TEST REPORT

FCC ID: 2AMY3-8T9-422L

Product: Tablet PC

Model No.: Acer One 8 T9-422L

Trade Mark: Acer

Report No.: WSCT-R&E230300002A-RF

Issued Date: 13 April 2023

Issued for:

Acer India Pvt Ltd.
Embassy Heights 6th Floor, No. 13, Magrath Road, (Next to Hosmat Hospital), Bangalore-560 025, India.

Issued By:

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1. GENERAL INFORMATION

Product:	Tablet PC
Model No.:	Acer One 8 T9-422L
Trade Mark:	Acer
Applicant:	**Acer India Pvt Ltd.**
Address:	Embassy Heights 6th Floor, No. 13, Magrath Road, (Next to Hosmat Hospital), Bangalore-560 025, India.
Manufacturer:	**Acer India Pvt Ltd.**
Address:	Embassy Heights 6th Floor, No. 13, Magrath Road, (Next to Hosmat Hospital), Bangalore-560 025, India.
Factory:	**Acer India Pvt Ltd.**
Address:	RS No. 38/2, Sedarapet Village, Villianur Commune, Pondicherry – 605111.
Date of Test:	12 January 2023 to 15 March 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)***

Approved By: ***(Liu Fuxin)***

Date: 13 April 2023

2. GENERAL DESCRIPTION OF EUT

Equipment Type:	Tablet PC
Model	Acer One 8 T9-422L
Trade Mark	Acer
Frequency Bands:	☒GSM 850 ☒PCS 1900 (U.S. Bands) E-UTRA Bands: ☒ E-UTRA Band 5 ☒ E-UTRA Band 41
Antenna Type:	Internal Antenna
Antenna gain:	GSM 850: -1.7 dBi PCS 1900: 1.56dBi E-UTRA Band 5: -1.7 dBi E-UTRA Band 41: 2.08dBi
Rechargeable Li-Polymer Battery:	Model: GFL 1100100 1ICP4/100/100 Nominal Voltage: 3.8V Rated capacity: 5100mAh/19.38Wh Limited Charge Voltage: 4.35V
Adapter:	Model: BSY01J3050200UU Input: 100-240V~50/60Hz 0.3A Output:5.0V⎓2.0A 10.0W
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	34.53
DCS1900	Class 1	GMSK	31.96
E-UTRA Band 5	Class 3	QPSK/16QAM	25.16
E-UTRA Band 41	Class 3	QPSK/16QAM	23.75

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

EUT

Table 3.2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Tablet PC	Acer One 8 T9-422L		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 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 41			
Test Channel	BW(MHz)	UL Channel	Frequency(MHz)
Low Range	5	39675	2498.5
	10	39700	2501
	15	39725	2503.5
	20	39750	2506
Mid Range	5/10/15/20	40620	2593
High Range	5	41565	2687.5
	10	41540	2685
	15	41515	2682.5
	20	41490	2680

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

PCS 1900:

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 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	11/05/2022	11/04/2023
LISN	AFJ	LS16	16010222119	11/05/2022	11/04/2023
LISN(EUT)	Mestec	AN3016	04/10040	11/05/2022	11/04/2023
Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	11/05/2022	11/04/2023
Coaxial cable	Megalon	LMR400	N/A	11/05/2022	11/04/2023
GPIB cable	Megalon	GPIB	N/A	11/05/2022	11/04/2023
Spectrum Analyzer	R&S	FSU	100114	11/05/2022	11/04/2023
Pre Amplifier	H.P.	HP8447E	2945A02715	11/05/2022	11/04/2023
Pre-Amplifier	CDSI	PAP-1G18-38	--	11/05/2022	11/04/2023
Loop Antenna	R&S	HFH2-Z2	100296	11/05/2022	11/04/2023
Bi-log Antenna	SUNOL Sciences	JB3	A021907	11/05/2022	11/04/2023
9*6*6 Anechoic	--	--	--	11/05/2022	11/04/2023
Horn Antenna	COMPLIANCE ENGINEERING	CE18000	--	11/05/2022	11/04/2023
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	11/05/2022	11/04/2023
Power meter	Anritsu	ML2487A	6K00003613	11/05/2022	11/04/2023
Power meter	Anritsu	MA2491A	32263	11/05/2022	11/04/2023
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	11/05/2022	11/04/2023
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	-	11/05/2022	11/04/2023
Loop Antenna	EMCO	6502	00042960	11/05/2022	11/04/2023
Wideband Radio Communication Tester	R&S	CMW 500	103974	11/05/2022	11/04/2023
Horn Antenna	SCHWARZBECK	BBHA 9170	1123	11/05/2022	11/04/2023
H & T Chamber	Guangzhou gongwen	GDJS-500-40	0329	11/05/2022	11/04/2023
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY60192341	11/05/2022	11/04/2023
Anechoic chamber	SAEMC	966	-	11/05/2022	11/04/2023

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	**34.53**	33.52	1.01	-9	24.52
		836.6	34.18	33.14	1.04	-9	24.14
		848.8	33.69	33.55	0.14	-9	24.55
GPRS850	1 Tx Slots	824.2	31.17	30.75	0.42	-9	21.75
		836.6	32.69	31.34	1.35	-9	22.34
		848.8	32.21	31.27	0.94	-9	22.27
	2 Tx Slots	824.2	32.13	30.83	1.30	-6	24.83
		836.6	30.85	30.36	0.49	-6	24.36
		848.8	31.61	30.30	1.31	-6	24.30
	3 Tx Slots	824.2	31.53	30.48	1.06	-4.26	26.22
		836.6	32.16	30.51	1.65	-4.26	26.25
		848.8	32.21	30.73	1.48	-4.26	26.47
	4 Tx Slots	824.2	31.11	30.68	0.43	-3	27.68
		836.6	30.86	30.27	0.59	-3	27.27
		848.8	31.04	30.90	0.14	-3	27.90
EPRS850	1 Tx Slots	824.2	27.34	26.87	0.47	-9	17.87
		836.6	28.02	27.04	0.98	-9	18.04
		848.8	27.82	26.38	1.44	-9	17.38
	2 Tx Slots	824.2	27.83	26.80	1.03	-6	20.80
		836.6	28.47	26.66	1.81	-6	20.66
		848.8	27.17	26.87	0.30	-6	20.87
	3 Tx Slots	824.2	28.32	26.97	1.36	-4.26	22.71
		836.6	28.45	27.66	0.79	-4.26	23.40
		848.8	27.98	27.33	0.65	-4.26	23.07
	4 Tx Slots	824.2	28.19	26.55	1.64	-3	23.55
		836.6	29.33	27.55	1.79	-3	24.55
		848.8	28.01	27.24	0.77	-3	24.24

