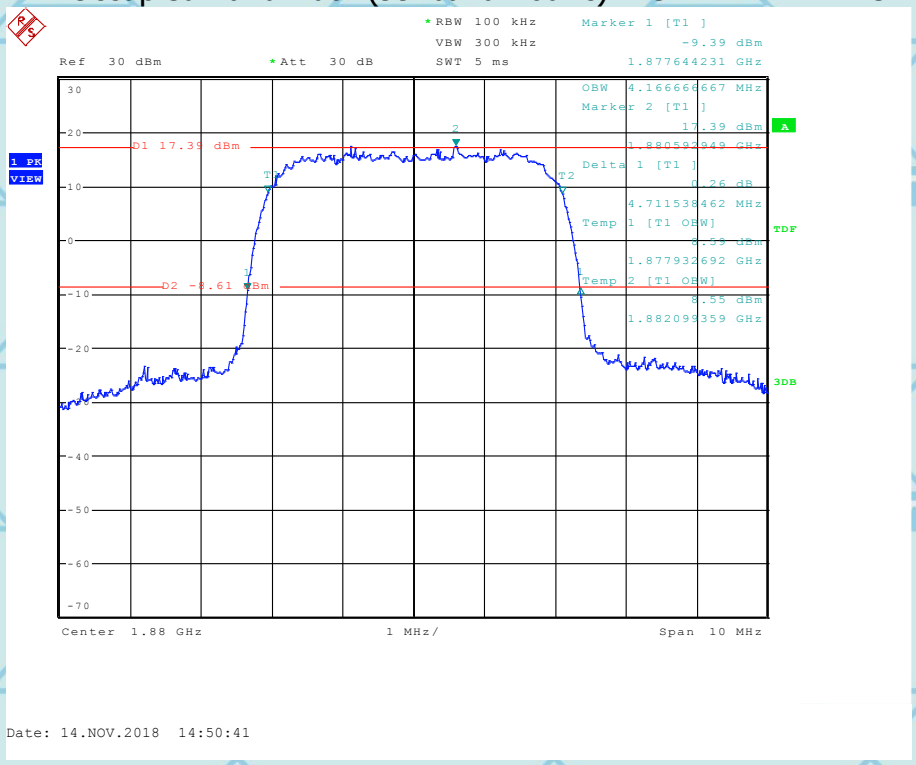


UTRA BANDS

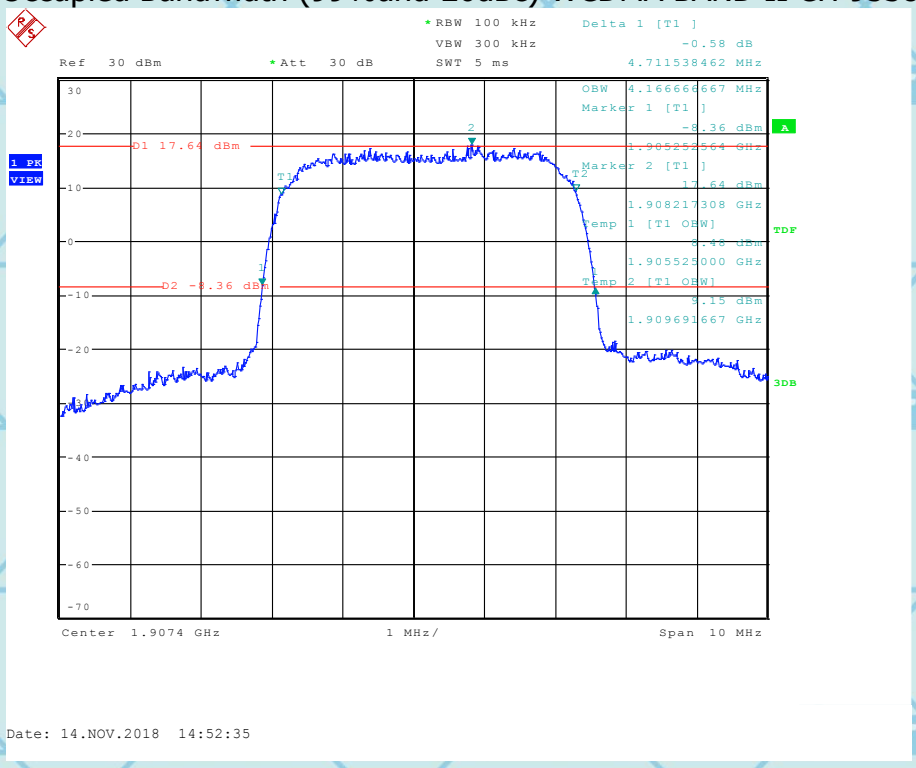
Occupied Bandwidth (99% and -26dBc) WCDMA BAND II CH 9262



