TEST REPORT

FCC ID: 2BDCX-BULUSE-M11

Product: Tablet

Model No.: M11

Trade Mark: BULUSE

Report No.: WSCT-R&E231000017A-RF

Issued Date: 12 December 2023

Issued for:

RPTRADING S.A

HAITI Numero: 04-21 TRINIDAD Y TOBAGO

Issued By:

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

Product:	Tablet
Model No.:	M11
Trade Mark:	BULUSE
Applicant:	**RPTRADING S.A**
Address:	HAITI Numero: 04-21 TRINIDAD Y TOBAGO
Manufacturer:	**SHENZHEN GERUIBANG TECHNOLOGY CO.,LTD**
Address:	Sogood Technology Park Sanwei Village in Xixiang Baoan District Shenzhen ,China
Factory:	**SHENZHEN GERUIBANG TECHNOLOGY CO.,LTD**
Address:	Sogood Technology Park Sanwei Village in Xixiang Baoan District Shenzhen ,China
Date of Test:	26 October 2023 to 10 November 2023
Applicable Standards:	FCC Rules Part 22H and 24E and 27.

The above equipment has been tested by World Standardization Certification& Testing Group (Shenzhen) 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: Wang Xiang *(Wang Xiang)*

Checked By: Qin Shuiquan *(Qin Shuiquan)*

Approved By: Liu Fuxin *(Liu Fuxin)*

Date: 12 December 2023

2. GENERAL DESCRIPTION OF EUT

Product Name:	Tablet
Model :	M11
Trade Mark:	BULUSE
Software Version:	F866_WXGA_4+64_V1.0
Hardware Version:	F866T-Y_6762_BJJ_MB_V4.0
Frequency Bands:	☒GSM 850 ☒PCS 1900 (U.S. Bands) E-UTRA Bands: ☒ E-UTRA Band 2 ☒ E-UTRA Band 4 ☒ E-UTRA Band 5 ☒ E-UTRA Band 12 ☒ E-UTRA Band 17 ☒ E-UTRA Band 41 ☒ E-UTRA Band 66
Antenna Type:	PIFA Antenna
Antenna gain:	GSM 850: 0.94 dBi PCS 1900: 0.71 dBi E-UTRA Band 2: 0.71 dBi E-UTRA Band 4: 0.11 dBi E-UTRA Band 5: 0.94 dBi E-UTRA Band 12: 1.03dB E-UTRA Band 17: 1.03 dBi E-UTRA Band 41: 2.77dB E-UTRA Band 66: 0.18dB
Rechargeable Li-Polymer Battery:	Li-ion Battery: JJY32100100 Rated Voltage: 3.8V Rated Capacity: 5000mAh/19Wh
Adapter:	Adapter: JHD-AP013U-050200BB-B Input: 100-240V~50/60Hz 0.35A Output: 5.0V⎓2000mA
Card(S):	Card 1: E-UTRA Card Slot Card 2: GSM Card Slot
Max power:	See Table 2.1
Remark:	N/A.

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

OPERATION BAND(S)	Power Class	Mod.	Max Peak Power (dBm)
GSM850	Class 4	GMSK	34.02
DCS1900	Class 1	GMSK	33.77
E-UTRA Band 2	Class 3	QPSK	22.51
		16QAM	22.28
E-UTRA Band 4	Class 3	QPSK	23.07
		16QAM	22.60
E-UTRA Band 5	Class 3	QPSK	25.67
		16QAM	24.73
E-UTRA Band 12	Class 3	QPSK	27.31
		16QAM	26.95
E-UTRA Band 17	Class 3	QPSK	24.59
		16QAM	24.01
E-UTRA Band 41	Class 3	QPSK	22.50
		16QAM	22.50
E-UTRA Band 66	Class 3	QPSK	21.50
		16QAM	21.16

3. FACILITIES AND ACCREDITATIONS

3.1. Facilities

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(Shenzhen) 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."

3.2. ACCREDITATIONS

CNAS - Registration Number: L3732

China National Accreditation Service for Conformity Assessment, The test firm Registration Number: L3732

FCC - Designation Number: CN1303

World Standardization Certification & Testing Group(Shenzhen) CO., LTD. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Designation Number: CN1303.

A2LA - Certificate Number: 5768.01

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA).Certification Number: 5768.01

3.3. EUT System Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

Fig. 3.2-1 Configuration of EUT System

Table 3.2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Tablet	M11		EUT

***Note: All the accessories have been used during the test. The following "EUT" in setup diagram means EUT system.

3.4. 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

LTE BAND 2			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	1.4	18607	1850.7
	3	18615	1851.5
	5	18625	1852.5
	10	18650	1855
	15	18675	1857.5
	20	18700	1860
Mid Range	1.4/3/5/10 15 /20	18900	1880
High Range	1.4	19193	1909.3
	3	19185	1908.5
	5	19175	1907.5
	10	19150	1905
	15	19125	1902.5
	20	19100	1900

LTE BAND 4			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	1.4	19957	1710.7
	3	19965	1711.5
	5	19975	1712.5
	10	20000	1715
	15	20025	1717.5
	20	20050	1720
Mid Range	1.4/3/5/10/15/20	20175	1732.5
High Range	1.4	20393	1754.3
	3	20385	1753.5
	5	20375	1752.5
	10	20350	1750
	15	20325	1747.5
	20	20300	1745

LTE Band 5			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	1.4	20407	824.7
	3	20415	825.5
	5	20425	826.5
	10	20450	829
Mid Range	1.4/3/5/10	20525	836.5
High Range	1.4	20643	848.3
	3	20635	847.5
	5	20625	846.5
	10	20600	844

LTE BAND 12			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	1.4	23017	699.7
	3	23025	700.5
	5	23035	701.5
	10	23060	704
Mid Range	1.4/3/5/10	23095	707.5
High Range	1.4	23173	715.3
	3	23165	714.5
	5	23155	713.5
	10	23130	711

LTE BAND 17			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	5	23755	706.5
	10	23780	709
Mid Range	5/10	23790	710
High Range	5	23825	713.5
	10	23800	711

LTE Band 41			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	5	40265	2557.5
	10	40290	2560
	15	40315	2562.5
	20	40340	2565
Mid Range	5/10/15/20	40740	2605
High Range	5	41215	2652.5
	10	41190	2650
	15	41165	2647.5
	20	41140	2645

LTE BAND 66			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	1.4	131979	1710.7
	3	131987	1711.5
	5	131997	1712.5
	10	132022	1715
	15	132047	1717.5
	20	132072	1720
Mid Range	1.4/3/5/10/15/20	132322	1745
High Range	1.4	132665	1779.3
	3	132657	1778.5
	5	132647	1777.5
	10	132622	1775
	15	132597	1772.5
	20	132572	1770

Note 1: both QPSK&16QAM modulation has been measured;
Note 2: The worst condition was recorded in the test report if no other modes test data.

3.5. Equipment Modifications

Not available for this EUT intended for grant.

4. SUMMARY OF TEST REQUIREMENTS AND RESULTS

Band2(PCS 1900/ E-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
Frequency Stability	§2.1055, §22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass

Band 4(E-UTRA Band 4 /E-UTRA Band 12 /E-UTRA Band 17 /E-UTRA Band 66):

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	§2.1046, §27.50(d)	EIRP ≤ 1W(30dBm)	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges	§2.1051, §27.53(h)	-13dBm	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	-13dBm	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	-13dBm	Pass
Frequency Stability	§2.1055, §27.54	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass
Peak to average ratio	§27.50(d)	<13dB	Pass

Band 5(GSM850/E-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

Band 41(E-UTRA Band 41):

Test Item	FCC Rule No.	Requirements	Judgement
Effective (Isotropic) Radiated Power	§2.1046, §27.50(h)	EIRP ≤ 2W(33dBm)	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges	§2.1051, §27.53(m)	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, §27.53(m)	-25dBm	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)	-25dBm	Pass
Frequency Stability	§2.1055, §27.54	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	11/05/2023	11/04/2024
LISN	AFJ	LS16	16010222119	11/05/2023	11/04/2024
LISN(EUT)	Mestec	AN3016	04/10040	11/05/2023	11/04/2024
Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	11/05/2023	11/04/2024
Coaxial cable	Megalon	LMR400	N/A	11/05/2023	11/04/2024
GPIB cable	Megalon	GPIB	N/A	11/05/2023	11/04/2024
Spectrum Analyzer	R&S	FSU	100114	11/05/2023	11/04/2024
Pre Amplifier	H.P.	HP8447E	2945A02715	11/05/2023	11/04/2024
Pre-Amplifier	CDSI	PAP-1G18-38	--	11/05/2023	11/04/2024
Loop Antenna	R&S	HFH2-Z2	100296	11/05/2023	11/04/2024
Bi-log Antenna	SCHWARZBECK	VULB9168	01488	7/29/2023	7/28/2024
9*6*6 Anechoic	--	--	--	11/05/2023	11/04/2024
Horn Antenna	COMPLIANCE ENGINEERING	CE18000	--	11/05/2023	11/04/2024
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	11/05/2023	11/04/2024
Power meter	Anritsu	ML2487A	6K00003613	11/05/2023	11/04/2024
Power meter	Anritsu	MA2491A	32263	11/05/2023	11/04/2024
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	11/05/2023	11/04/2024
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	-	11/05/2023	11/04/2024
Loop Antenna	EMCO	6502	00042960	11/05/2023	11/04/2024
Wideband Radio Communication Tester	R&S	CMW 500	103974	11/05/2023	11/04/2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1123	11/05/2023	11/04/2024
H & T Chamber	Guangzhou gongwen	GDJS-500-40	0329	11/05/2023	11/04/2024
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY60192341	11/05/2023	11/04/2024
Anechoic chamber	SAEMC	966	-	11/05/2023	11/04/2024

6. EFFECTIVE (ISOTROPIC) RADIATED POWER

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 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.
5. ERP/EIRP = PMeas + GT − LC
Where:
ERP/EIRP = effective or equivalent radiated power
PMeas = measured transmitter output power from SG
GT = gain of the substitution antenna
LC = cable loss between SG and substitution antenna.

GSM850 Band:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAP	Duty cycle Factor(dB)	Frame Power(dBm)
GSM850		824.2	33.13	32.01	1.12	-9	23.01
		836.6	**34.02**	**32.96**	1.05	-9	23.96
		848.8	32.99	32.51	0.48	-9	23.51
GPRS850	1 Tx Slots	824.2	30.88	29.44	1.44	-9	20.44
		836.6	30.47	29.60	0.86	-9	20.60
		848.8	31.34	29.61	1.73	-9	20.61
	2 Tx Slots	824.2	29.72	29.09	0.63	-6	23.09
		836.6	31.21	29.73	1.48	-6	23.73
		848.8	29.97	29.11	0.86	-6	23.11
	3 Tx Slots	824.2	31.24	29.77	1.47	-4.26	25.51
		836.6	30.78	29.24	1.55	-4.26	24.98
		848.8	31.21	29.52	1.69	-4.26	25.26
	4 Tx Slots	824.2	31.23	29.98	1.24	-3	26.98
		836.6	30.89	29.52	1.37	-3	26.52
		848.8	30.57	29.43	1.15	-3	26.43
EPRS850	1 Tx Slots	824.2	27.77	26.73	1.04	-9	17.73
		836.6	27.56	26.78	0.79	-9	17.78
		848.8	27.27	26.51	0.76	-9	17.51
	2 Tx Slots	824.2	27.26	26.69	0.56	-6	20.69
		836.6	26.70	26.31	0.39	-6	20.31
		848.8	26.92	26.73	0.19	-6	20.73
	3 Tx Slots	824.2	28.21	26.82	1.39	-4.26	22.56
		836.6	26.10	25.61	0.49	-4.26	21.35
		848.8	27.38	26.53	0.85	-4.26	22.27
	4 Tx Slots	824.2	26.63	26.17	0.46	-3	23.17
		836.6	27.23	26.30	0.92	-3	23.30
		848.8	27.82	26.46	1.36	-3	23.46

PCS1900 Band:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAP	Duty cycle Factor(dB)	Frame Power(dBm)
GSM1900		1850.2	**33.77**	**32.52**	1.25	-9	23.52
		1880	33.10	32.46	0.65	-9	23.46
		1909.8	33.04	32.36	0.67	-9	23.36
GPRS1900	1 Tx Slots	1850.2	30.76	29.91	0.85	-9	20.91
		1880	30.68	29.71	0.97	-9	20.71
		1909.8	31.03	29.51	1.52	-9	20.51
	2 Tx Slots	1850.2	30.88	29.23	1.65	-6	23.23
		1880	29.90	29.35	0.55	-6	23.35
		1909.8	30.32	29.47	0.85	-6	23.47
	3 Tx Slots	1850.2	29.10	29.01	0.09	-4.26	24.75
		1880	29.94	29.31	0.63	-4.26	25.05
		1909.8	30.16	29.22	0.94	-4.26	24.96
	4 Tx Slots	1850.2	30.42	29.42	1.00	-3	26.42
		1880	30.45	29.50	0.95	-3	26.50
		1909.8	29.62	29.06	0.57	-3	26.06
EGPRS1900	1 Tx Slots	1850.2	27.36	26.25	1.11	-9	17.25
		1880	27.73	26.49	1.24	-9	17.49
		1909.8	27.29	26.30	0.99	-9	17.30
	2 Tx Slots	1850.2	27.22	26.31	0.92	-6	20.31
		1880	27.10	26.05	1.05	-6	20.05
		1909.8	27.31	26.40	0.91	-6	20.40
	3 Tx Slots	1850.2	26.68	25.84	0.84	-4.26	21.58
		1880	28.47	26.68	1.79	-4.26	22.42
		1909.8	27.10	26.45	0.65	-4.26	22.19
	4 Tx Slots	1850.2	26.79	26.23	0.56	-3	23.23
		1880	27.48	26.59	0.89	-3	23.59
		1909.8	27.27	26.94	0.33	-3	23.94

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

Radiation power test

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

Radiated Power (ERP) for GSM850

Mode	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss	Antenna Gain	Correction (dB)	ERP (Peak) (dBm)	Polarization
GSM850	824.2	3.40	31.23	1.02	0.94	2.15	**32.40**	H
	836.6	3.06	31.23	1.02	0.94	2.15	32.06	H
	848.8	2.70	31.23	1.02	0.94	2.15	31.70	H

Radiated Power (EIRP) for PCS1900

Mode	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss	Antenna Gain	Correction (dB)	ERP (Peak) (dBm)	Polarization
PCS1900	1850.2	3.49	31.23	1.02	0.71	2.15	**32.26**	H
	1880	2.86	31.23	1.02	0.71	2.15	31.63	H
	1909.8	3.37	31.23	1.02	0.71	2.15	32.14	H

ERP or E.I.R.P = PMea + Amplifier Gain – Path Loss + Antenna Gain –Correction Factor

Note: Each channel is scanned 10 times, and the peak value of each channel is recorded.