PCS1900 Band:

Mode		Frequency (MHz)	Peak Power(dBm)	Avg.Burst Power(dBm)	PAP	Duty cycle Factor(dB)	Frame Power(dBm)
GSM1900		1850.2	30.86	30.36	0.51	-9	21.36
		1880	31.17	30.18	0.99	-9	21.18
		1909.8	**31.96**	31.32	0.64	-9	22.32
GPRS1900	1 Tx Slots	1850.2	28.51	27.66	0.85	-9	18.66
		1880	27.56	27.05	0.51	-9	18.05
		1909.8	28.42	27.03	1.39	-9	18.03
	2 Tx Slots	1850.2	29.11	27.86	1.25	-6	21.86
		1880	29.66	28.12	1.54	-6	22.12
		1909.8	27.78	27.66	0.11	-6	21.66
	3 Tx Slots	1850.2	28.42	27.16	1.26	-4.26	22.90
		1880	29.00	27.57	1.43	-4.26	23.31
		1909.8	28.56	27.95	0.61	-4.26	23.69
	4 Tx Slots	1850.2	28.29	27.91	0.38	-3	24.91
		1880	28.32	27.26	1.06	-3	24.26
		1909.8	28.25	27.33	0.92	-3	24.33
EGPRS1900	1 Tx Slots	1850.2	27.07	26.60	0.48	-9	17.60
		1880	27.85	26.97	0.88	-9	17.97
		1909.8	28.01	26.42	1.59	-9	17.42
	2 Tx Slots	1850.2	28.15	27.11	1.05	-6	21.11
		1880	27.44	26.52	0.91	-6	20.52
		1909.8	26.99	26.75	0.24	-6	20.75
	3 Tx Slots	1850.2	27.70	27.29	0.42	-4.26	23.03
		1880	27.37	26.64	0.73	-4.26	22.38
		1909.8	28.00	26.99	1.01	-4.26	22.73
	4 Tx Slots	1850.2	28.26	26.54	1.72	-3	23.54
		1880	27.32	26.35	0.97	-3	23.35
		1909.8	27.43	26.18	1.25	-3	23.18

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	6.70	31.23	1.02	-1.7	2.15	**33.06**	H
	836.6	6.17	31.23	1.02	-1.7	2.15	32.53	H
	848.8	6.46	31.23	1.02	-1.7	2.15	32.82	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	0.34	31.23	1.02	1.56	2.15	29.96	H
	1880	0.72	31.23	1.02	1.56	2.15	30.34	H
	1909.8	0.80	31.23	1.02	1.56	2.15	**30.42**	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 (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	-8.37	31.23	-2.8	-1.7	0	23.96	H
		Q16	836.5	-8.89	31.23	-2.8	-1.7	0	23.44	H
	3	QPSK	836.5	-8.92	31.23	-2.8	-1.7	0	23.41	H
		Q16	836.5	-8.15	31.23	-2.8	-1.7	0	24.18	H
	5	QPSK	836.5	-8.50	31.23	-2.8	-1.7	0	23.83	H
		Q16	836.5	-9.00	31.23	-2.8	-1.7	0	23.33	H
	10	QPSK	836.5	-8.65	31.23	-2.8	-1.7	0	23.68	H
		Q16	836.5	-8.58	31.23	-2.8	-1.7	0	23.75	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	2593	-13.58	31.23	-1.3	2.08	0	21.03	H
		Q16	2593	-13.95	31.23	-1.3	2.08	0	20.66	H
	10	QPSK	2593	-13.49	31.23	-1.3	2.08	0	**21.12**	H
		Q16	2593	-14.01	31.23	-1.3	2.08	0	20.60	H
	15	QPSK	2593	-14.03	31.23	-1.3	2.08	0	20.58	H
		Q16	2593	-14.14	31.23	-1.3	2.08	0	20.47	H
	20	QPSK	2593	-14.07	31.23	-1.3	2.08	0	20.54	H
		Q16	2593	-13.73	31.23	-1.3	2.08	0	20.88	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 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
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 41:

Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
5	39675	2498.5	QPSK	25	LOW	Pass
5	39675	2498.5	Q16	25	LOW	Pass
5	40620	2593	QPSK	25	LOW	Pass
5	41565	2687.5	Q16	25	LOW	Pass
5	20643	848.3	QPSK	25	LOW	Pass
5	41565	2687.5	Q16	25	LOW	Pass
10	39700	2501	QPSK	50	LOW	Pass
10	39700	2501	Q16	50	LOW	Pass
10	40620	2593	QPSK	50	LOW	Pass
10	40620	2593	Q16	50	LOW	Pass
10	41540	2685	QPSK	50	LOW	Pass
10	41540	2685	Q16	50	LOW	Pass
15	39725	2503.5	QPSK	75	LOW	Pass
15	39725	2503.5	Q16	75	LOW	Pass
15	40620	2593	QPSK	75	LOW	Pass
15	40620	2593	Q16	75	LOW	Pass
15	41515	2682.5	QPSK	75	LOW	Pass
15	41515	2682.5	Q16	75	LOW	Pass
20	39750	2506	QPSK	100	LOW	Pass
20	39750	2506	Q16	100	LOW	Pass
20	40620	2593	QPSK	100	LOW	Pass
20	40620	2593	Q16	100	LOW	Pass
20	41490	2680	QPSK	100	LOW	Pass
20	41490	2680	Q16	100	LOW	Pass

Test Plot(s)

Conducted method

Test limit:

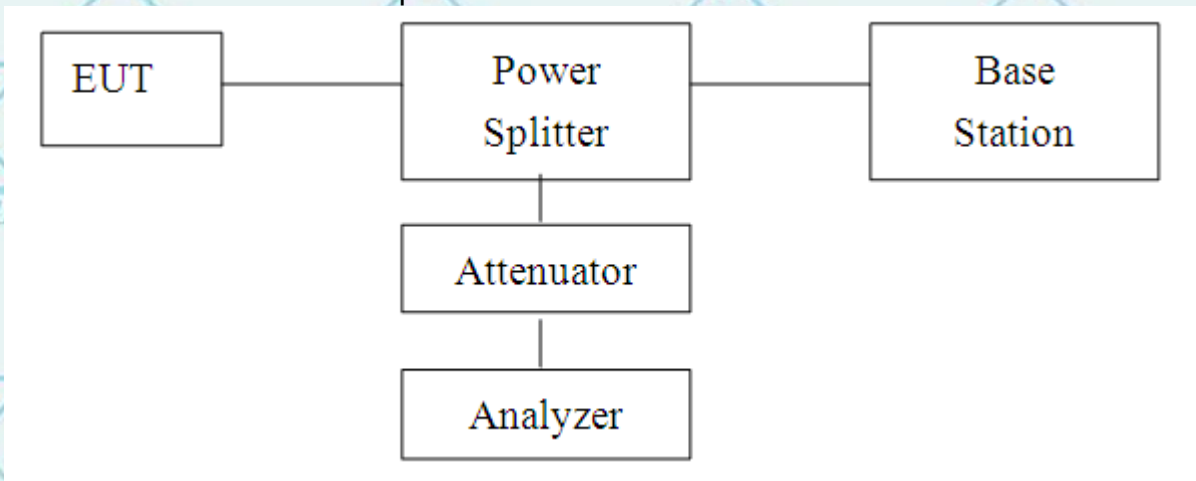
The spurious (unwanted) emission limits specified in the individual FCC rule parts applicable to licensed digital transmitters (typically referred to under the heading 'emission limits') normally apply to any and all emissions that are present outside of the authorized frequency band/block and apply 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:

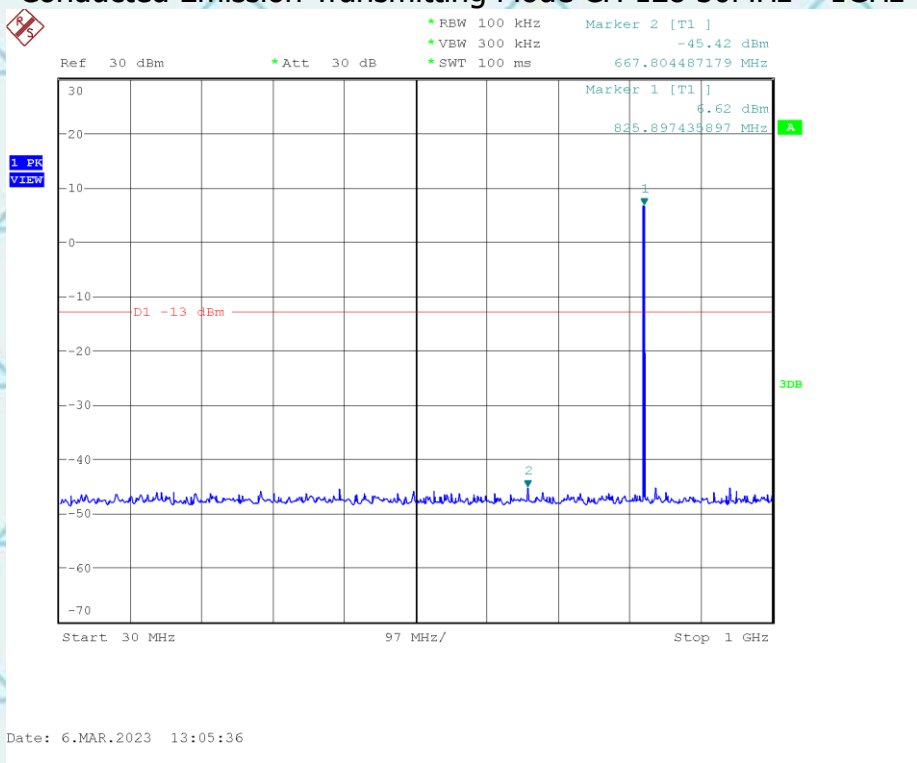
The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

Conducted Emission Test-Up:

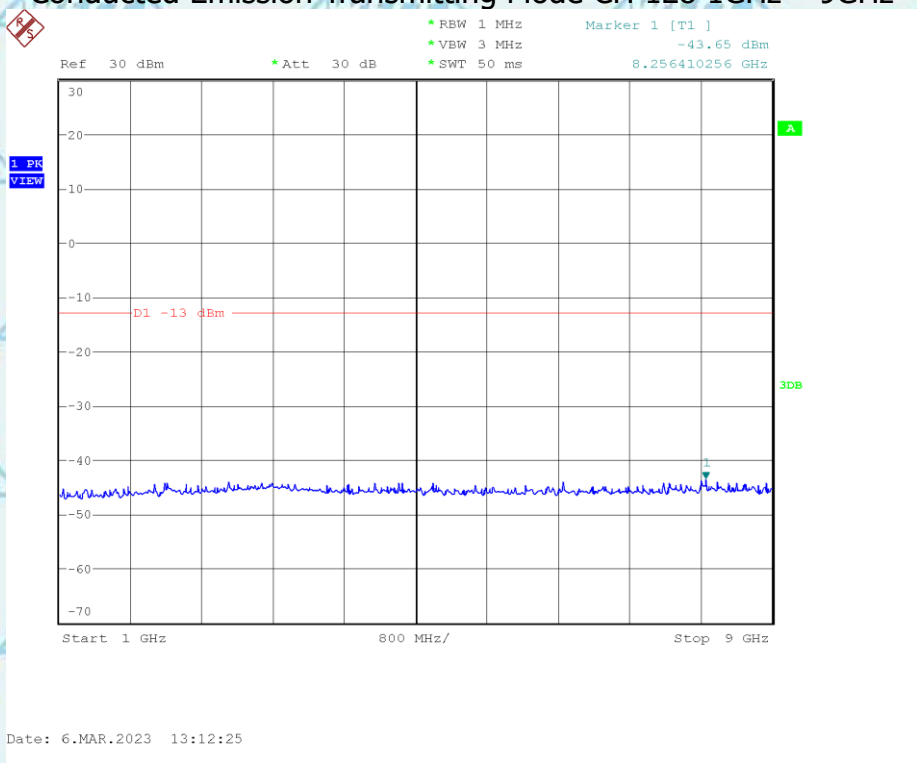


CONDUCTED EMISSION IN GSM850

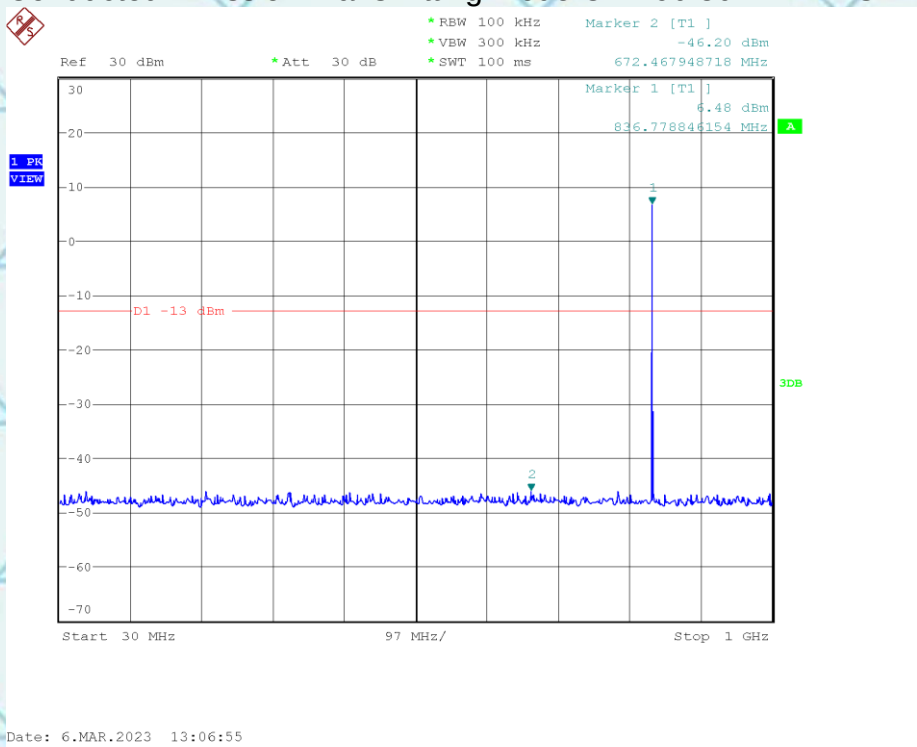
Conducted Emission Transmitting Mode CH 128 30MHz – 1GHz



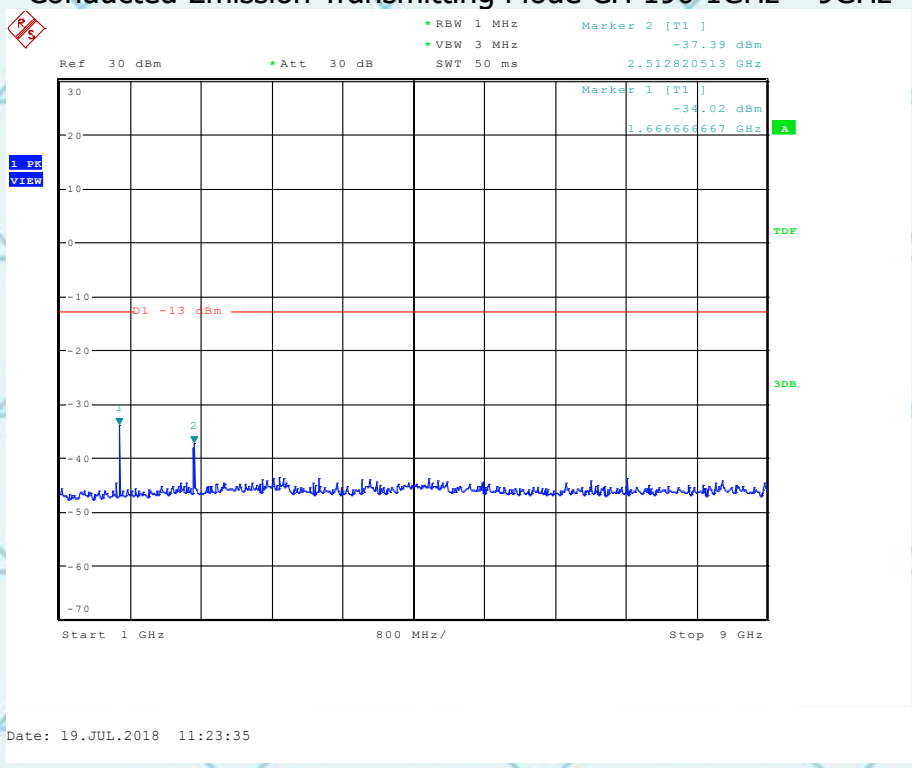
Conducted Emission Transmitting Mode CH 128 1GHz – 9GHz



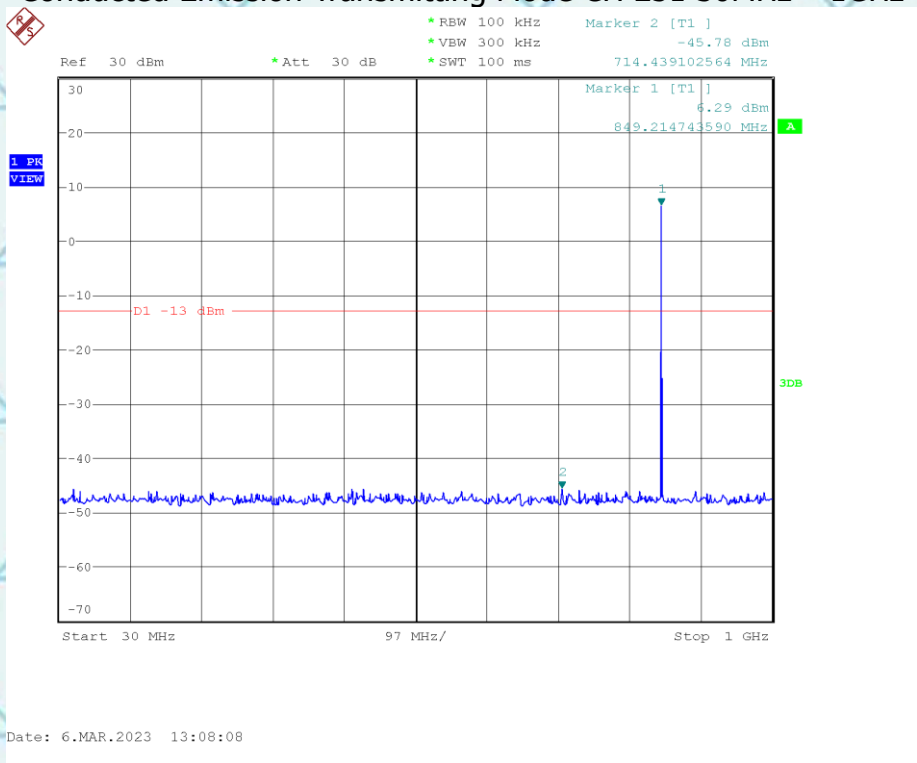
Conducted Emission Transmitting Mode CH 190 30MHz – 1GHz