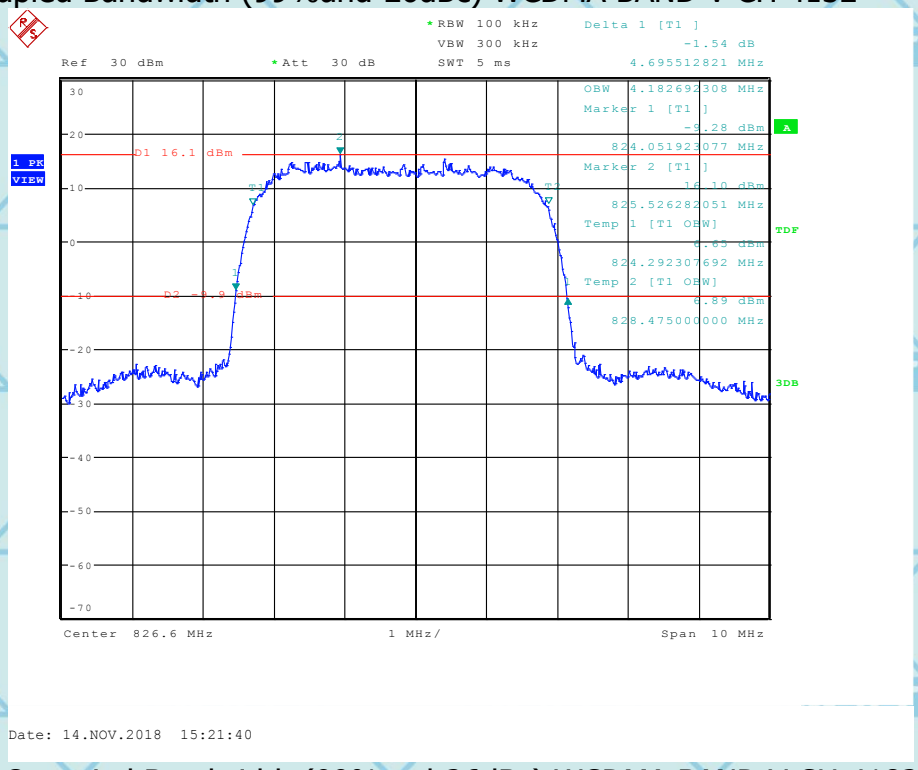
Occupied Bandwidth (99%and-26dBc) WCDMA BAND II CH 9400