LTE power is filtered as the worst mode data

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

Mode	bandwidth	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
E-UTRA Band 2	1.4	QPSK	1880	-9.50	31.23	1.02	0.71	0	**21.42**	H
		Q16	1880	-10.31	31.23	1.02	0.71	0	20.61	H
	3	QPSK	1880	-9.42	31.23	1.02	0.71	0	21.50	H
		Q16	1880	-9.95	31.23	1.02	0.71	0	20.97	H
	5	QPSK	1880	-10.34	31.23	1.02	0.71	0	20.58	H
		Q16	1880	-9.60	31.23	1.02	0.71	0	21.32	H
	10	QPSK	1880	-10.27	31.23	1.02	0.71	0	20.65	H
		Q16	1880	-10.03	31.23	1.02	0.71	0	20.89	H
	15	QPSK	1880	-9.90	31.23	1.02	0.71	0	21.02	H
		Q16	1880	-10.11	31.23	1.02	0.71	0	20.81	H
	20	QPSK	1880	-9.84	31.23	1.02	0.71	0	21.08	H
		Q16	1880	-9.90	31.23	1.02	0.71	0	21.02	H

Radiated Power (E.I.R.P) for E-UTRA Band 4

Mode	bandwidth	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
E-UTRA Band 4	1.4	QPSK	1732.5	-9.07	31.23	1.02	0.11	0	21.25	H
		Q16	1732.5	-8.56	31.23	1.02	0.11	0	**21.76**	H
	3	QPSK	1732.5	-8.95	31.23	1.02	0.11	0	21.37	H
		Q16	1732.5	-8.87	31.23	1.02	0.11	0	21.45	H
	5	QPSK	1732.5	-9.00	31.23	1.02	0.11	0	21.32	H
		Q16	1732.5	-8.91	31.23	1.02	0.11	0	21.41	H
	10	QPSK	1732.5	-8.93	31.23	1.02	0.11	0	21.39	H
		Q16	1732.5	-9.34	31.23	1.02	0.11	0	20.98	H
	15	QPSK	1732.5	-9.35	31.23	1.02	0.11	0	20.97	H
		Q16	1732.5	-8.56	31.23	1.02	0.11	0	21.76	H
	20	QPSK	1732.5	-8.74	31.23	1.02	0.11	0	21.58	H
		Q16	1732.5	-9.30	31.23	1.02	0.11	0	21.02	H

Radiated Power (ERP) for E-UTRA Band 5

Mode	Band width (MHz)	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
E-UTRA Band 5	1.4	QPSK	836.5	-11.59	31.23	-2.8	0.94	0	23.38	H
		Q16	836.5	-11.99	31.23	-2.8	0.94	0	22.98	H
	3	QPSK	836.5	-12.03	31.23	-2.8	0.94	0	22.94	H
		Q16	836.5	-11.22	31.23	-2.8	0.94	0	**23.75**	H
	5	QPSK	836.5	-11.55	31.23	-2.8	0.94	0	23.42	H
		Q16	836.5	-11.90	31.23	-2.8	0.94	0	23.07	H
	10	QPSK	836.5	-12.03	31.23	-2.8	0.94	0	22.94	H
		Q16	836.5	-12.08	31.23	-2.8	0.94	0	22.89	H

Radiated Power (ERP) for E-UTRA Band 12

Mode	bandwidth	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	ERP (Peak) (dBm)	Polarization
E-UTRA Band 12	1.4	QPSK	707.5	-9.74	31.23	-2.8	1.03	0	25.32	H
		Q16	707.5	-9.73	31.23	-2.8	1.03	0	25.33	H
	3	QPSK	707.5	-9.87	31.23	-2.8	1.03	0	25.19	H
		Q16	707.5	-9.95	31.23	-2.8	1.03	0	25.11	H
	5	QPSK	707.5	-9.43	31.23	-2.8	1.03	0	**25.63**	H
		Q16	707.5	-9.75	31.23	-2.8	1.03	0	25.31	H
	10	QPSK	707.5	-9.74	31.23	-2.8	1.03	0	25.32	H
		Q16	707.5	-10.24	31.23	-2.8	1.03	0	24.82	H

Radiated Power (ERP) for E-UTRA Band 17

Mode	bandwidth	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	ERP (Peak) (dBm)	Polarization
E-UTRA Band 17	5	QPSK	710	-9.04	31.23	1.02	1.03	0	22.20	H
		Q16	710	-8.99	31.23	1.02	1.03	0	22.25	H
	10	QPSK	710	-8.73	31.23	1.02	1.03	0	**22.51**	H
		Q16	710	-9.04	31.23	1.02	1.03	0	22.20	H

Radiated Power (EIRP) for E-UTRA Band 41

Mode	Band width (MHz)	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
E-UTRA Band 41	5	QPSK	2605	-14.46	31.23	-1.3	2.77	0	20.84	H
		Q16	2605	-14.19	31.23	-1.3	2.77	0	21.11	H
	10	QPSK	2605	-13.95	31.23	-1.3	2.77	0	21.35	H
		Q16	2605	-13.90	31.23	-1.3	2.77	0	21.40	H
	15	QPSK	2605	-14.31	31.23	-1.3	2.77	0	20.99	H
		Q16	2605	-13.70	31.23	-1.3	2.77	0	21.60	H
	20	QPSK	2605	-13.55	31.23	-1.3	2.77	0	**21.75**	H
		Q16	2605	-13.99	31.23	-1.3	2.77	0	21.31	H

Radiated Power (E.I.R.P) for E-UTRA Band 66

Mode	bandwidth	Modulation	Frequency (MHz)	P_{Mea} (dBm)	Amplifier Gain (dBi)	Path Loss (dB)	Antenna Gain (dB)	Correction (dB)	E.I.R.P. (Peak) (dBm)	Polarization
E-UTRA Band 66	1.4	QPSK	1732.5	-10.69	31.23	1.02	0.18	0	19.70	H
		Q16	1732.5	-9.91	31.23	1.02	0.18	0	20.48	H
	3	QPSK	1732.5	-10.12	31.23	1.02	0.18	0	20.27	H
		Q16	1732.5	-10.50	31.23	1.02	0.18	0	19.89	H
	5	QPSK	1732.5	-10.32	31.23	1.02	0.18	0	20.07	H
		Q16	1732.5	-9.91	31.23	1.02	0.18	0	20.48	H
	10	QPSK	1732.5	-10.71	31.23	1.02	0.18	0	19.68	H
		Q16	1732.5	-9.96	31.23	1.02	0.18	0	20.43	H
	15	QPSK	1732.5	-10.79	31.23	1.02	0.18	0	19.60	H
		Q16	1732.5	-10.27	31.23	1.02	0.18	0	20.12	H
	20	QPSK	1732.5	-10.11	31.23	1.02	0.18	0	20.28	H
		Q16	1732.5	-10.79	31.23	1.02	0.18	0	19.60	H

ERP or E.I.R.P = PMea + Amplifier Gain – Path Loss + Antenna Gain –Correction Factor

Note: Each channel is scanned 10 times, the worst data 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

E-UTRA BANDS

Band 2:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1.4	18607	1850.7	QPSK	6	LOW	Pass
1.4	18607	1850.7	Q16	6	LOW	Pass
1.4	18900	1880	QPSK	6	LOW	Pass
1.4	18900	1880	Q16	6	LOW	Pass
1.4	19193	1909.3	QPSK	6	LOW	Pass
1.4	19193	1909.3	Q16	6	LOW	Pass
3	18615	1851.5	QPSK	15	LOW	Pass
3	18615	1851.5	Q16	15	LOW	Pass
3	18900	1880	QPSK	15	LOW	Pass
3	18900	1880	Q16	15	LOW	Pass
3	19185	1908.5	QPSK	15	LOW	Pass
3	19185	1908.5	Q16	15	LOW	Pass
5	18625	1852.5	QPSK	25	LOW	Pass
5	18625	1852.5	Q16	25	LOW	Pass
5	18900	1880	QPSK	25	LOW	Pass
5	18900	1880	Q16	25	LOW	Pass
5	19175	1907.5	QPSK	25	LOW	Pass
5	19175	1907.5	Q16	25	LOW	Pass
10	18650	1855	QPSK	50	LOW	Pass
10	18650	1855	Q16	50	LOW	Pass
10	18900	1880	QPSK	50	LOW	Pass
10	18900	1880	Q16	50	LOW	Pass
10	19150	1905	QPSK	50	LOW	Pass
10	19150	1905	Q16	50	LOW	Pass
15	18675	1857.5	QPSK	75	LOW	Pass
15	18675	1857.5	Q16	75	LOW	Pass
15	18900	1880	QPSK	75	LOW	Pass
15	18900	1880	Q16	75	LOW	Pass
15	19125	1902.5	QPSK	75	LOW	Pass
15	19125	1902.5	Q16	75	LOW	Pass
20	18700	1860	QPSK	100	LOW	Pass
20	18700	1860	Q16	100	LOW	Pass
20	18900	1880	QPSK	100	LOW	Pass
20	18900	1880	Q16	100	LOW	Pass
20	19100	1900	QPSK	100	LOW	Pass
20	19100	1900	Q16	100	LOW	Pass

Band 4:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1.4	19957	1710.7	QPSK	6	LOW	Pass
1.4	19957	1710.7	Q16	6	LOW	Pass
1.4	20393	1754.3	QPSK	6	LOW	Pass
1.4	20393	1754.3	Q16	6	LOW	Pass
1.4	20175	1732.5	QPSK	6	LOW	Pass
1.4	20175	1732.5	Q16	6	LOW	Pass
3	19965	1711.5	QPSK	15	LOW	Pass
3	19965	1711.5	Q16	15	LOW	Pass

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
3	20385	1753.5	QPSK	15	LOW	Pass
3	20385	1753.5	Q16	15	LOW	Pass
3	20175	1732.5	QPSK	15	LOW	Pass
3	20175	1732.5	Q16	15	LOW	Pass
5	19975	1712.5	QPSK	25	LOW	Pass
5	19975	1712.5	Q16	25	LOW	Pass
5	20375	1752.5	QPSK	25	LOW	Pass
5	20375	1752.5	Q16	25	LOW	Pass
5	20175	1732.5	QPSK	25	LOW	Pass
5	20175	1732.5	Q16	25	LOW	Pass
10	20000	1715	QPSK	50	LOW	Pass
10	20000	1715	Q16	50	LOW	Pass
10	20350	1750	QPSK	50	LOW	Pass
10	20350	1750	Q16	50	LOW	Pass
10	20175	1732.5	QPSK	50	LOW	Pass
10	20175	1732.5	Q16	50	LOW	Pass
15	20025	1717.5	QPSK	75	LOW	Pass
15	20025	1717.5	Q16	75	LOW	Pass
15	20325	1747.5	QPSK	75	LOW	Pass
15	20325	1747.5	Q16	75	LOW	Pass
15	20175	1732.5	QPSK	75	LOW	Pass
15	20175	1732.5	Q16	75	LOW	Pass
20	20050	1720	QPSK	100	LOW	Pass
20	20050	1720	Q16	100	LOW	Pass
20	20300	1745	QPSK	100	LOW	Pass
20	20300	1745	Q16	100	LOW	Pass
20	20175	1732.5	QPSK	100	LOW	Pass
20	20175	1732.5	Q16	100	LOW	Pass

Band 5:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1.4	20407	824.7	QPSK	6	LOW	Pass
1.4	20407	824.7	Q16	6	LOW	Pass
1.4	20525	836.5	QPSK	6	LOW	Pass
1.4	20525	836.5	Q16	6	LOW	Pass
1.4	20643	848.3	QPSK	6	LOW	Pass
1.4	20643	848.3	Q16	6	LOW	Pass
3	20415	825.5	QPSK	15	LOW	Pass
3	20415	825.5	Q16	15	LOW	Pass
3	20525	836.5	QPSK	15	LOW	Pass
3	20525	836.5	Q16	15	LOW	Pass
3	20635	847.5	QPSK	15	LOW	Pass
3	20635	847.5	Q16	15	LOW	Pass
5	20425	826.5	QPSK	25	LOW	Pass
5	20425	826.5	Q16	25	LOW	Pass
5	20525	836.5	QPSK	25	LOW	Pass
5	20525	836.5	Q16	25	LOW	Pass
5	20625	846.5	QPSK	25	LOW	Pass
5	20625	846.5	Q16	25	LOW	Pass

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
10	20450	829	QPSK	50	LOW	Pass
10	20450	829	Q16	50	LOW	Pass
10	20525	836.5	QPSK	50	LOW	Pass
10	20525	836.5	Q16	50	LOW	Pass
10	20600	844	QPSK	50	LOW	Pass
10	20600	844	Q16	50	LOW	Pass

Band 12:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1.4	23017	699.7	QPSK	6	LOW	Pass
1.4	23017	699.7	Q16	6	LOW	Pass
1.4	23095	707.5	QPSK	6	LOW	Pass
1.4	23095	707.5	Q16	6	LOW	Pass
1.4	23173	715.3	QPSK	6	LOW	Pass
1.4	23173	715.3	Q16	6	LOW	Pass
3	23025	700.5	QPSK	15	LOW	Pass
3	23025	700.5	Q16	15	LOW	Pass
3	23095	707.5	QPSK	15	LOW	Pass
3	23095	707.5	Q16	15	LOW	Pass
3	23165	714.5	QPSK	15	LOW	Pass
3	23165	714.5	Q16	15	LOW	Pass
5	23035	701.5	QPSK	25	LOW	Pass
5	23035	701.5	Q16	25	LOW	Pass
5	23095	707.5	QPSK	25	LOW	Pass
5	23095	707.5	Q16	25	LOW	Pass
5	23155	713.5	QPSK	25	LOW	Pass
5	23155	713.5	Q16	25	LOW	Pass
10	23060	704	QPSK	50	LOW	Pass
10	23060	704	Q16	50	LOW	Pass
10	23095	707.5	QPSK	50	LOW	Pass
10	23095	707.5	Q16	50	LOW	Pass
10	23130	711	QPSK	50	LOW	Pass
10	23130	711	Q16	50	LOW	Pass

Band 17:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
5	23755	706.5	QPSK	25	LOW	Pass
5	23755	706.5	Q16	25	LOW	Pass
5	23790	710	QPSK	25	LOW	Pass
5	23790	710	Q16	25	LOW	Pass
5	23825	713.5	QPSK	25	LOW	Pass
5	23825	713.5	Q16	25	LOW	Pass
10	23780	709	QPSK	50	LOW	Pass
10	23780	709	Q16	50	LOW	Pass
10	23790	710	QPSK	50	LOW	Pass
10	23790	710	Q16	50	LOW	Pass
10	23800	711	QPSK	50	LOW	Pass

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
10	23800	711	Q16	50	LOW	Pass

Band 41:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
5	40265	2557.5	QPSK	25	LOW	Pass
5	40265	2557.5	Q16	25	LOW	Pass
5	40740	2605	QPSK	25	LOW	Pass
5	40740	2605	Q16	25	LOW	Pass
5	41215	2652.5	QPSK	25	LOW	Pass
5	41215	2652.5	Q16	25	LOW	Pass
10	40290	2560	QPSK	50	LOW	Pass
10	40290	2560	Q16	50	LOW	Pass
10	40740	2605	QPSK	50	LOW	Pass
10	40740	2605	Q16	50	LOW	Pass
10	41190	2650	QPSK	50	LOW	Pass
10	41190	2650	Q16	50	LOW	Pass
15	40315	2562.5	QPSK	75	LOW	Pass
15	40315	2562.5	Q16	75	LOW	Pass
15	40740	2605	QPSK	75	LOW	Pass
15	40740	2605	Q16	75	LOW	Pass
15	41165	2647.5	QPSK	75	LOW	Pass
15	41165	2647.5	Q16	75	LOW	Pass
20	40340	2565	QPSK	100	LOW	Pass
20	40340	2565	Q16	100	LOW	Pass
20	40740	2605	QPSK	100	LOW	Pass
20	40740	2605	Q16	100	LOW	Pass
20	41140	2645	QPSK	100	LOW	Pass
20	41140	2645	Q16	100	LOW	Pass