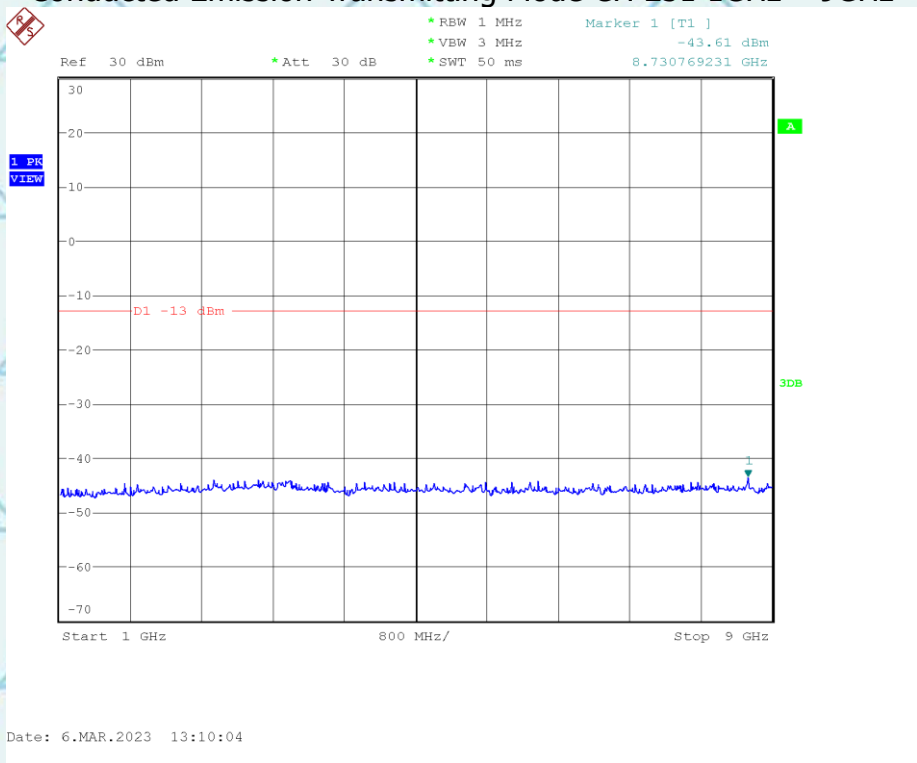
Conducted Emission Transmitting Mode CH 190 1GHz – 9GHz