Occupied Bandwidth (99%and-26dBc) WCDMA BAND II CH 9538

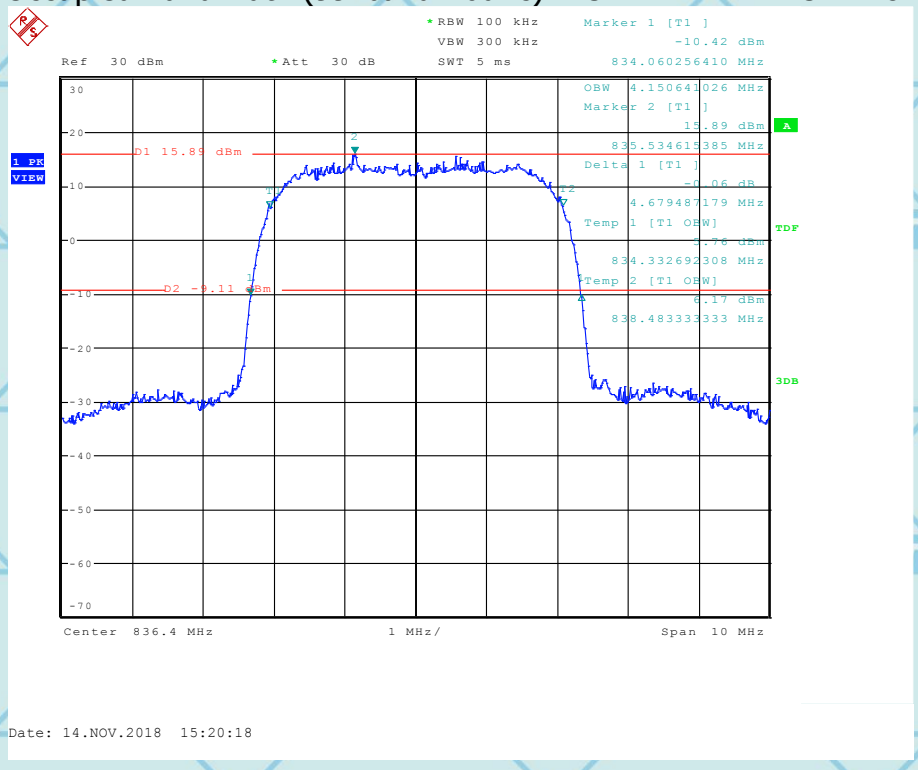


Occupied Bandwidth (99%and-26dBc) WCDMA BAND V CH 4132



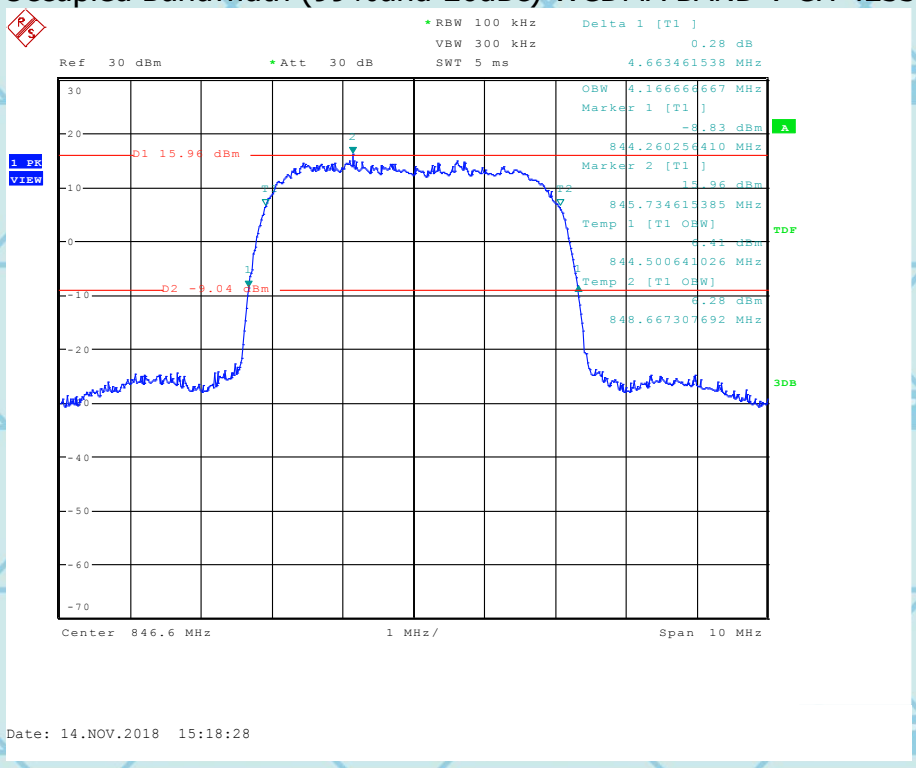
Date: 14.NOV.2018 15:21:40

Occupied Bandwidth (99%and-26dBc) WCDMA BAND V CH 4182



Date: 14.NOV.2018 15:20:18

Occupied Bandwidth (99%and-26dBc) WCDMA BAND V CH 4233



9. BAND EDGE

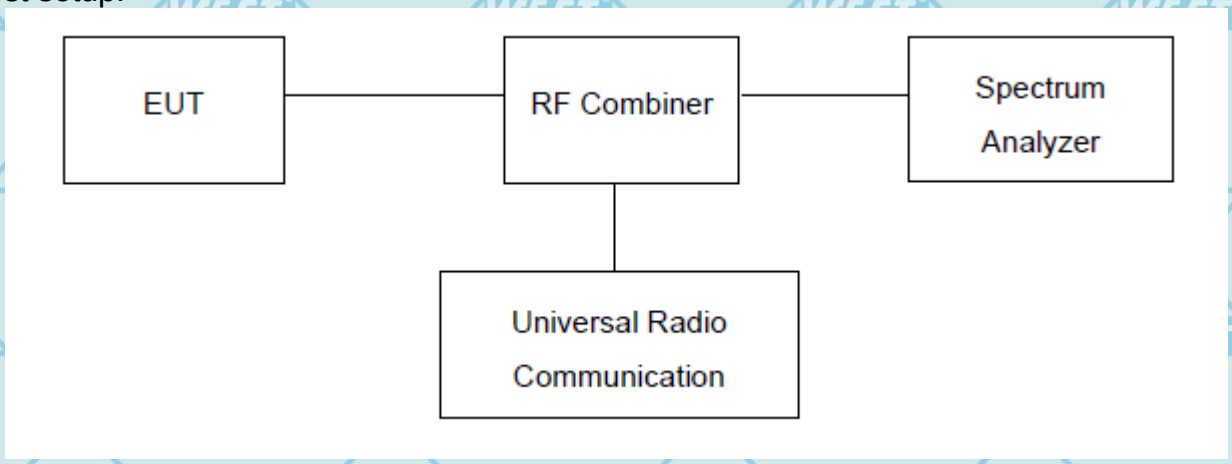
Test Limit:

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified. See section 4.