Band 66:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1.4	131979	1710.7	QPSK	6	LOW	Pass
1.4	131979	1710.7	Q16	6	LOW	Pass
1.4	132322	1745	QPSK	6	LOW	Pass
1.4	132322	1745	Q16	6	LOW	Pass
1.4	132665	1779.3	QPSK	6	LOW	Pass
1.4	132665	1779.3	Q16	6	LOW	Pass
3	131987	1711.5	QPSK	15	LOW	Pass
3	131987	1711.5	Q16	15	LOW	Pass
3	132322	1745	QPSK	15	LOW	Pass
3	132322	1745	Q16	15	LOW	Pass
3	132657	1778.5	QPSK	15	LOW	Pass
3	132657	1778.5	Q16	15	LOW	Pass
5	131997	1712.5	QPSK	25	LOW	Pass
5	131997	1712.5	Q16	25	LOW	Pass
5	132322	1745	QPSK	25	LOW	Pass
5	132322	1745	Q16	25	LOW	Pass
5	132647	1777.5	QPSK	25	LOW	Pass

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
5	132647	1777.5	Q16	25	LOW	Pass
10	132022	1715	QPSK	50	LOW	Pass
10	132022	1715	Q16	50	LOW	Pass
10	132322	1745	QPSK	50	LOW	Pass
10	132322	1745	Q16	50	LOW	Pass
10	132622	1775	QPSK	50	LOW	Pass
10	132622	1775	Q16	50	LOW	Pass
15	132047	1717.5	QPSK	75	LOW	Pass
15	132047	1717.5	Q16	75	LOW	Pass
15	132322	1745	QPSK	75	LOW	Pass
15	132322	1745	Q16	75	LOW	Pass
15	132597	1772.5	QPSK	75	LOW	Pass
15	132597	1772.5	Q16	75	LOW	Pass
20	132072	1720	QPSK	100	LOW	Pass
20	132072	1720	Q16	100	LOW	Pass
20	132322	1745	QPSK	100	LOW	Pass
20	132322	1745	Q16	100	LOW	Pass
20	132572	1770	QPSK	100	LOW	Pass
20	132572	1770	Q16	100	LOW	Pass

Test Plot(s)

Conducted method

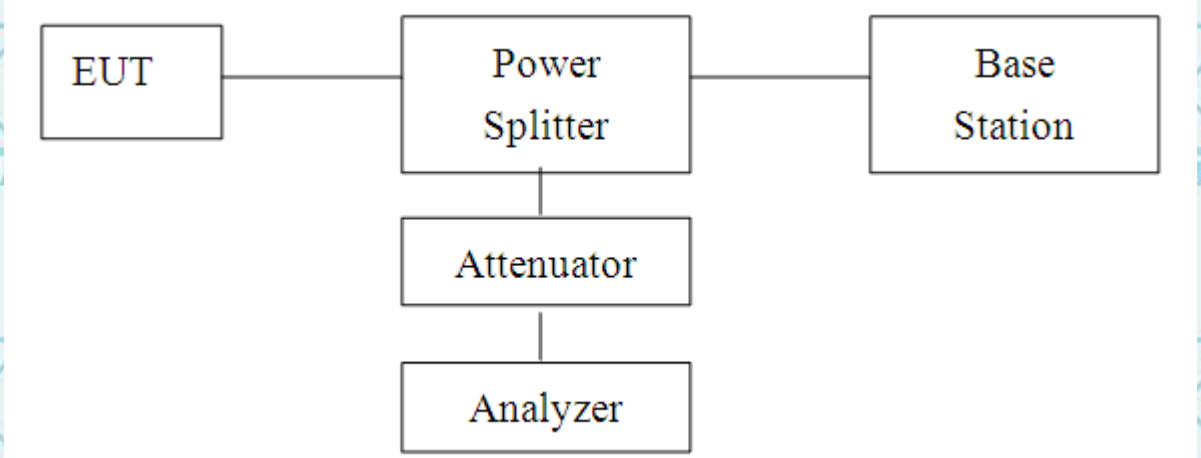
Test limit:

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:

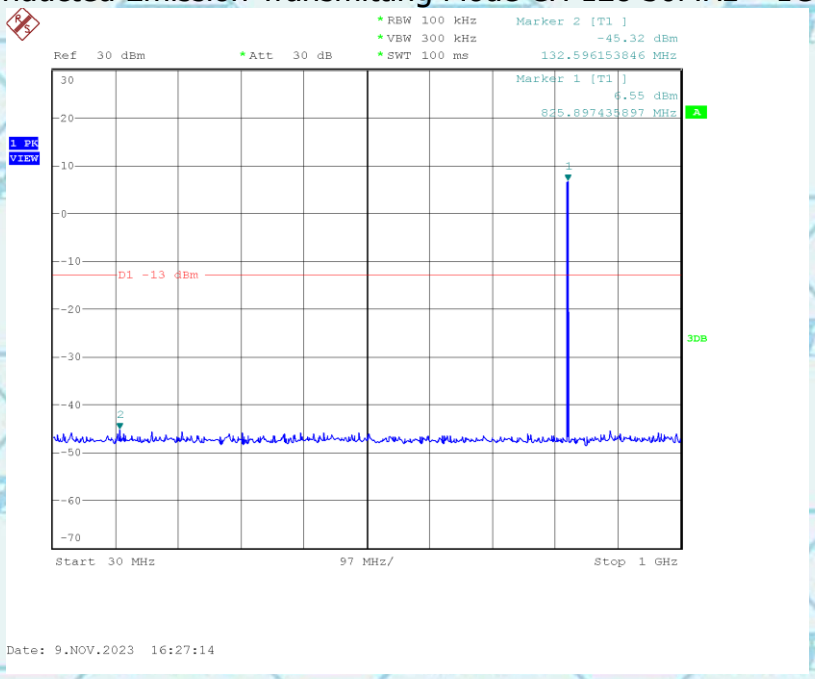
The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

Conducted Emission Test-Up:

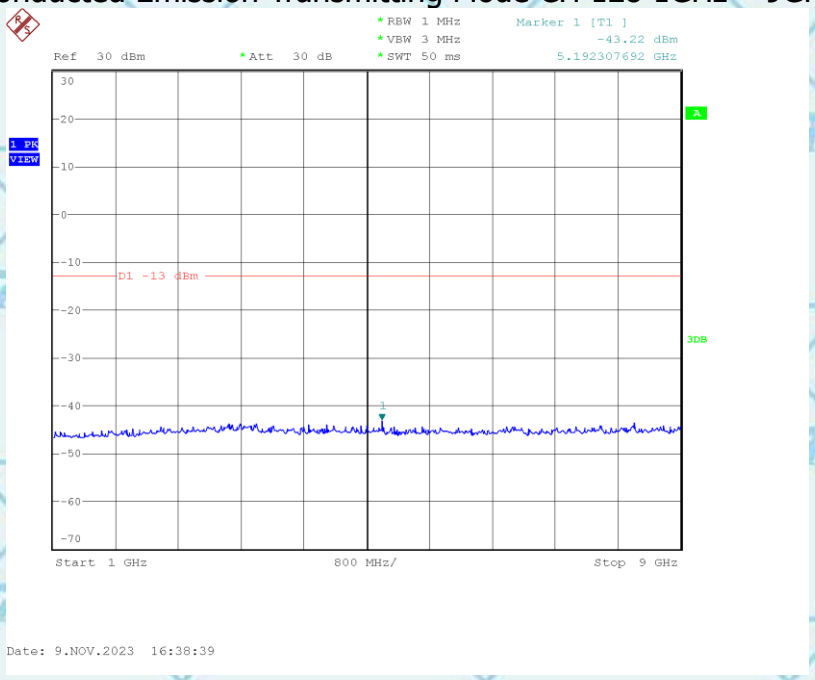


CONDUCTED EMISSION IN GSM850

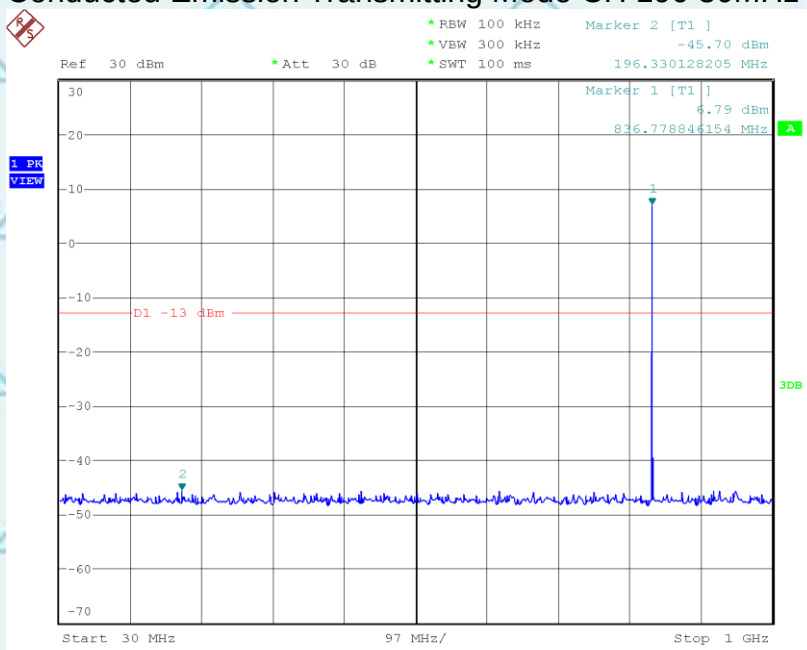
Conducted Emission Transmitting Mode CH 128 30MHz – 1GHz



Conducted Emission Transmitting Mode CH 128 1GHz – 9GHz



Conducted Emission Transmitting Mode CH 190 30MHz – 1GHz



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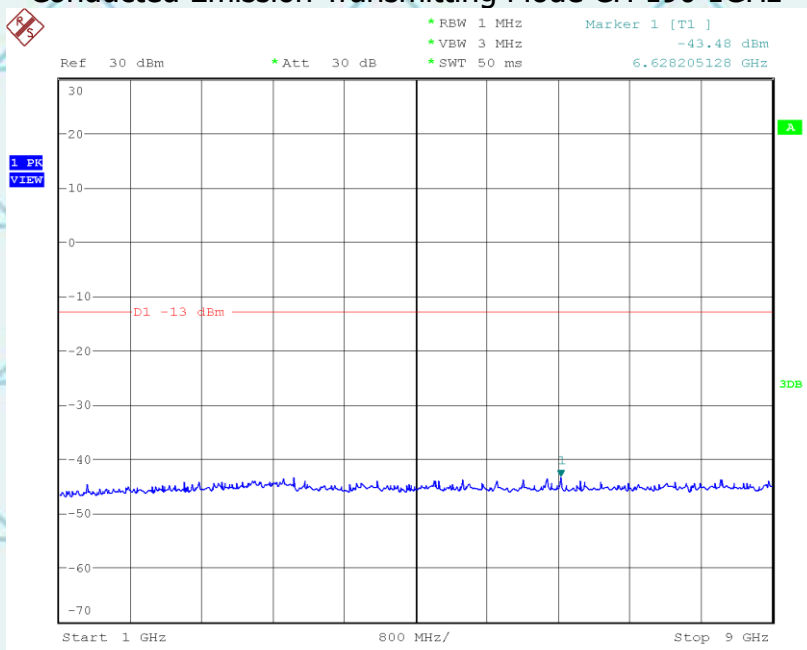
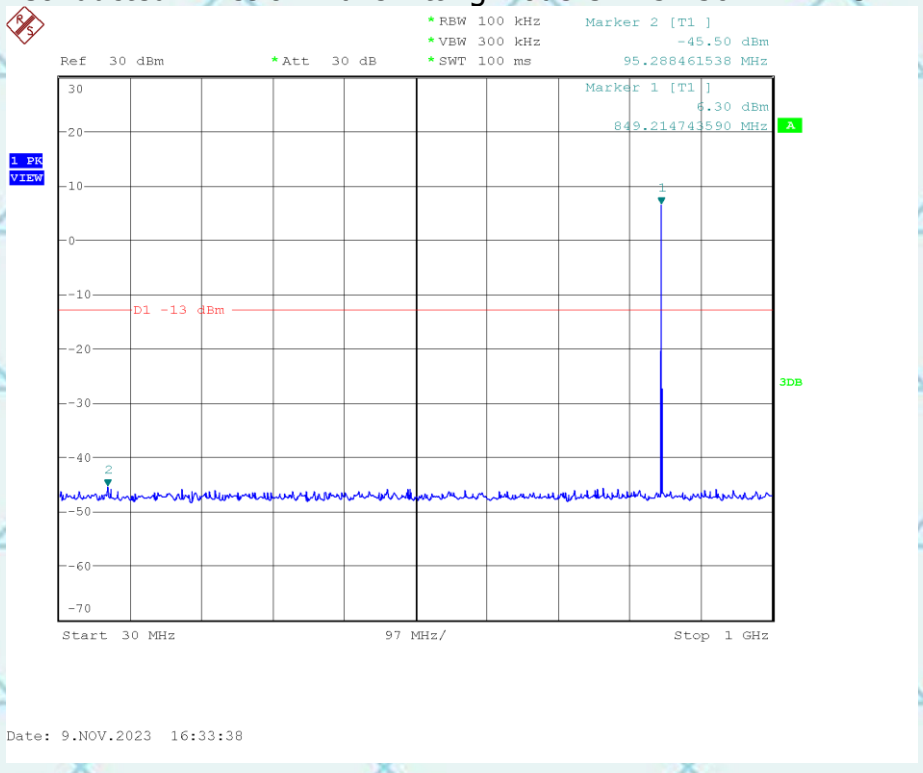
Conducted Emission Transmitting Mode CH 190 1GHz – 9GHz