Conducted Emission Transmitting Mode CH 251 30MHz – 1GHz

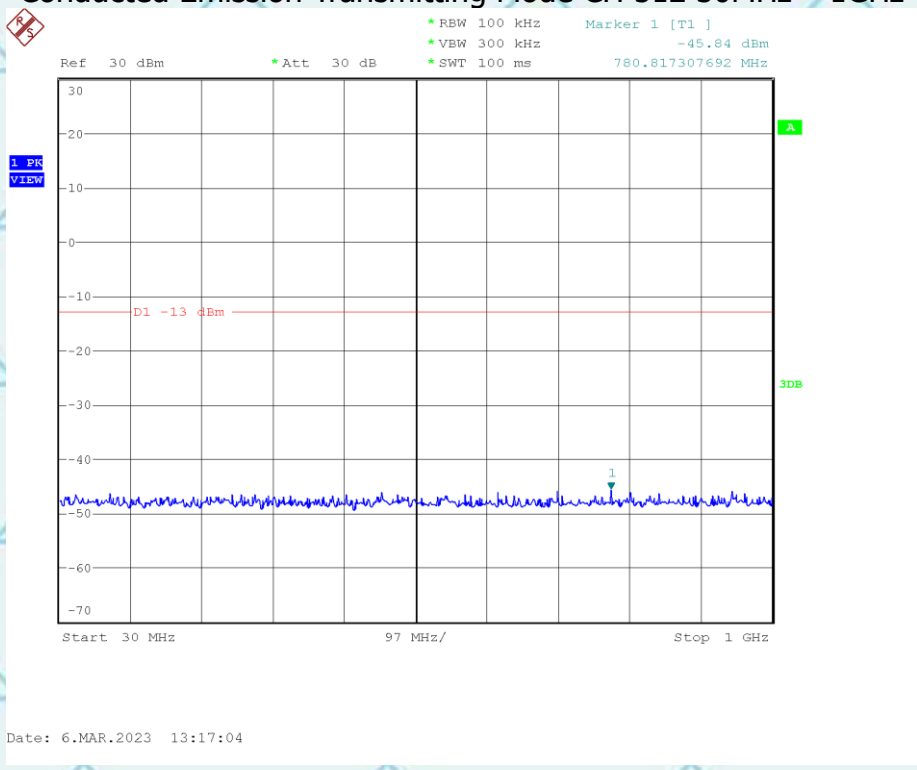


Conducted Emission Transmitting Mode CH 251 1GHz – 9GHz

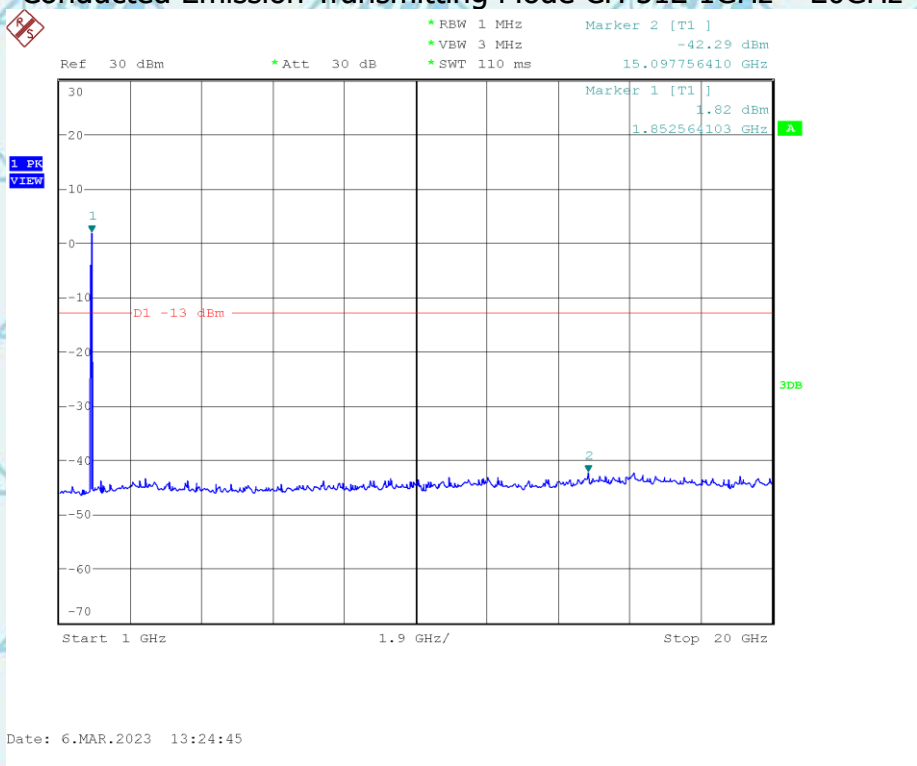


CONDUCTED EMISSION IN PCS1900

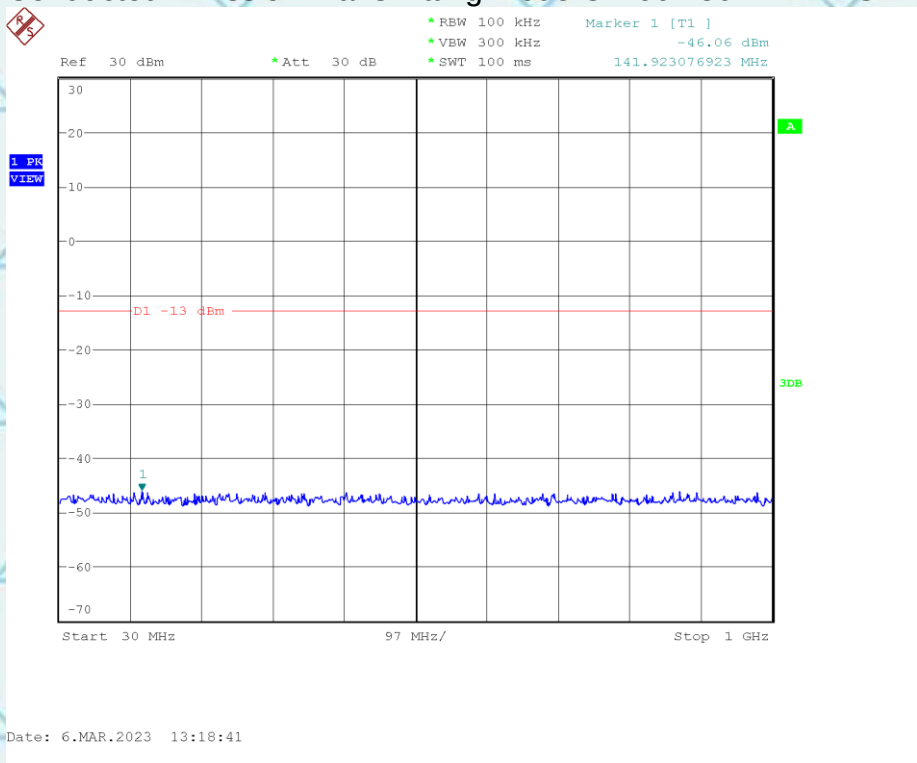
Conducted Emission Transmitting Mode CH 512 30MHz – 1GHz



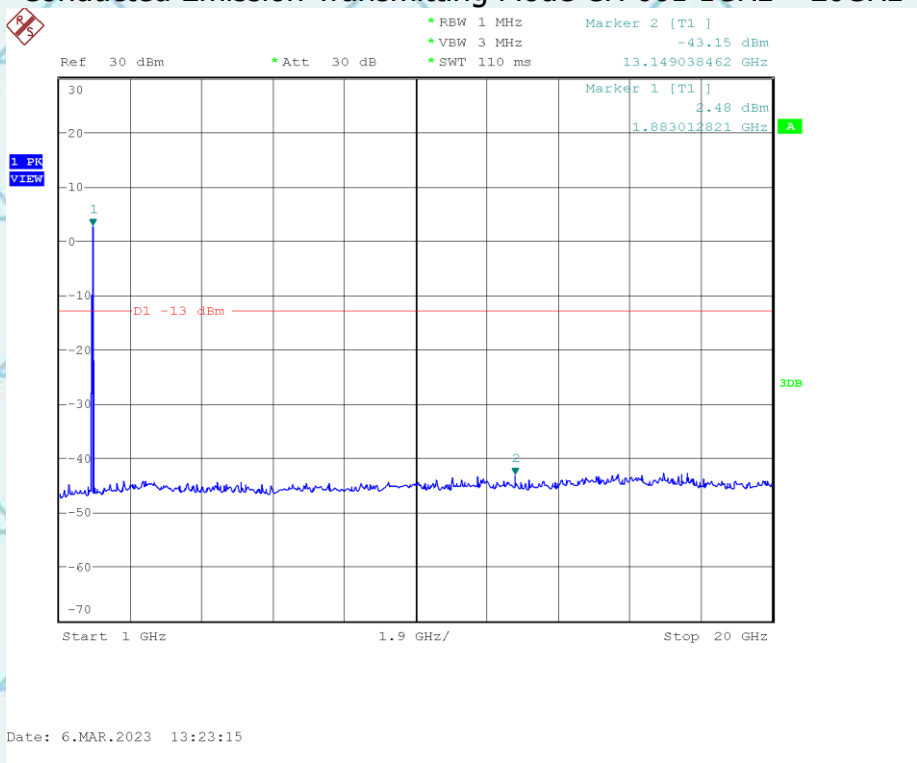
Conducted Emission Transmitting Mode CH 512 1GHz – 20GHz