Test procedure:

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

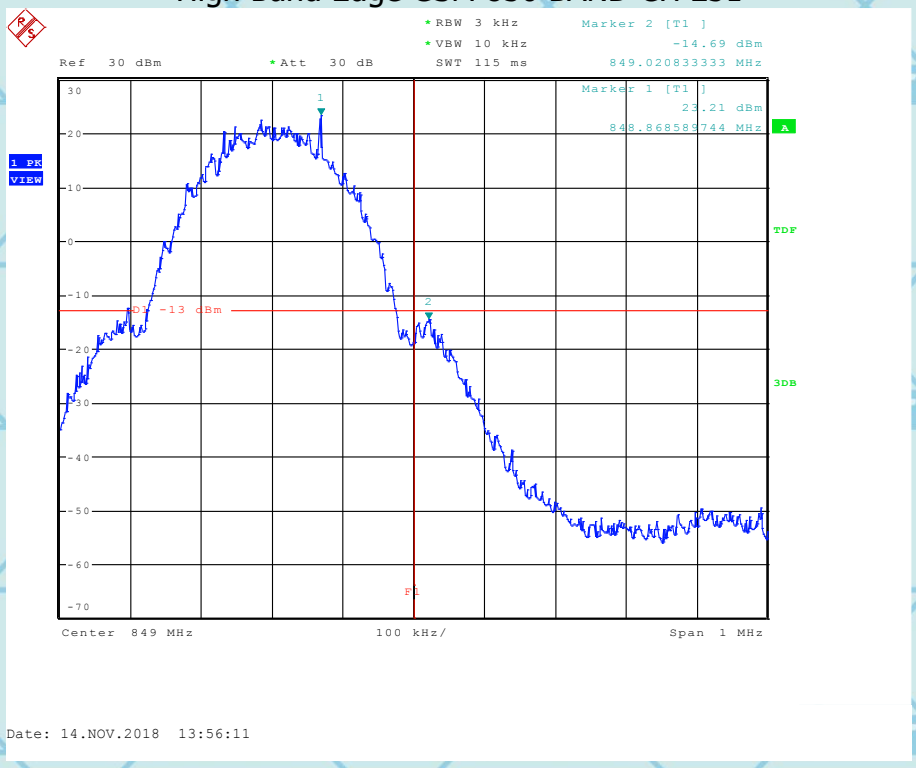
Test setup:



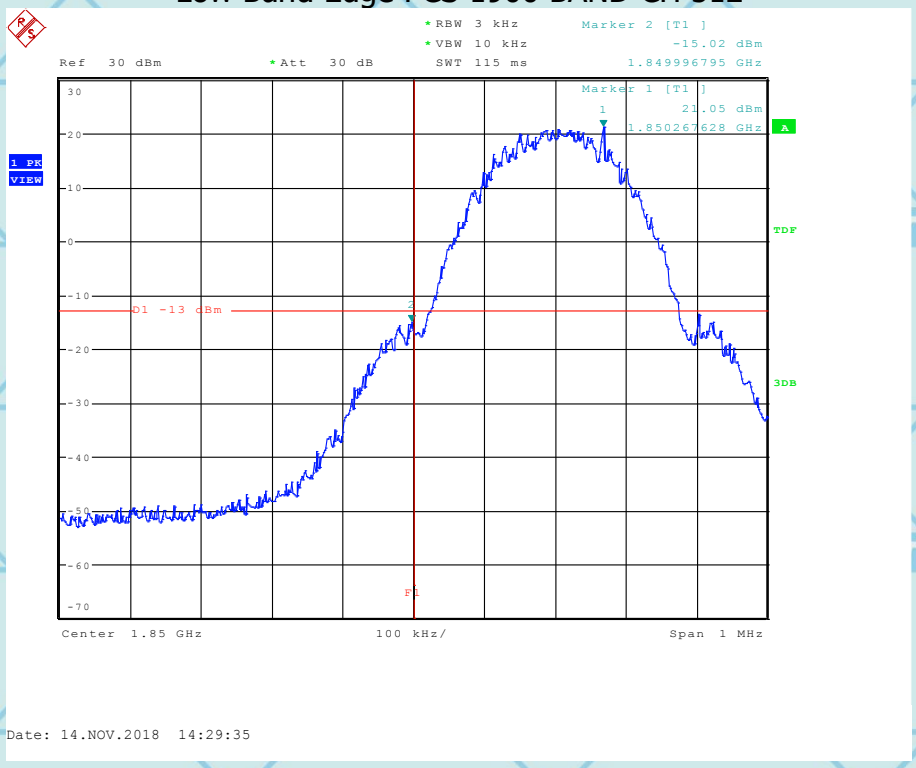
Measurement Result
Test Plot(s)