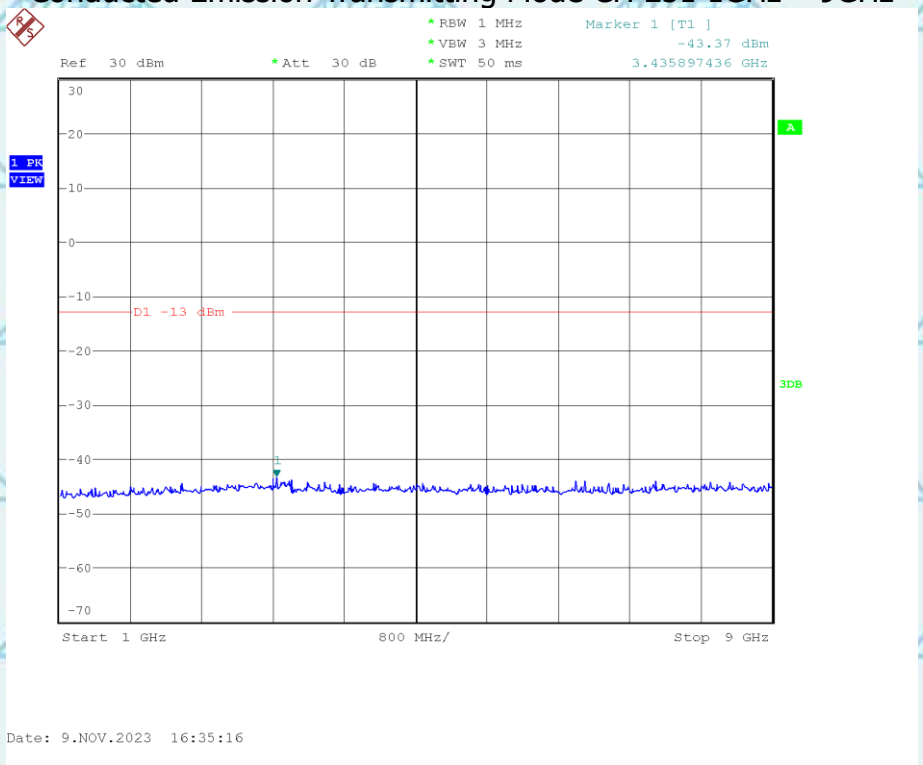


Date: 9.NOV.2023 16:37:08

Conducted Emission Transmitting Mode CH 251 30MHz – 1GHz

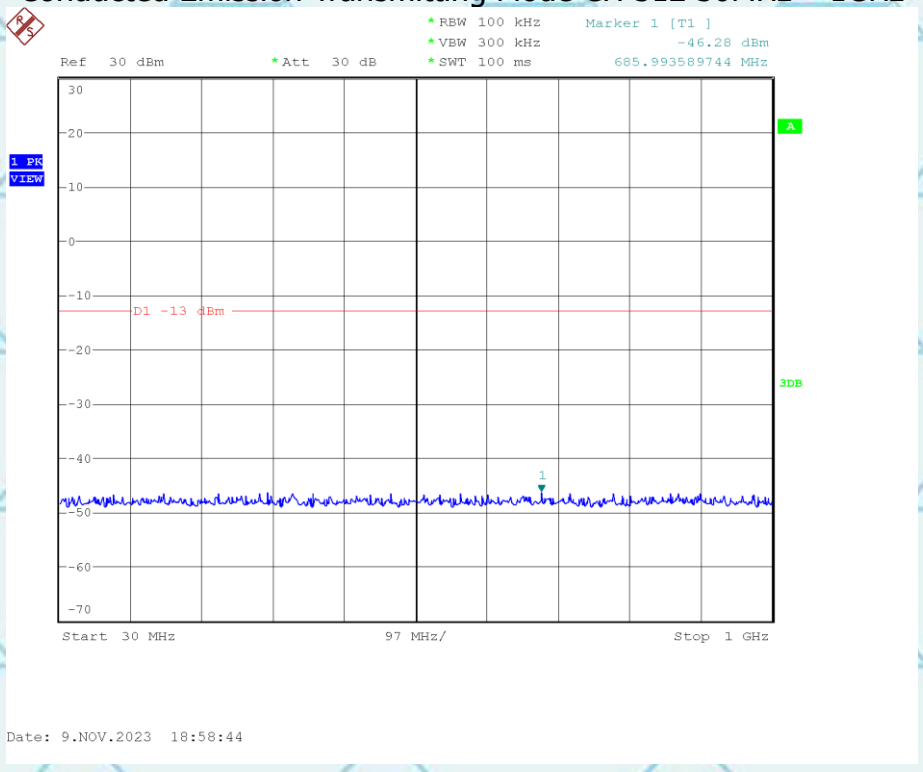


Conducted Emission Transmitting Mode CH 251 1GHz – 9GHz



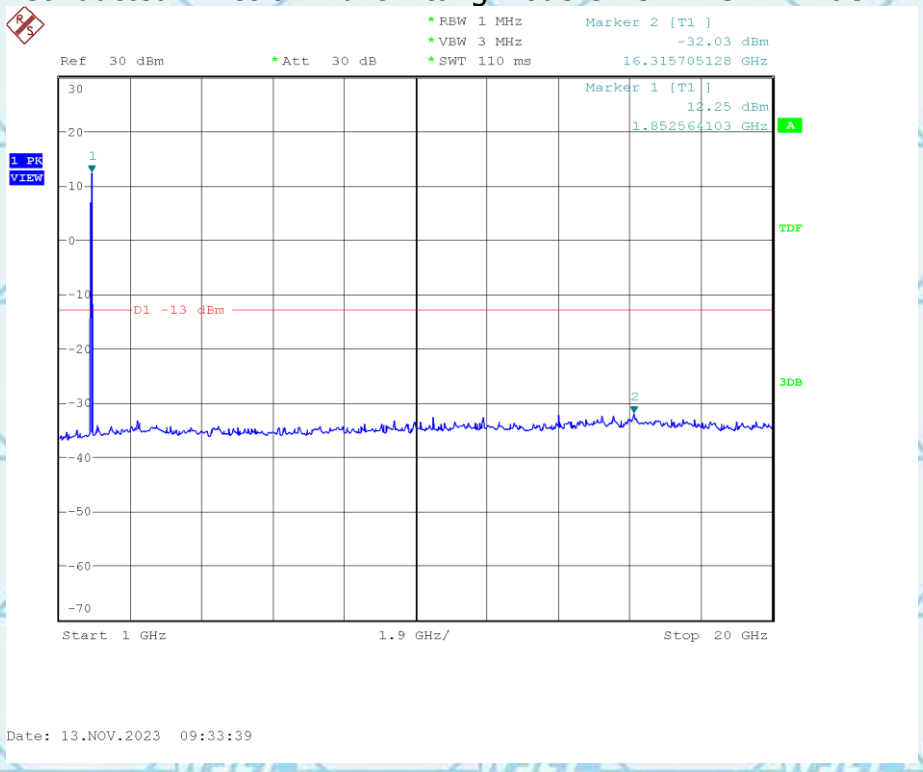
CONDUCTED EMISSION IN PCS1900

Conducted Emission Transmitting Mode CH 512 30MHz – 1GHz



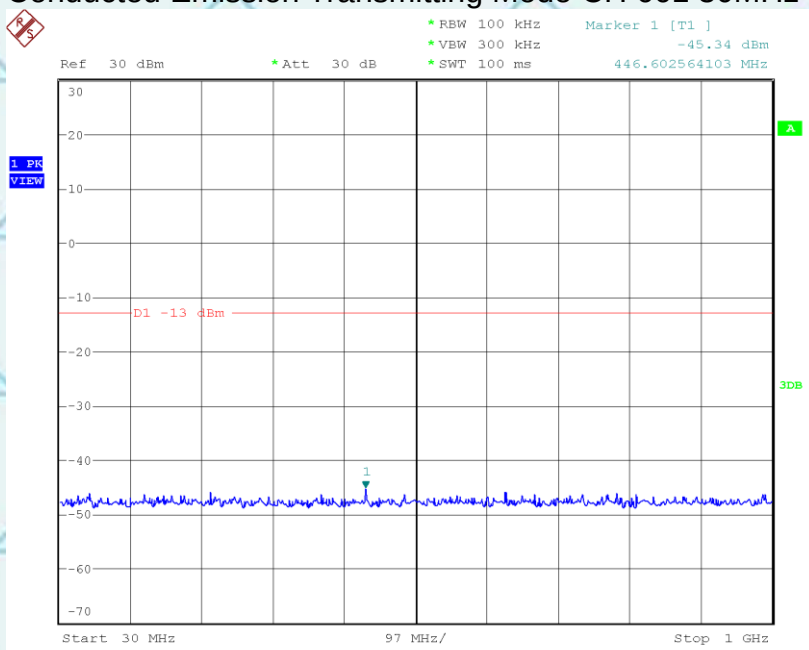
Date: 9.NOV.2023 18:58:44

Conducted Emission Transmitting Mode CH 512 1GHz – 20GHz



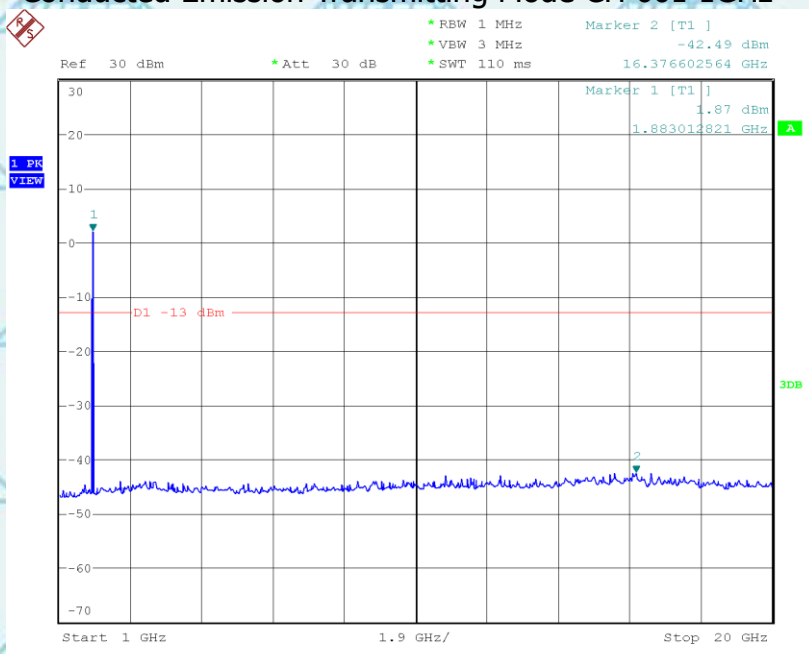
Date: 13.NOV.2023 09:33:39

Conducted Emission Transmitting Mode CH 661 30MHz – 1GHz



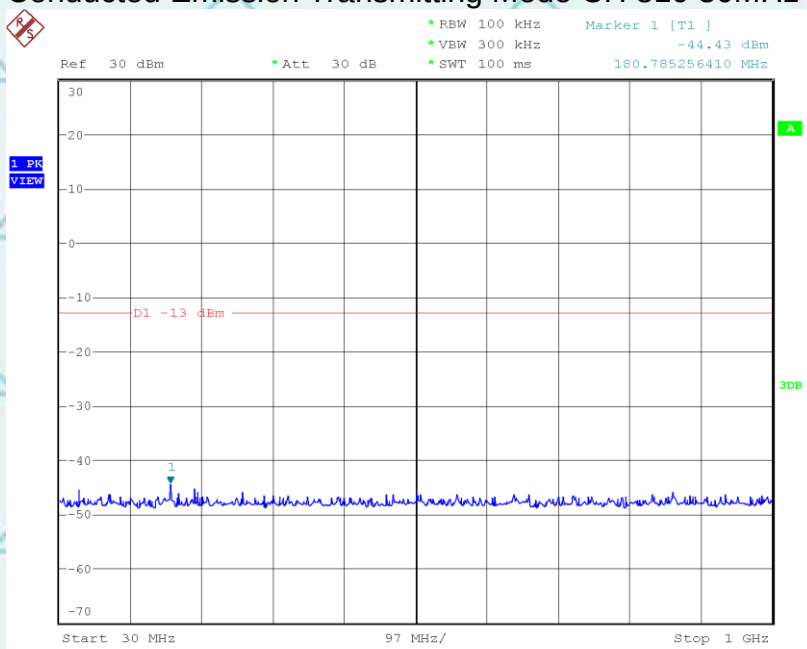
Date: 9.NOV.2023 18:57:20

Conducted Emission Transmitting Mode CH 661 1GHz – 20GHz

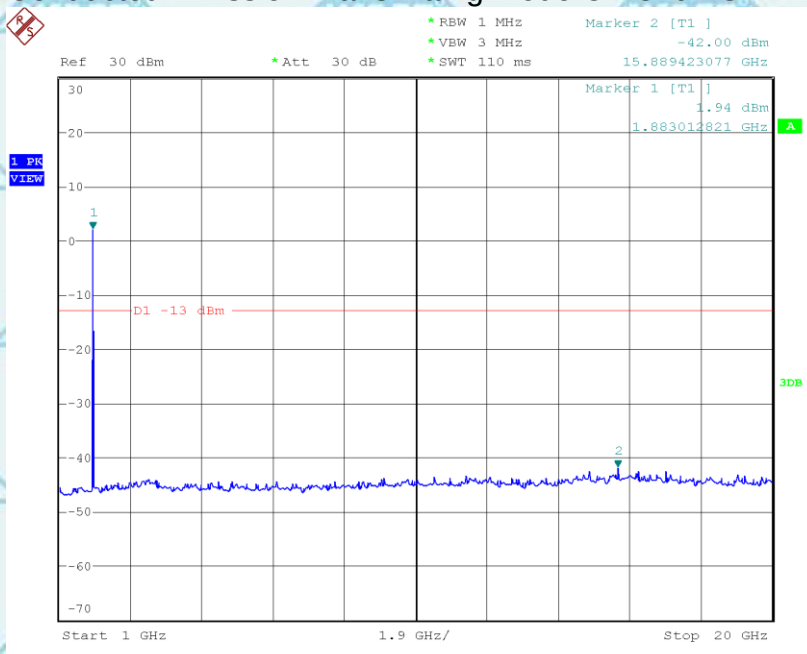


Date: 9.NOV.2023 18:51:00

Conducted Emission Transmitting Mode CH 810 30MHz – 1GHz



Conducted Emission Transmitting Mode CH 810 1GHz – 20GHz



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.

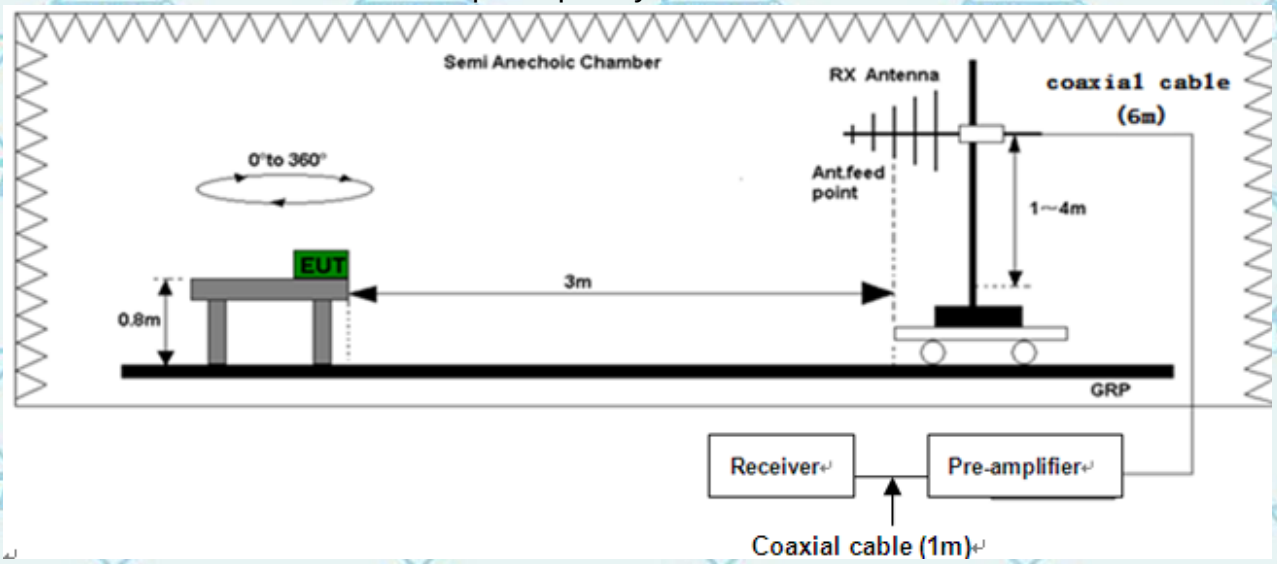
Typically, unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least X + 10log(P) dB, where P represents the transmitter power expressed in watts and X is a specified scalar value (e.g., 43). This specification can be interpreted in 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:

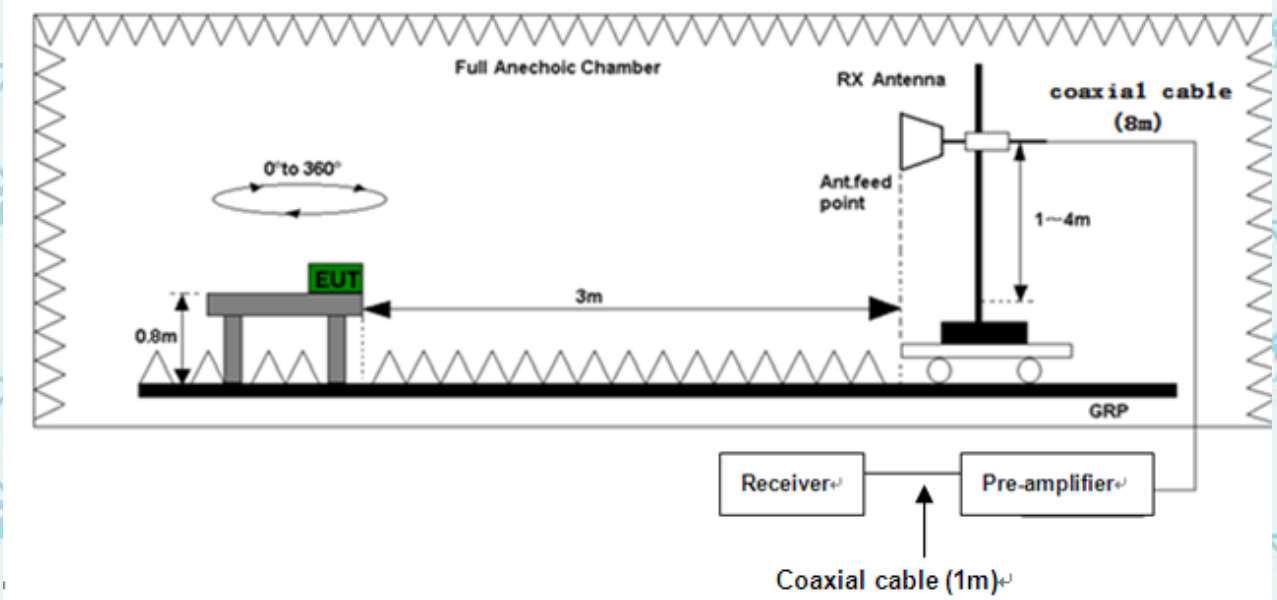
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

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

E-UTRA BANDS
This is the worst pattern data

Band 2:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	20	18700	1860	QPSK	50	LOW	Pass
2	20	18900	1880	QPSK	50	LOW	Pass
3	20	19100	1900	QPSK	50	LOW	Pass

Band 4:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	20	20050	1720	QPSK	50	LOW	Pass
2	20	20300	1745	QPSK	50	LOW	Pass
3	20	20175	1732.5	QPSK	50	LOW	Pass

Band 5:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	10	20450	829	QPSK	50	LOW	Pass
2	10	20525	836.5	QPSK	50	LOW	Pass
3	10	20600	844	QPSK	50	LOW	Pass

Band 12:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	10	23060	704	QPSK	50	LOW	Pass
2	10	23095	707.5	QPSK	50	LOW	Pass
3	10	23130	711	QPSK	50	LOW	Pass

Band 17:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	10	23780	709	QPSK	50	LOW	Pass
2	10	23790	710	QPSK	50	LOW	Pass
3	10	23800	711	QPSK	50	LOW	Pass

Band 41:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	20	40340	2565	QPSK	100	LOW	Pass
2	20	40740	2605	QPSK	100	LOW	Pass
3	20	41140	2645	QPSK	100	LOW	Pass

Band 66:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	20	132072	1720	QPSK	50	LOW	Pass
2	20	132322	1745	QPSK	50	LOW	Pass
3	20	132572	1770	QPSK	50	LOW	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 =Cable loss + Antenna gain

GSM850:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1648.4	-55.03	0.50	-55.53	-13	Horizontal
1648.4	-56.85	0.50	-57.35	-13	Vertical
2472.6	-57.54	0.50	-58.04	-13	Horizontal
2472.6	-58.37	0.50	-58.87	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1673.2	-59.99	0.50	-60.49	-13	Horizontal
1673.2	-59.45	0.50	-59.95	-13	Vertical
2509.8	-55.30	0.50	-55.80	-13	Horizontal
2509.8	-58.50	0.50	-59.00	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1697.6	-56.43	0.50	-56.93	-13	Horizontal
1697.6	-58.48	0.50	-58.98	-13	Vertical
2546.4	-59.27	0.50	-59.77	-13	Horizontal
2546.4	-60.42	0.50	-60.92	-13	Vertical

PCS1900:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3700.4	-57.15	1.48	-58.63	-13	Horizontal
3700.4	-58.90	1.48	-60.38	-13	Vertical
5550.6	-60.75	1.48	-62.23	-13	Horizontal
5550.6	-57.50	1.48	-58.98	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3760	-55.99	1.48	-57.47	-13	Horizontal
3760	-56.99	1.48	-58.47	-13	Vertical
5640	-55.75	1.48	-57.23	-13	Horizontal
5640	-58.43	1.48	-59.91	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3819.6	-55.17	1.48	-56.65	-13	Horizontal
3819.6	-58.65	1.48	-60.13	-13	Vertical
5729.4	-56.30	1.48	-57.78	-13	Horizontal
5729.4	-57.84	1.48	-59.32	-13	Vertical

E-UTRA BANDS

Band 2:

Mode 1					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3720	-59.06	1.51	-60.57	-13	Horizontal
3720	-59.04	1.51	-60.55	-13	Vertical
5580	-55.33	1.51	-56.84	-13	Horizontal
5580	-60.45	1.51	-61.96	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3760	-57.89	1.51	-59.40	-13	Horizontal
3760	-55.54	1.51	-57.05	-13	Vertical
5640	-57.15	1.51	-58.66	-13	Horizontal
5640	-56.57	1.51	-58.08	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3800	-55.35	1.51	-56.86	-13	Horizontal
3800	-59.22	1.51	-60.73	-13	Vertical
5700	-59.70	1.51	-61.21	-13	Horizontal
5700	-60.38	1.51	-61.89	-13	Vertical

Band 4:

Mode 1					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3440	-58.71	1.5	-60.21	-13	Horizontal
3440	-60.45	1.5	-61.95	-13	Vertical
5160	-58.69	1.5	-60.19	-13	Horizontal
5160	-56.04	1.5	-57.54	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3465	-57.23	1.5	-58.73	-13	Horizontal
3465	-59.55	1.5	-61.05	-13	Vertical
5197.5	-60.12	1.5	-61.62	-13	Horizontal
5197.5	-58.88	1.5	-60.38	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3490	-60.73	1.5	-62.23	-13	Horizontal
3490	-57.27	1.5	-58.77	-13	Vertical
5235	-59.60	1.5	-61.10	-13	Horizontal
5235	-59.41	1.5	-60.91	-13	Vertical

Band 5:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1658	-56.22	0.5	-56.72	-13	Horizontal
1658	-57.39	0.5	-57.89	-13	Vertical
2487	-57.74	0.5	-58.24	-13	Horizontal
2487	-55.54	0.5	-56.04	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1673	-56.69	0.5	-57.19	-13	Horizontal
1673	-59.43	0.5	-59.93	-13	Vertical
2509.5	-59.46	0.5	-59.96	-13	Horizontal
2509.5	-60.62	0.5	-61.12	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1688	-60.01	0.5	-60.51	-13	Horizontal
1688	-60.88	0.5	-61.38	-13	Vertical
2532	-59.51	0.5	-60.01	-13	Horizontal
2532	-58.62	0.5	-59.12	-13	Vertical

Band 12:

Mode 1					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1408	-58.12	1.6	-59.72	-13	Horizontal
1408	-56.47	1.6	-58.07	-13	Vertical
2112	-56.81	1.6	-58.41	-13	Horizontal
2112	-60.58	1.6	-62.18	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1415	-55.72	1.6	-57.32	-13	Horizontal
1415	-58.98	1.6	-60.58	-13	Vertical
2122.5	-57.95	1.6	-59.55	-13	Horizontal
2122.5	-59.99	1.6	-61.59	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1422	-56.97	1.6	-58.57	-13	Horizontal
1422	-60.18	1.6	-61.78	-13	Vertical
2133	-60.13	1.6	-61.73	-13	Horizontal
2133	-58.86	1.6	-60.46	-13	Vertical

Band 17:

Mode 1					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1418	-55.61	1.59	-57.20	-13	Horizontal
1418	-60.01	1.59	-61.60	-13	Vertical
2127	-57.93	1.59	-59.52	-13	Horizontal
2127	-57.92	1.59	-59.51	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1420	-60.43	1.59	-62.02	-13	Horizontal
1420	-59.58	1.59	-61.17	-13	Vertical
2130	-59.74	1.59	-61.33	-13	Horizontal
2130	-55.46	1.59	-57.05	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
1422	-55.96	1.59	-57.55	-13	Horizontal
1422	-56.43	1.59	-58.02	-13	Vertical
2133	-58.99	1.59	-60.58	-13	Horizontal
2133	-56.38	1.59	-57.97	-13	Vertical

Band 41:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5130	-57.09	2.38	-59.47	-13	Horizontal
5130	-57.16	2.38	-59.54	-13	Vertical
7695	-57.33	2.38	-59.71	-13	Horizontal
7695	-59.86	2.38	-62.24	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5210	-60.03	2.38	-62.41	-13	Horizontal
5210	-60.36	2.38	-62.74	-13	Vertical
5210	-60.76	2.38	-63.14	-13	Horizontal
5210	-59.27	2.38	-61.65	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5290	-60.74	2.38	-63.12	-13	Horizontal
5290	-58.76	2.38	-61.14	-13	Vertical
7935	-58.74	2.38	-61.12	-13	Horizontal
7935	-60.16	2.38	-62.54	-13	Vertical

Band 66:

Mode 1					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3440	-60.57	1.5	-62.07	-13	Horizontal
3440	-57.14	1.5	-58.64	-13	Vertical
5160	-60.50	1.5	-62.00	-13	Horizontal
5160	-58.47	1.5	-59.97	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3490	-58.26	1.5	-59.76	-13	Horizontal
3490	-58.71	1.5	-60.21	-13	Vertical
5235	-58.12	1.5	-59.62	-13	Horizontal
5235	-57.03	1.5	-58.53	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit（dBm）	Polarity
3540	-55.50	1.5	-57.00	-13	Horizontal
3540	-57.87	1.5	-59.37	-13	Vertical
5310	-58.60	1.5	-60.10	-13	Horizontal
5310	-56.19	1.5	-57.69	-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).

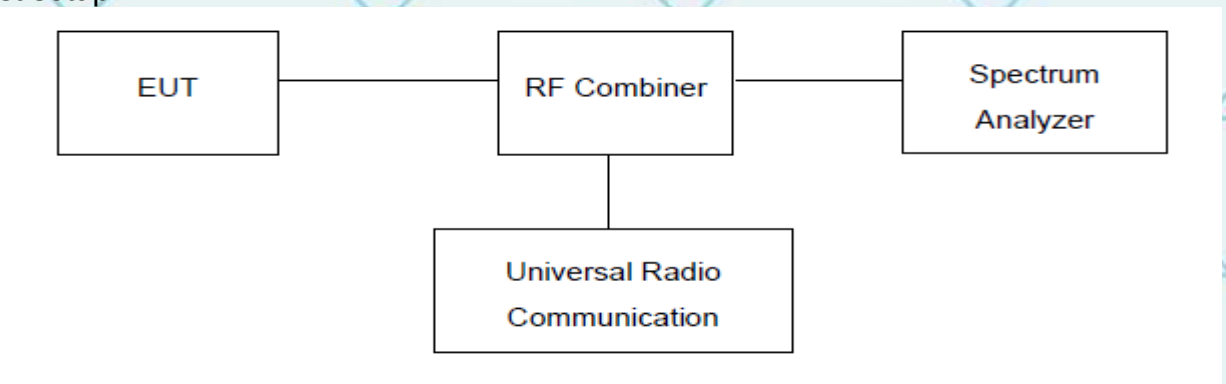
f) Set the detection mode to peak, and the trace mode to max hold.

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(Worst)

850(GSM):

Frequency	OBW(99%)	26dB BW
824.2	246.795KHz	317.308KHz
836.6	245.192KHz	309.295KHz
848.8	246.795KHz	315.705KHz

850(GPRS):

Frequency	OBW(99%)	26dB BW
824.2	245.192KHz	317.308KHz
836.6	248.397KHz	318.910KHz
848.8	245.192KHz	317.308KHz

850(EGPRS):

Frequency	OBW(99%)	26dB BW
824.2	245.192KHz	317.308KHz
836.6	245.192KHz	315.705KHz
848.8	248.397KHz	314.103KHz

1900(PCS):

Frequency	OBW(99%)	26dB BW
1850.2	243.590KHz	317.308KHz
1880	241.987KHz	301.282KHz
1909.8	243.590KHz	301.282KHz

1900(GPRS):

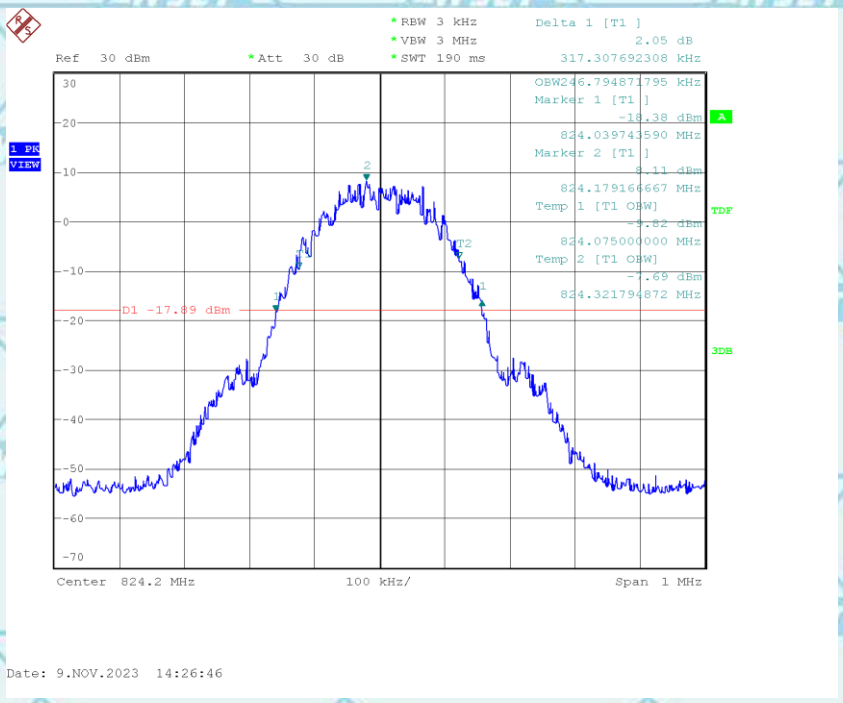
Frequency	OBW(99%)	26dB BW
1850.2	246.795KHz	315.705KHz
1880	245.192KHz	312.450KHz
1909.8	243.590KHz	317.308KHz

1900(EGPRS):