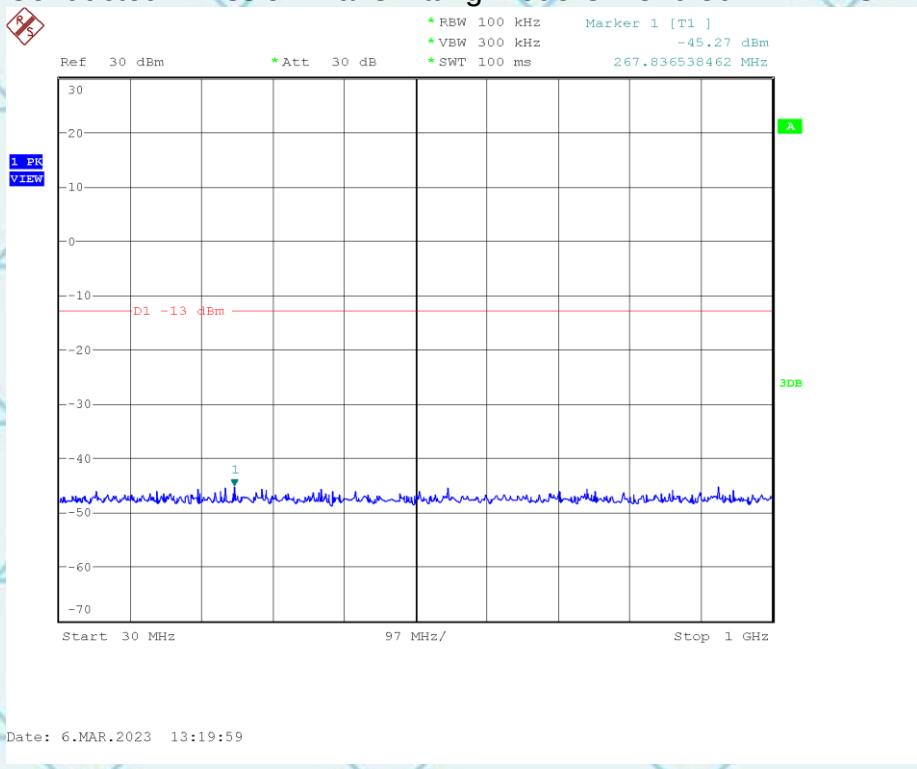
Conducted Emission Transmitting Mode CH 661 30MHz – 1GHz



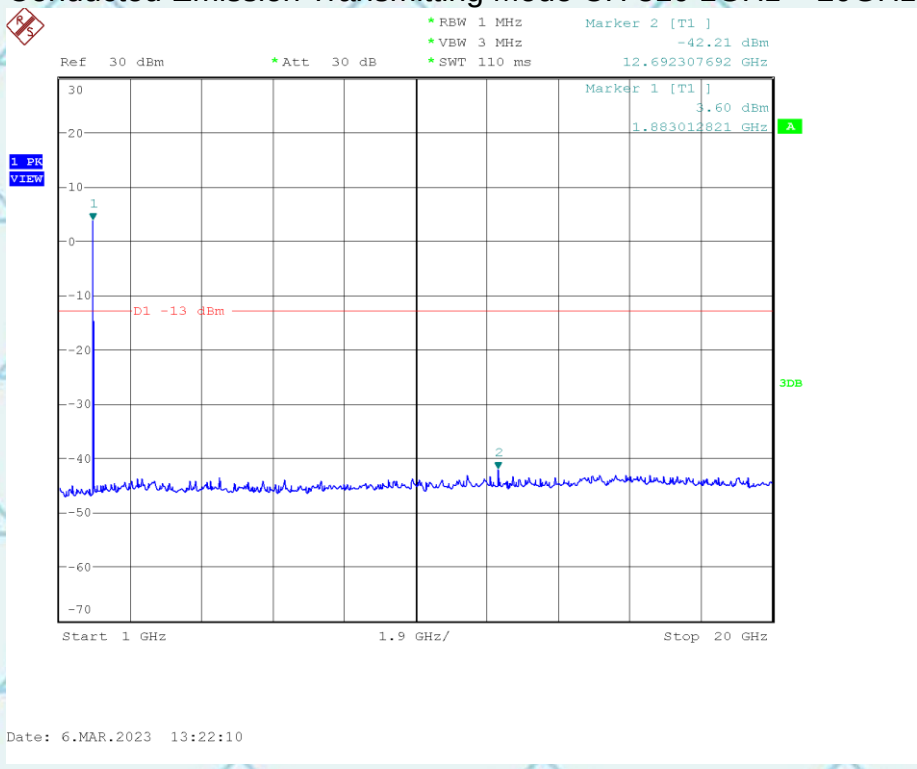
Conducted Emission Transmitting Mode CH 661 1GHz – 20GHz



Conducted Emission Transmitting Mode CH 810 30MHz – 1GHz



Conducted Emission Transmitting Mode CH 810 1GHz – 20GHz



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.

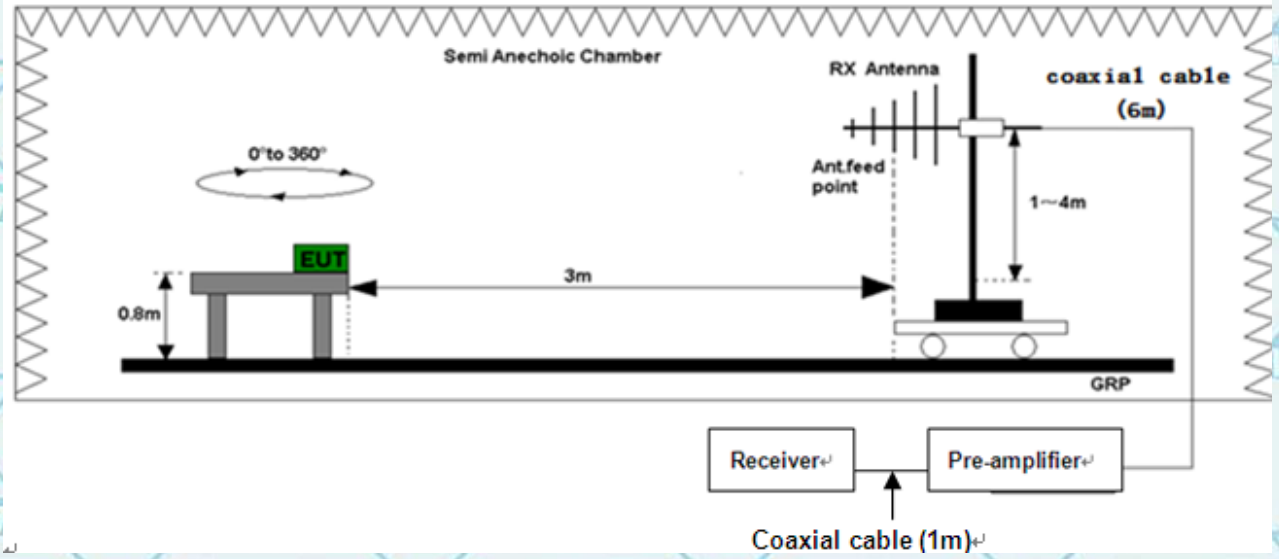
Typically, unwanted emissions are required by the licensed rule parts to be attenuated below the transmitter power by a factor of at least X + 10log(P) dB, where P represents the transmitter power expressed in watts and X is a specified scalar value (e.g., 43). This specification can be interpreted in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