Low Band Edge GSM 850 BAND CH 128

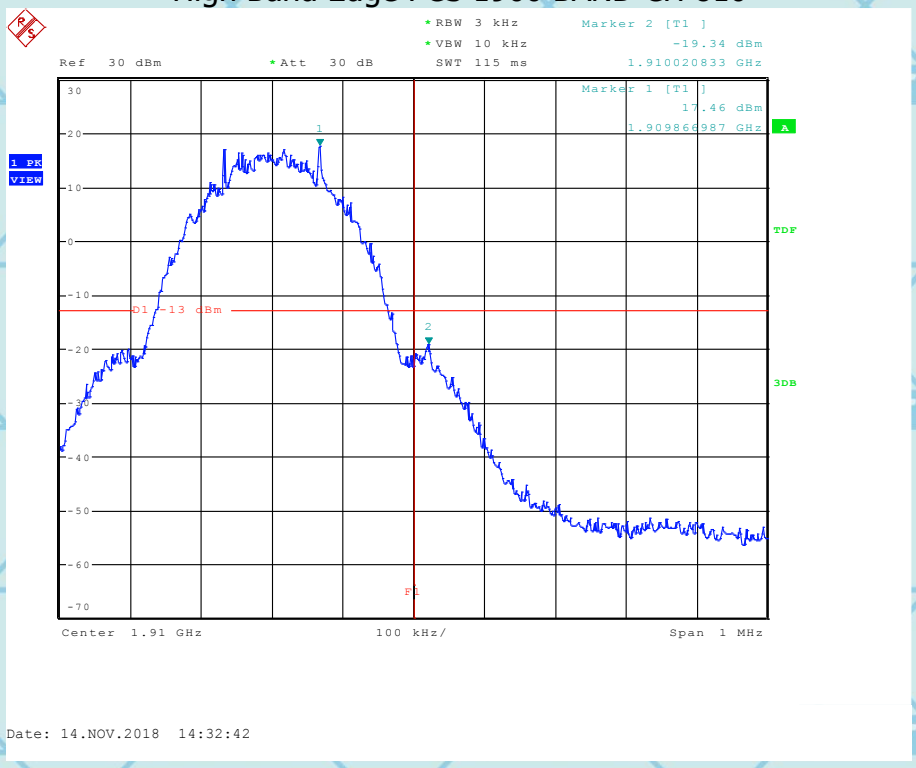
High Band Edge GSM 850 BAND CH 251



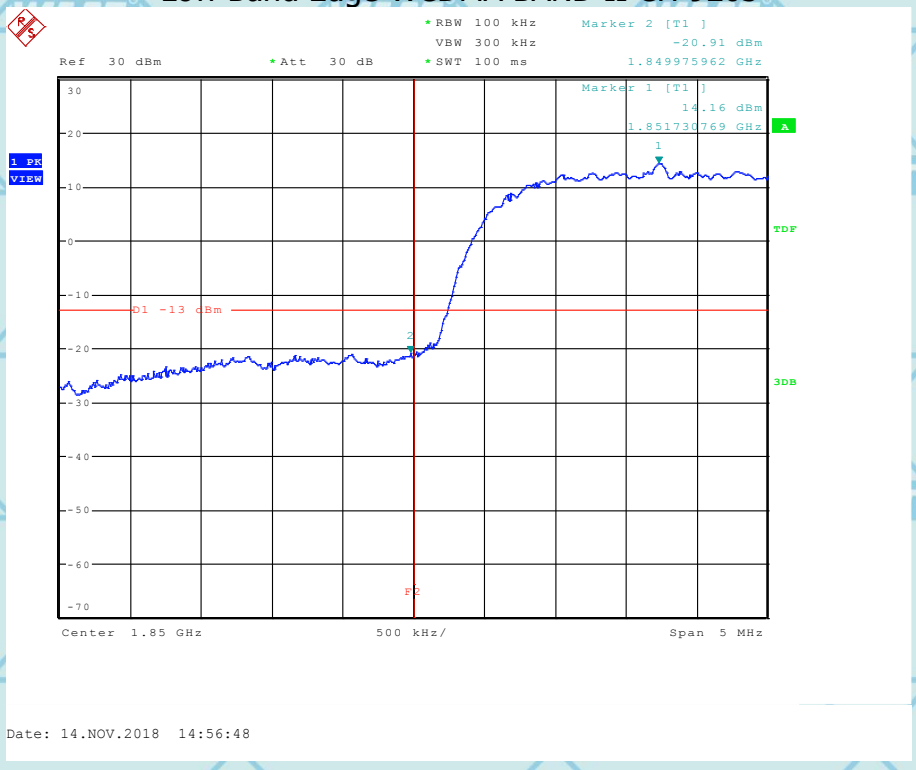
Low Band Edge PCS 1900 BAND CH 512