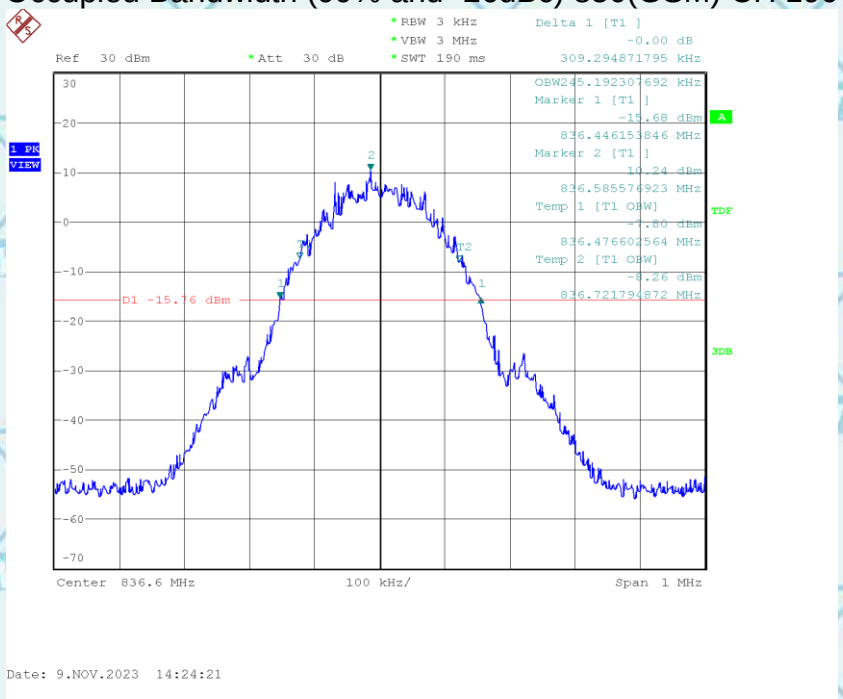
Frequency	OBW(99%)	26dB BW
1850.2	245.192KHz	314.103KHz
1880	243.590KHz	317.308KHz
1909.8	245.192KHz	315.705KHz

Test Plot (Worst)

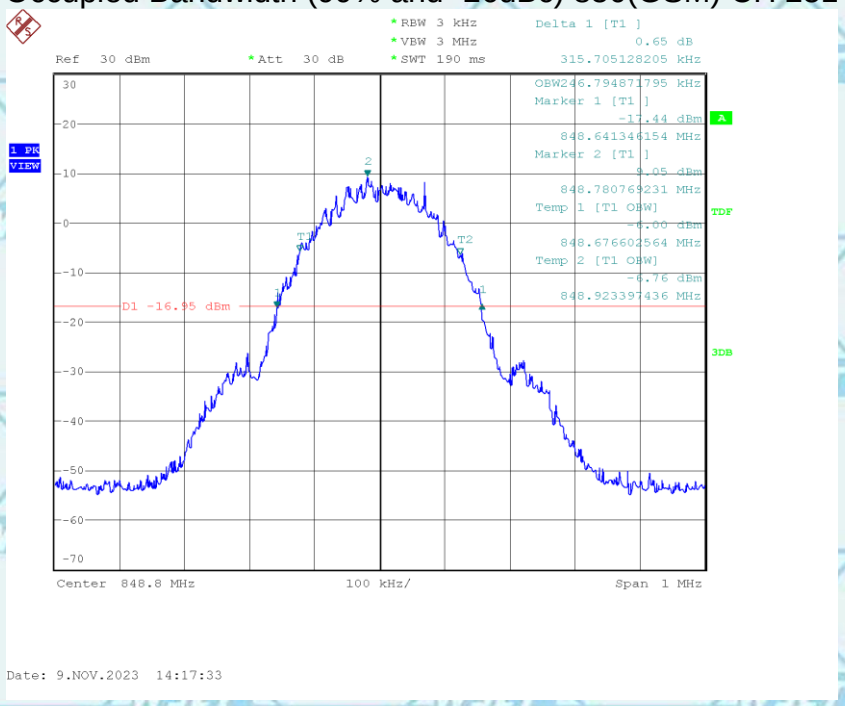
Occupied Bandwidth (99% and -26dBc) 850(GSM) CH 128



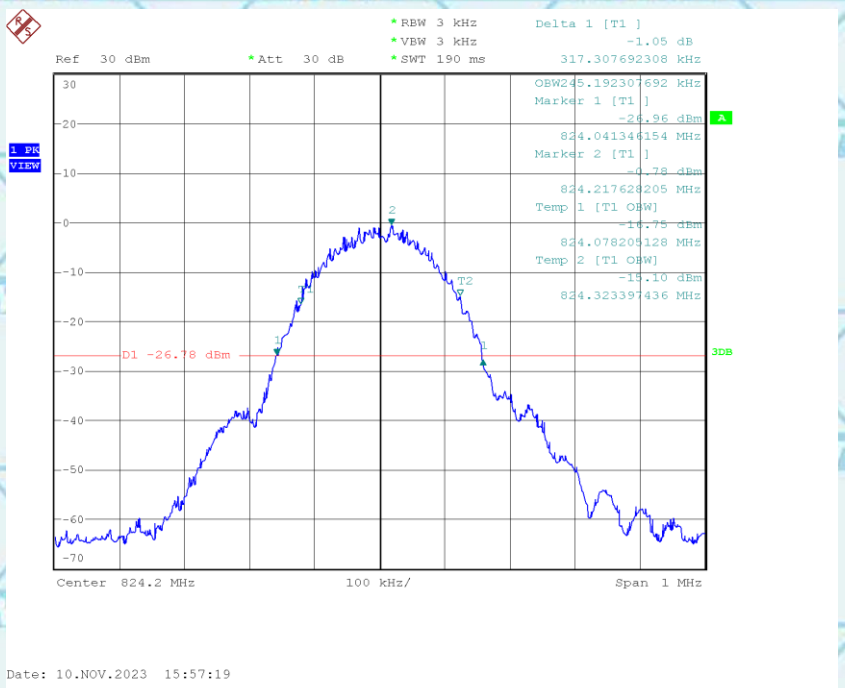
Occupied Bandwidth (99% and -26dBc) 850(GSM) CH 190



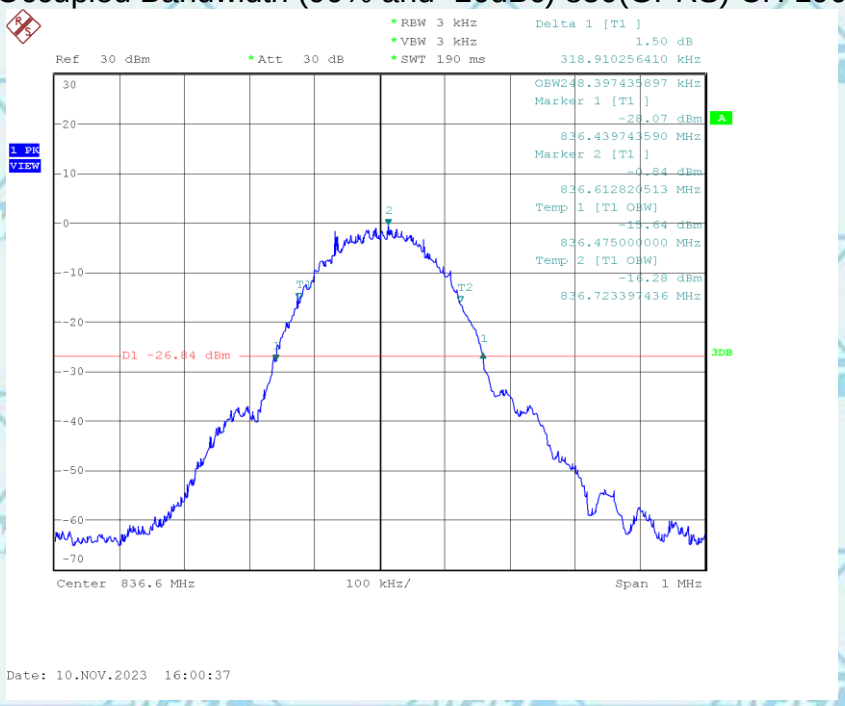
Occupied Bandwidth (99% and -26dBc) 850(GSM) CH 251



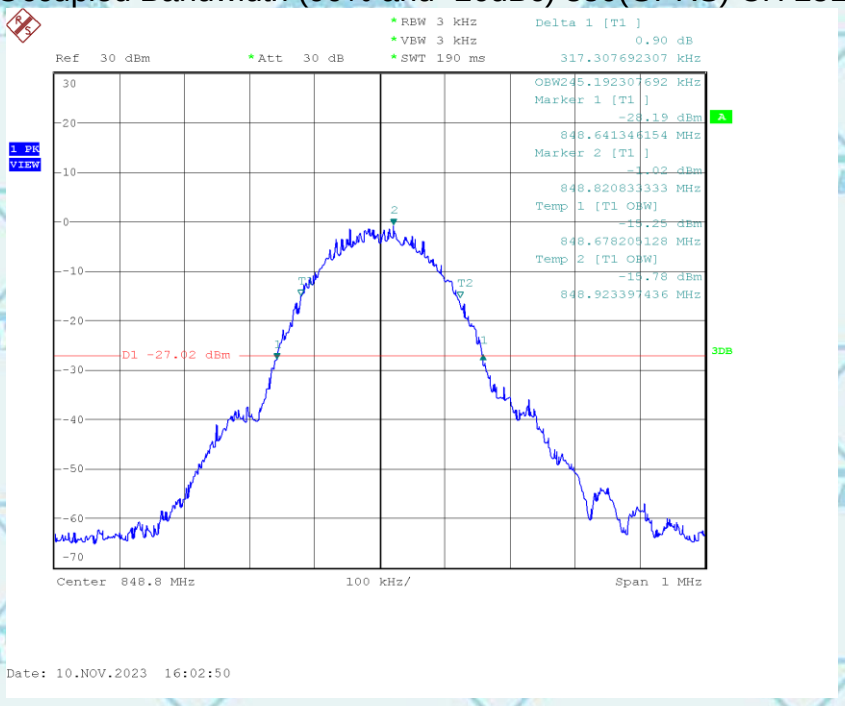
Occupied Bandwidth (99% and -26dBc) 850(GPRS) CH 128



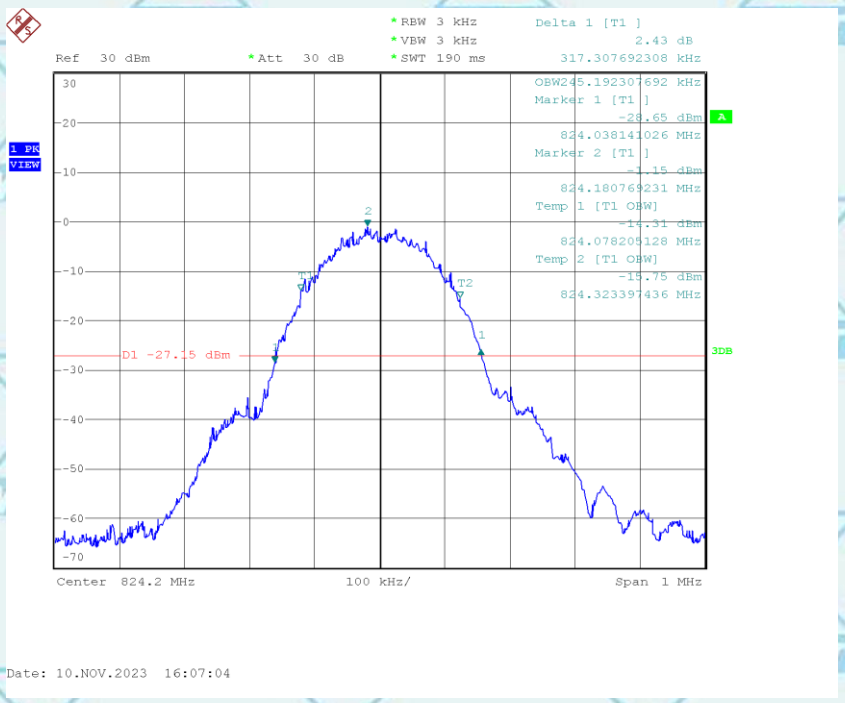
Occupied Bandwidth (99% and -26dBc) 850(GPRS) CH 190



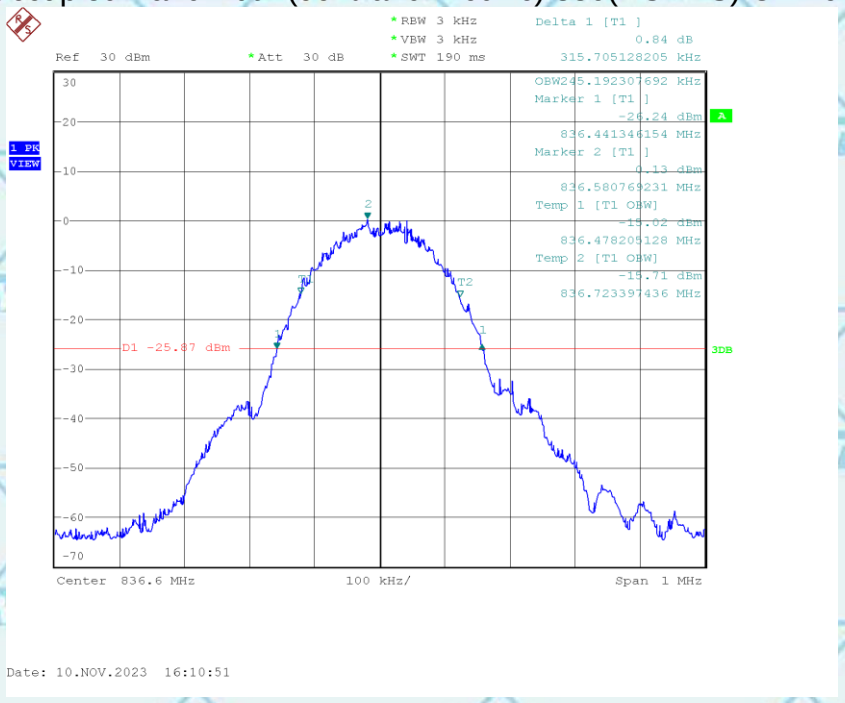
Occupied Bandwidth (99% and -26dBc) 850(GPRS) CH 251



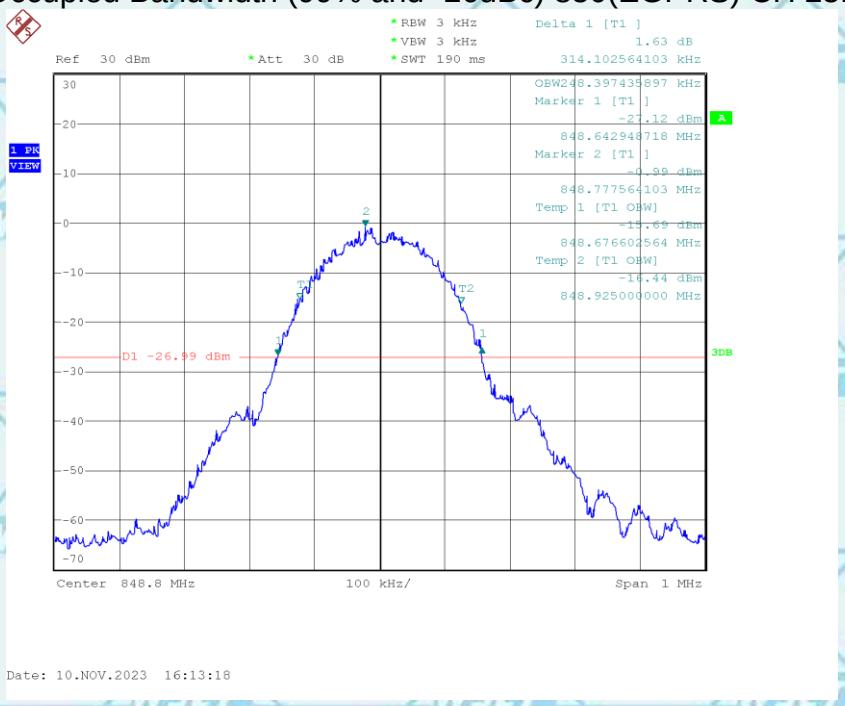
Occupied Bandwidth (99% and -26dBc) 850(EGPRS) CH 128



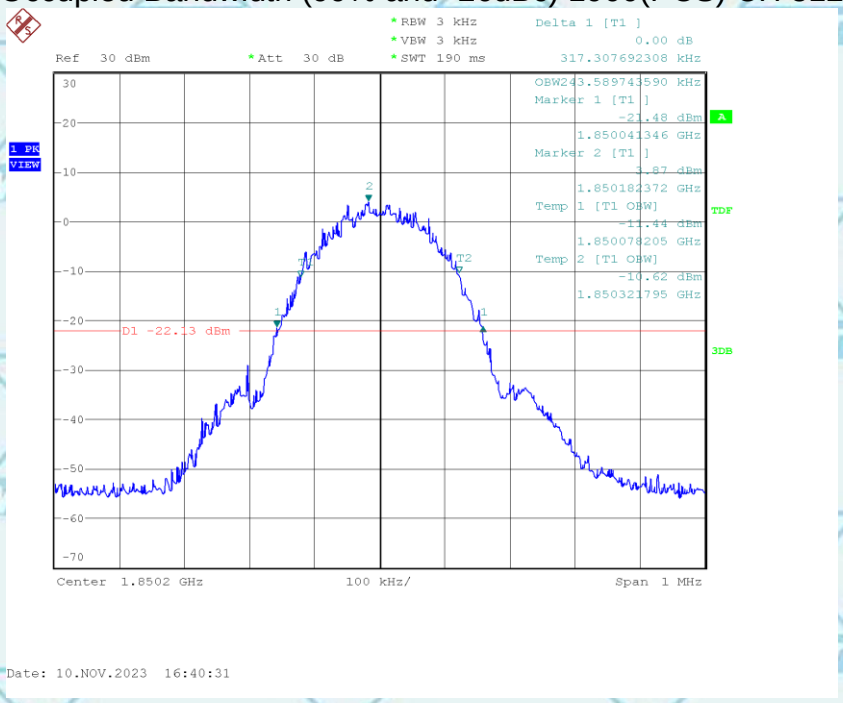
Occupied Bandwidth (99% and -26dBc) 850(EGPRS) CH 190



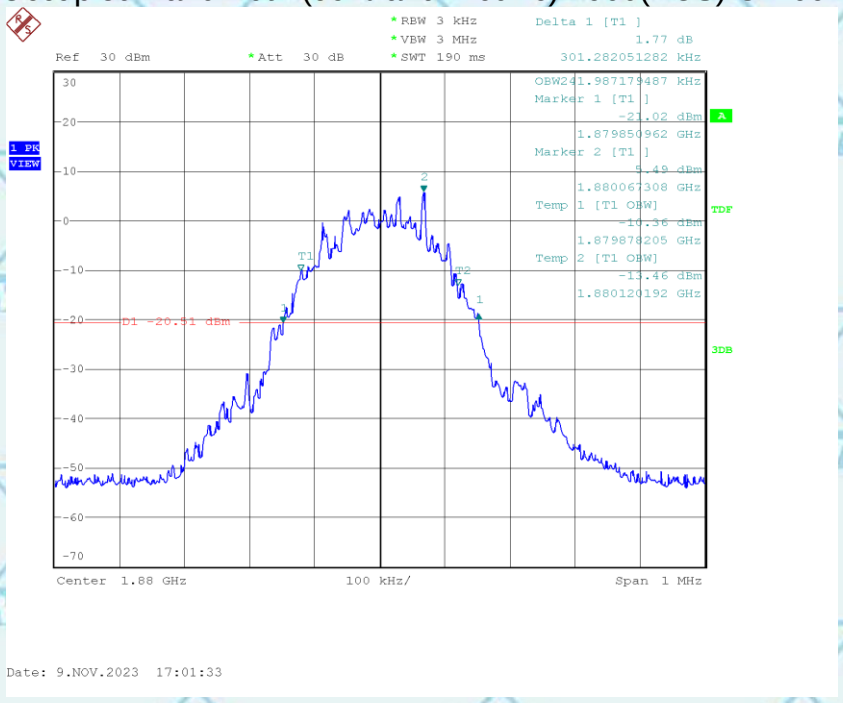
Occupied Bandwidth (99% and -26dBc) 850(EGPRS) CH 251



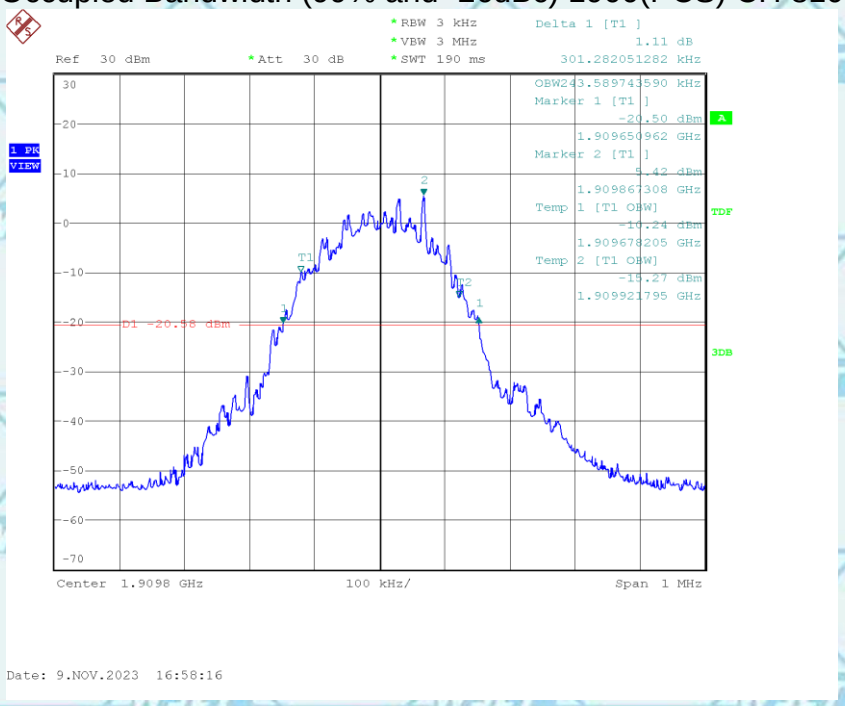
Occupied Bandwidth (99% and -26dBc) 1900(PCS) CH 512



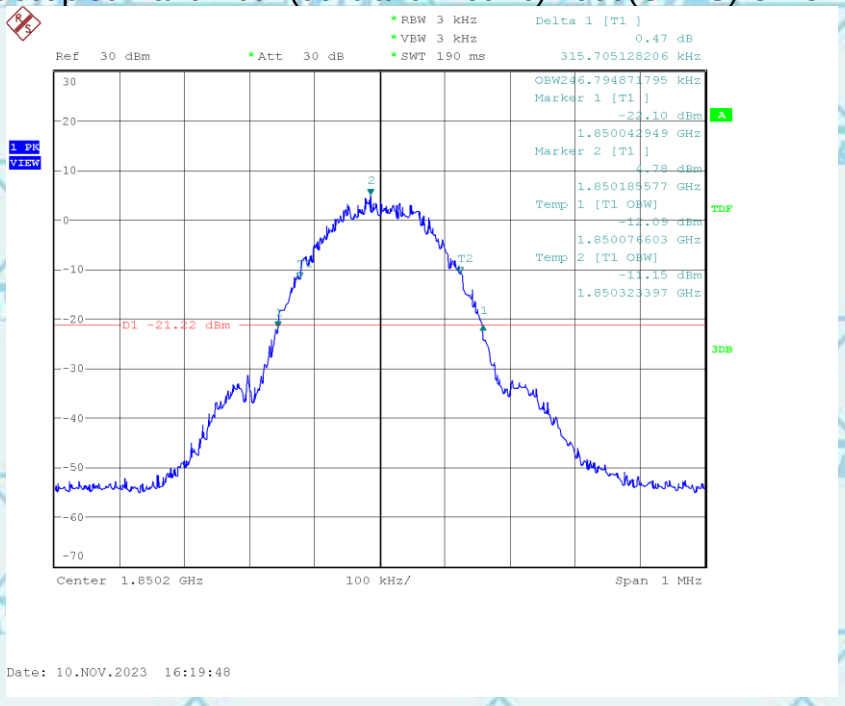
Occupied Bandwidth (99% and -26dBc) 1900(PCS) CH 661



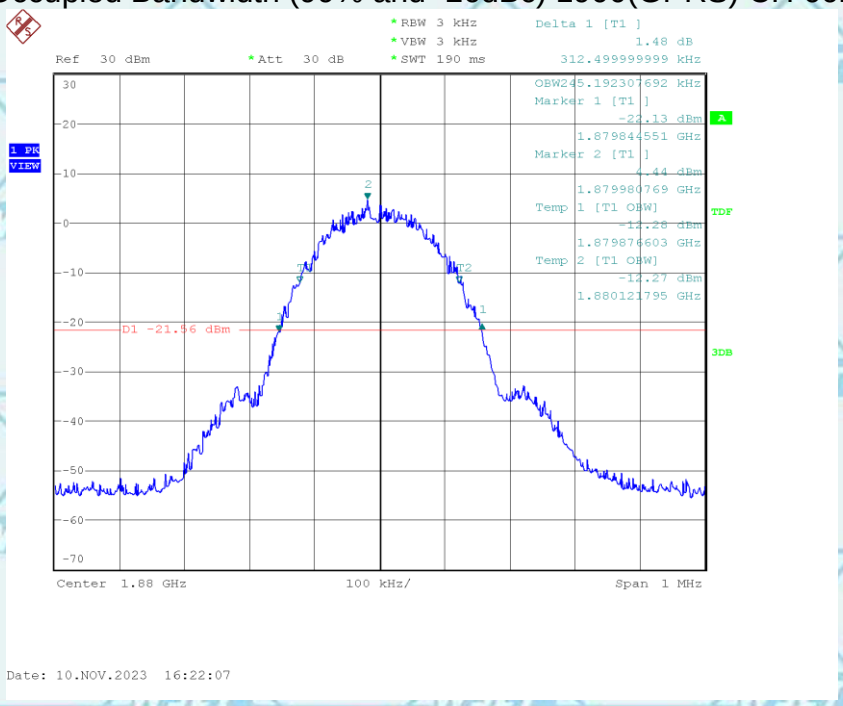
Occupied Bandwidth (99% and -26dBc) 1900(PCS) CH 810



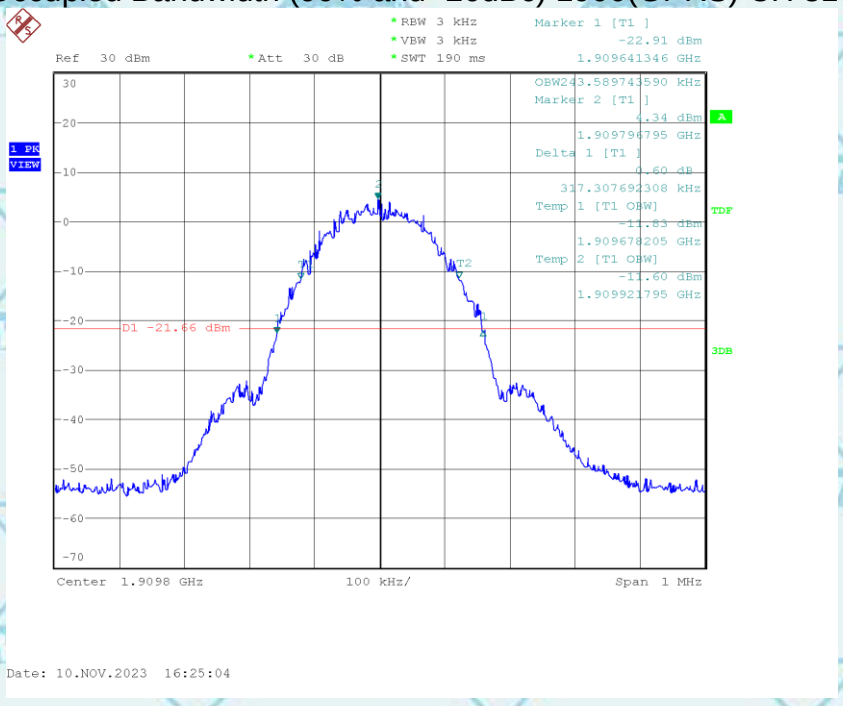
Occupied Bandwidth (99% and -26dBc) 1900(GPRS) CH 512



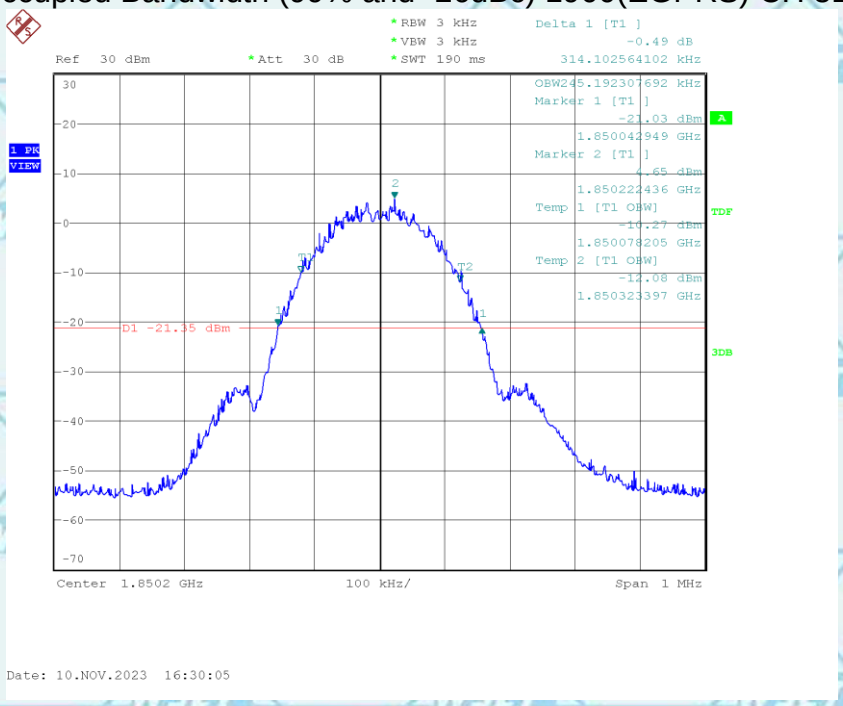
Occupied Bandwidth (99% and -26dBc) 1900(GPRS) CH 661