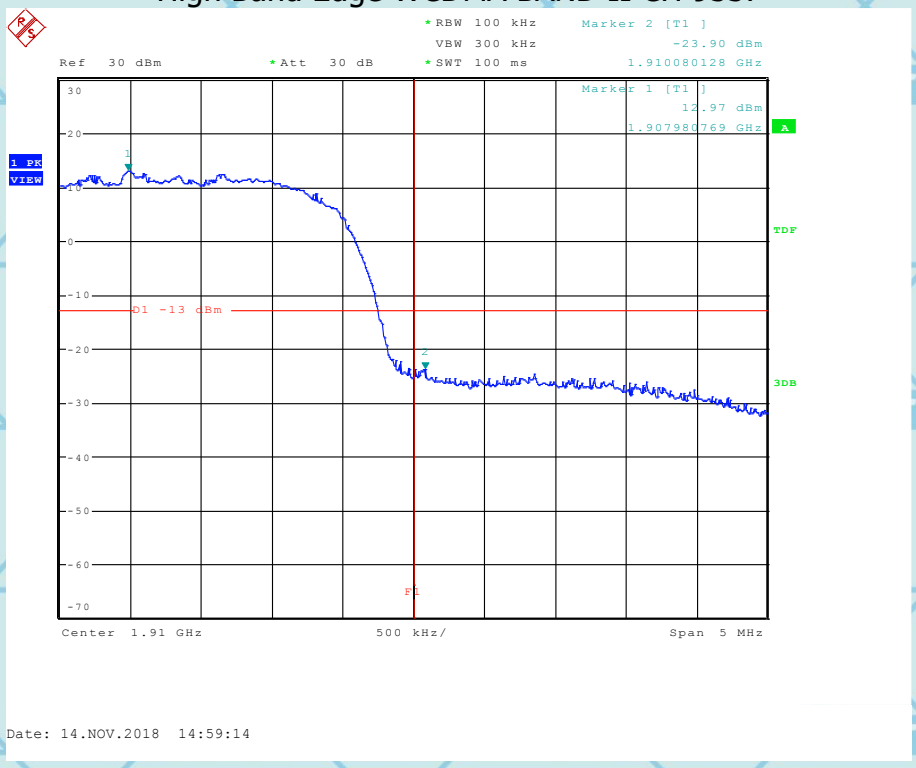
High Band Edge PCS 1900 BAND CH 810



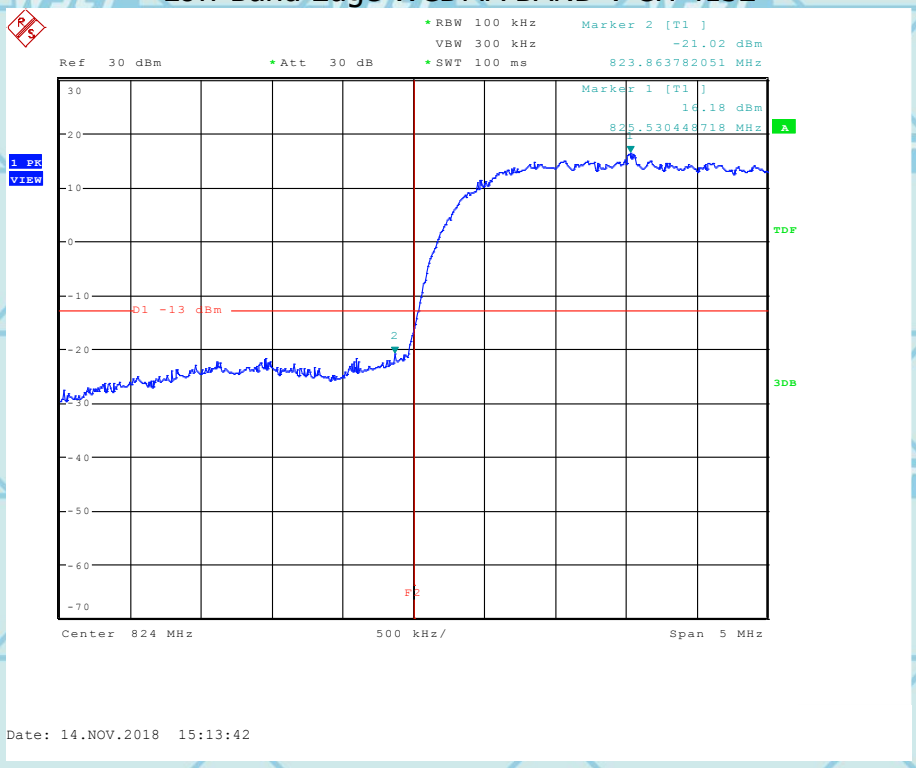
Low Band Edge WCDMA BAND II CH 9263



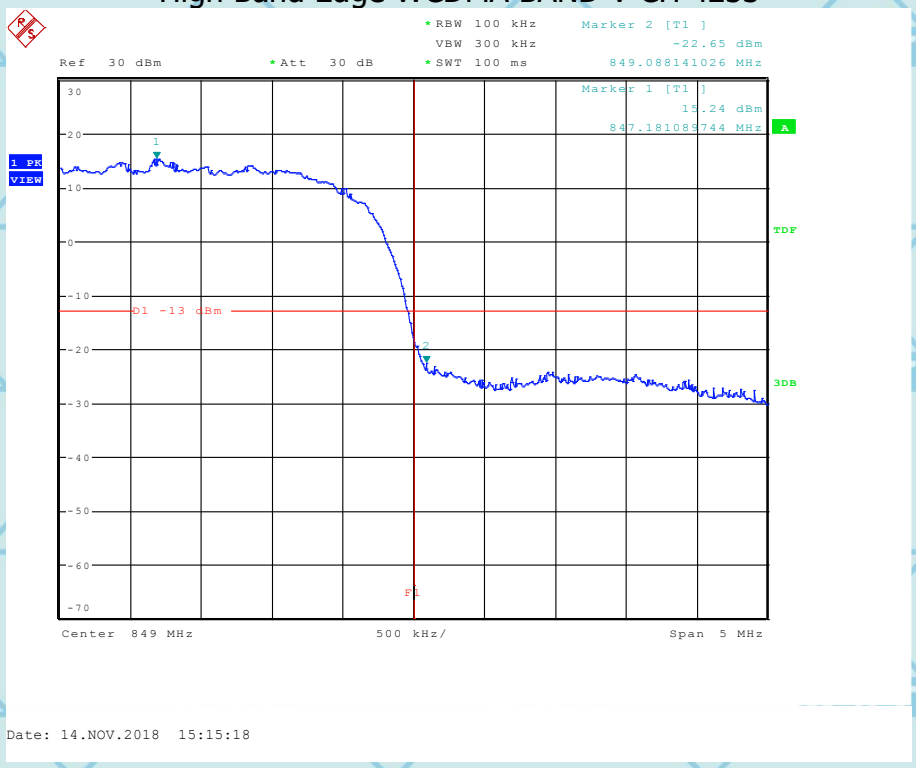