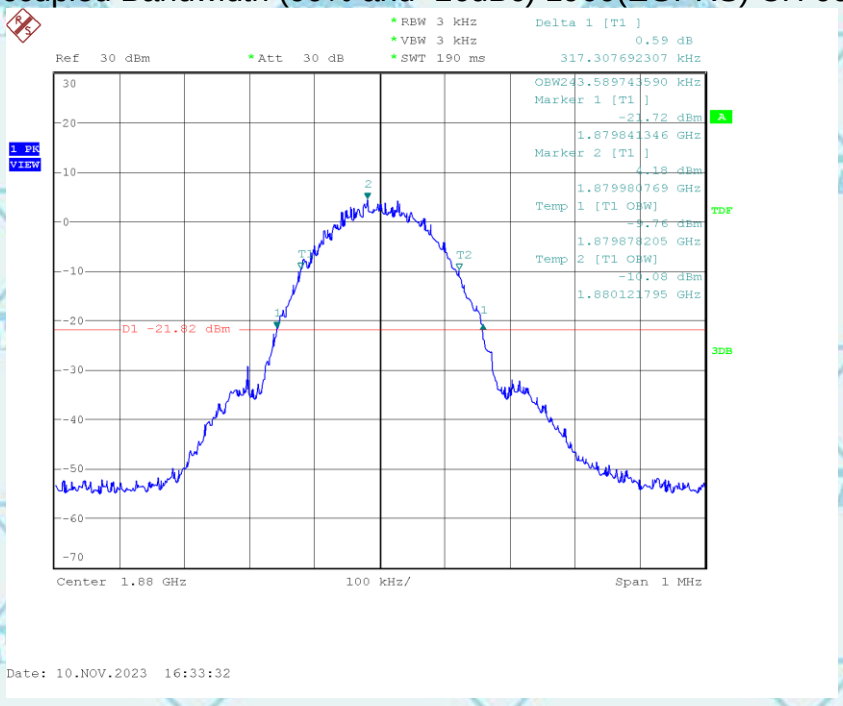
Occupied Bandwidth (99% and -26dBc) 1900(GPRS) CH 810



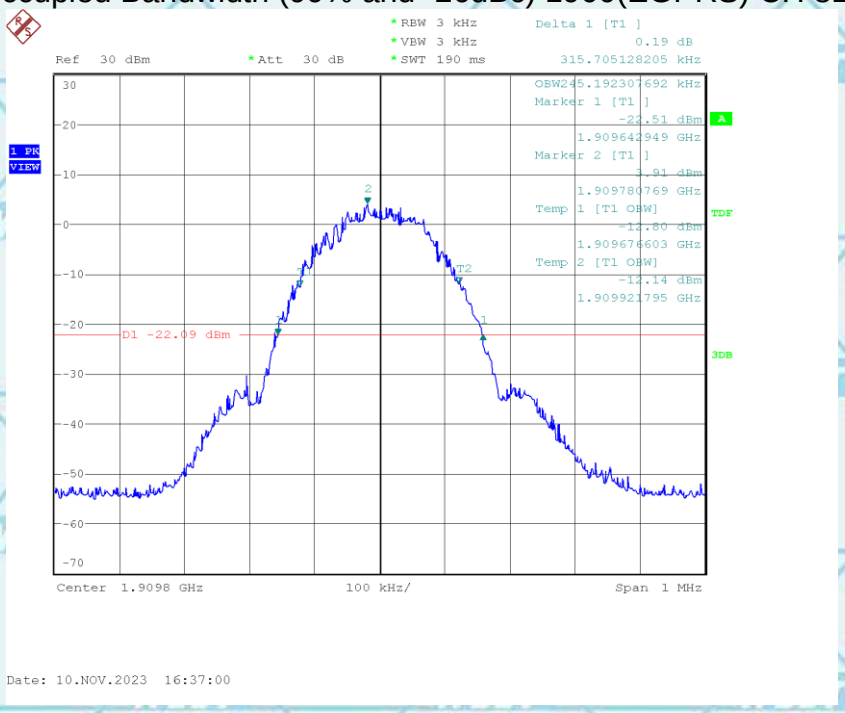
Occupied Bandwidth (99% and -26dBc) 1900(EGPRS) CH 512



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



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



9. BAND EDGE

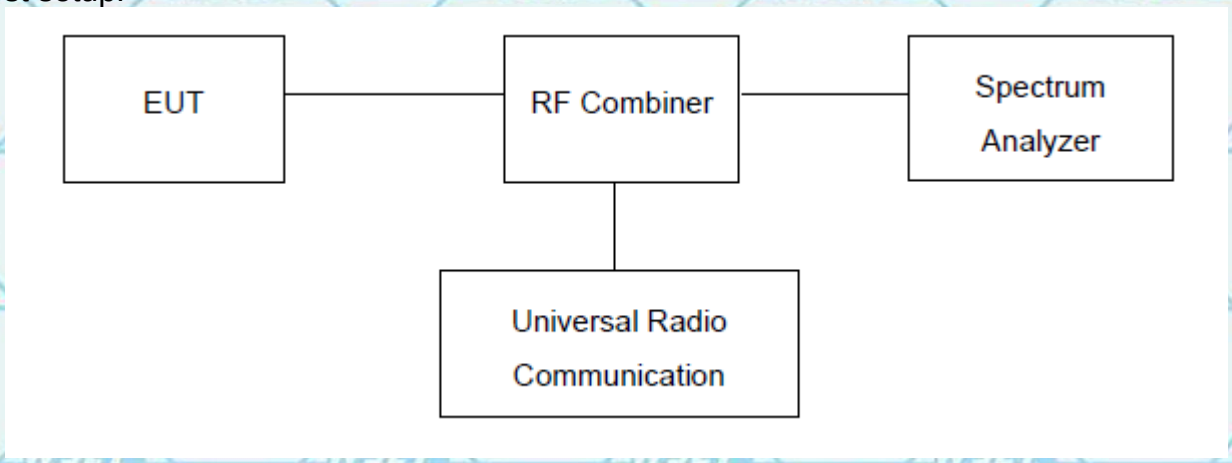
Test Limit:

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:

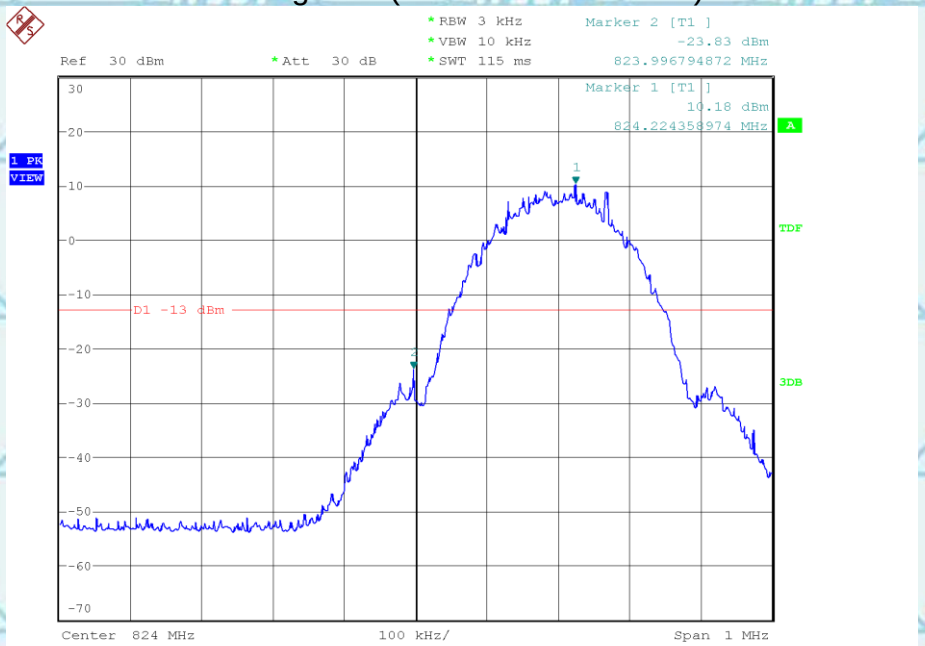
The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test setup:

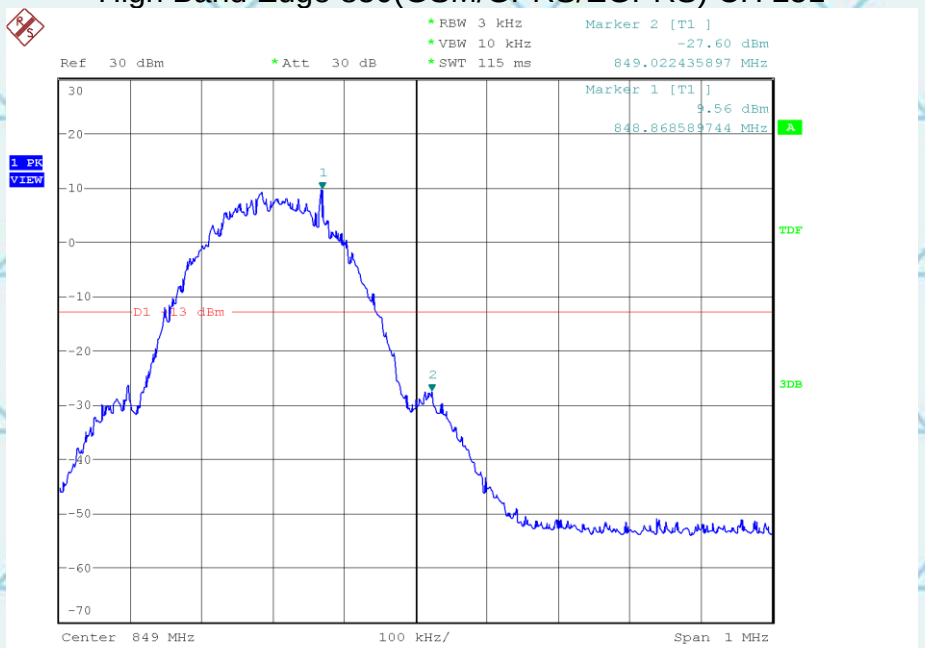


Measurement Result
Test Plot (Worst)

Low Band Edge 850(GSM/GPRS/EGPRS) CH 128

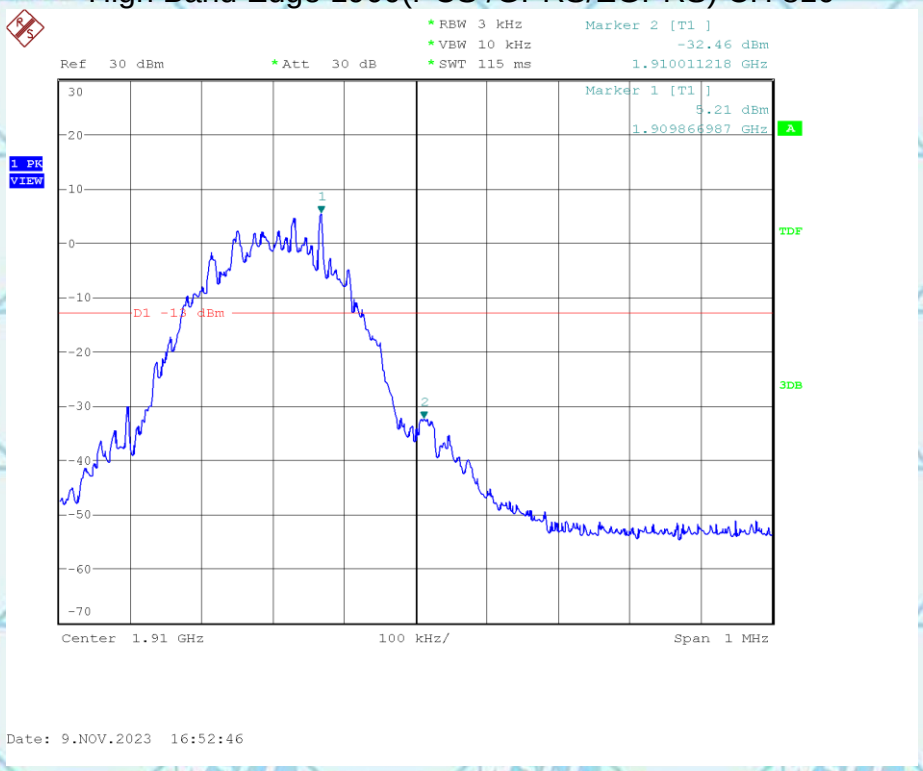


High Band Edge 850(GSM/GPRS/EGPRS) CH 251



Low Band Edge 1900(PCS /GPRS/EGPRS) CH 512

High Band Edge 1900(PCS /GPRS/EGPRS) CH 810



10. FREQUENCY STABILITY

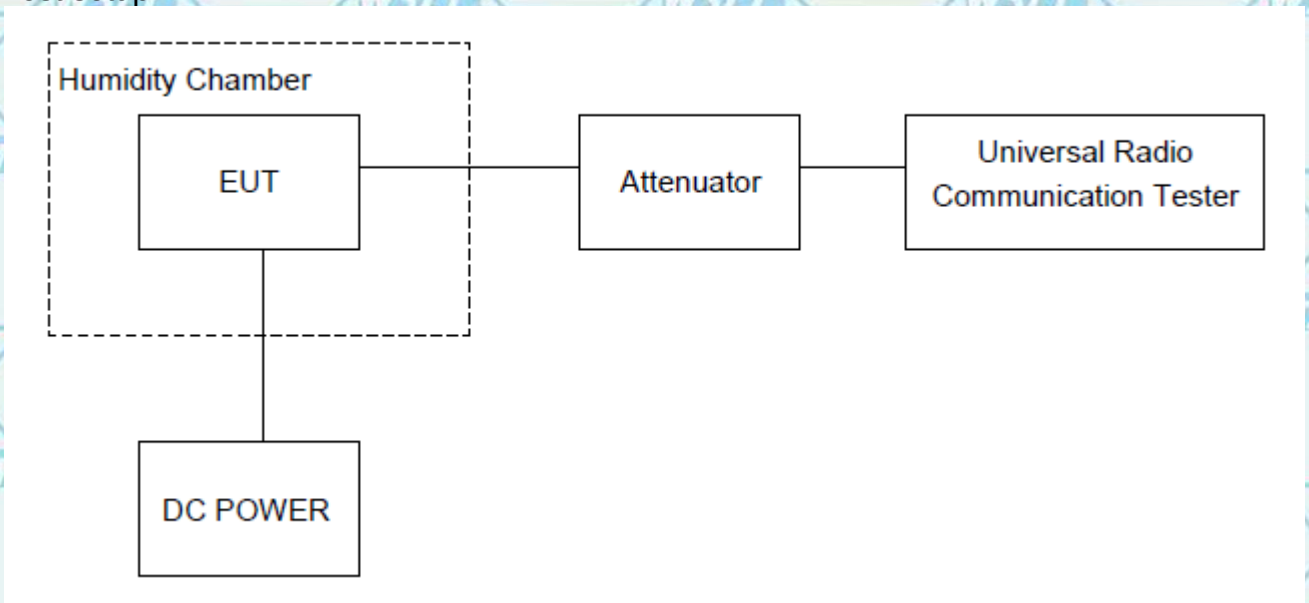
Test limit:

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 (836.4MHz)

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.45	35	0.042
3.8	35	0.042
4.35	38	0.046

Frequency Error against Temperature for GSM 850 (836.4MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-20	29	0.035
0	30	0.036
10	31	0.037
20	33	0.040
30	38	0.046
40	37	0.045
50	29	0.035
60	28	0.034

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

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.45	34	0.018
3.8	34	0.018
4.35	29	0.015

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

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-20	38	0.020
0	37	0.020
10	34	0.018
20	36	0.019
30	40	0.021
40	34	0.018
50	40	0.021
60	34	0.018

Note: Please refer to Annex M11 (E-UTRA Ban2/4/5/12/17/41/66) for more test data

---END OF REPORT---