High Band Edge WCDMA BAND II CH 9537



Low Band Edge WCDMA BAND V CH 4132



High Band Edge WCDMA BAND V CH 4233



10. FREQUENCY STABILITY

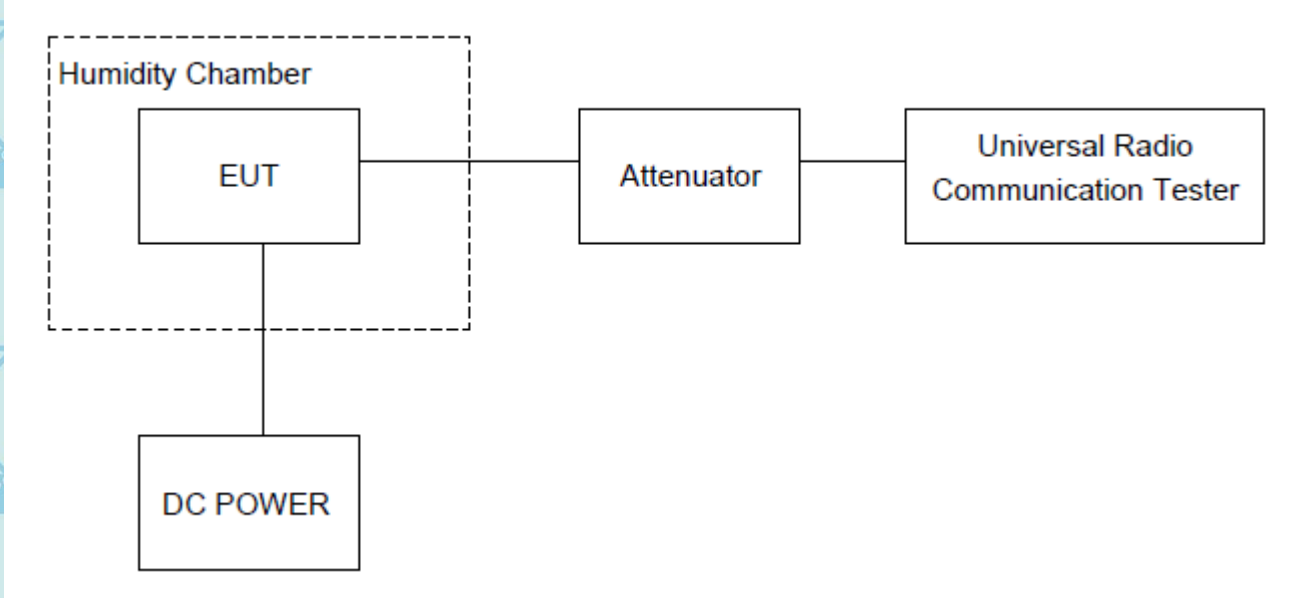
Test limit:

The frequency stability of the transmitter shall be measured while varying the ambient temperatures and supply voltages over the ranges specified in §2.1055. The specific frequency stability limits are provided in the relevant rules section(s). see section 4.

Test procedure:

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

Test setup:



10.1. Measurement Result (Worst)

Frequency Error against Voltage for GSM 850 band (836.6MHz)

Voltage(V)	Frequency error(Hz)	Frequency error (ppm)
3.6	40	0.048
3.85	36	0.043
4.4	40	0.047

Frequency Error against Temperature for GSM 850 band (836.6MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	39	0.047
0	34	0.040
10	37	0.044
20	34	0.041
30	31	0.038
40	28	0.034
55	31	0.037

Frequency Error against Voltage for PCS 1900 band (1880MHz)

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	32	0.017
3.85	30	0.016
4.4	29	0.015

Frequency Error against Temperature for PCS 1900 band (1880MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	37	0.020
0	33	0.017
10	34	0.018
20	39	0.021
30	34	0.018
40	36	0.019
55	32	0.017

Frequency Error against Voltage for GPRS 850 band (836.6MHz)

Voltage(V)	Frequency error(Hz)	Frequency error (ppm)
3.6	29	0.035
3.85	32	0.038
4.4	40	0.048

Frequency Error against Temperature for GPRS 850 band (836.6MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	32	0.038
0	30	0.036
10	40	0.047
20	35	0.042
30	36	0.042
40	33	0.040
55	33	0.040

Frequency Error against Voltage for GPRS 1900 band (1880MHz)

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	34	0.018
3.85	35	0.019
4.4	31	0.017

Frequency Error against Temperature for GPRS 1900 band (1880MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	32	0.017
0	37	0.020
10	40	0.021
20	39	0.021
30	34	0.018
40	28	0.015
55	36	0.019

Frequency Error against Voltage for EGPRS 850 band (836.6MHz)

Voltage(V)	Frequency error(Hz)	Frequency error (ppm)
3.6	35	0.042
3.85	36	0.043
4.4	33	0.040

Frequency Error against Temperature for EGPRS 850 band (836.6MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	31	0.038
0	35	0.042
10	40	0.048
20	40	0.048
30	41	0.049
40	38	0.045
55	33	0.040

Frequency Error against Voltage for EGPRS 1900 band (1880MHz)

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	38	0.020
3.85	30	0.016
4.4	36	0.019

Frequency Error against Temperature for EGPRS 1900 band (1880MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	40	0.021
0	40	0.021
10	31	0.016
20	36	0.019
30	33	0.018
40	30	0.016
55	34	0.018

UTRA BANDS

Frequency Error against Voltage for WCDMA BAND 2 (1880MHz)

Voltage(V)	Frequency error(Hz)	Frequency error (ppm)
3.6	32	0.017
3.85	34	0.018
4.4	32	0.017

Frequency Error against Temperature for WCDMA BAND 2 (1880MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	31	0.017
0	37	0.020
10	36	0.019
20	35	0.019
30	33	0.017
40	40	0.021
55	38	0.020

Frequency Error against Voltage for WCDMA BAND 5 (836.4MHz)

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	36	0.043
3.85	36	0.043
4.4	37	0.044

Frequency Error against Temperature for WCDMA BAND 5 (836.4MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	33	0.040
0	36	0.043
10	38	0.046
20	38	0.046
30	39	0.047
40	28	0.034
55	31	0.037

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