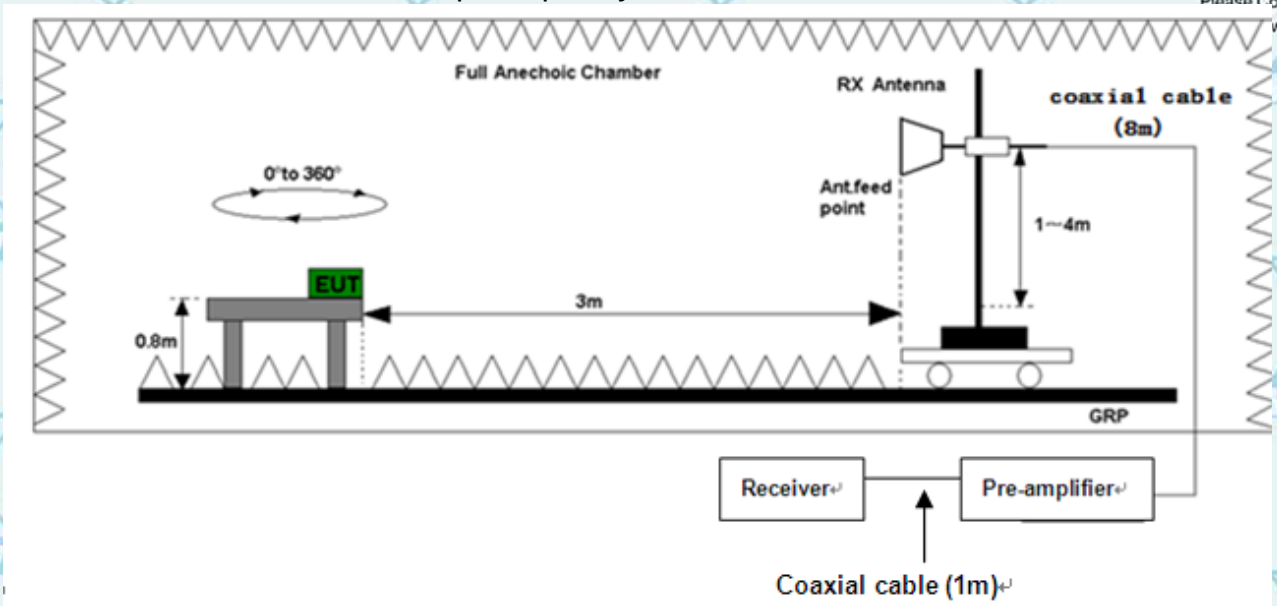
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The resolution bandwidth of the spectrum analyzer was set at 100 kHz below 1 GHz and 1 MHz above 1 GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.

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 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 41:

Mode	Bandwidth	UL Channel	Frequency	Modulation	RB Size	RB Offset	Judgement
1	20	39750	2506	QPSK	100	LOW	Pass
2	20	40620	2593	QPSK	100	LOW	Pass
3	20	41490	2680	QPSK	100	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	-34.22	0.5	-34.72	-13	Horizontal
1648.4	-30.20	0.5	-30.70	-13	Vertical
2472.6	-31.63	0.5	-32.13	-13	Horizontal
2472.6	-33.14	0.5	-33.64	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1673.2	-30.44	0.5	-30.94	-13	Horizontal
1673.2	-33.99	0.5	-34.49	-13	Vertical
2509.8	-35.34	0.5	-35.84	-13	Horizontal
2509.8	-35.89	0.5	-36.39	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1697.6	-31.20	0.5	-31.70	-13	Horizontal
1697.6	-30.82	0.5	-31.32	-13	Vertical
2546.4	-36.65	0.5	-37.15	-13	Horizontal
2546.4	-34.45	0.5	-34.95	-13	Vertical

PCS1900:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3700.4	-35.61	1.48	-37.09	-13	Horizontal
3700.4	-33.75	1.48	-35.23	-13	Vertical
5550.6	-36.23	1.48	-37.71	-13	Horizontal
5550.6	-28.19	1.48	-29.67	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3760	-37.88	1.48	-39.36	-13	Horizontal
3760	-33.66	1.48	-35.14	-13	Vertical
5640	-34.89	1.48	-36.37	-13	Horizontal
5640	-31.91	1.48	-33.39	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
3819.6	-33.83	1.48	-35.31	-13	Horizontal
3819.6	-30.57	1.48	-32.05	-13	Vertical
5729.4	-28.84	1.48	-30.32	-13	Horizontal
5729.4	-35.34	1.48	-36.82	-13	Vertical

E-UTRA BANDS

Band 5:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1658	-56.69	2.38	-59.07	-13	Horizontal
1658	-55.73	2.38	-58.11	-13	Vertical
2487	-55.65	2.38	-58.03	-13	Horizontal
2487	-57.65	2.38	-60.03	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1673	-58.63	2.38	-61.01	-13	Horizontal
1673	-56.65	2.38	-59.03	-13	Vertical
2509.5	-58.64	2.38	-61.02	-13	Horizontal
2509.5	-56.33	2.38	-58.71	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
1688	-60.77	2.38	-63.15	-13	Horizontal
1688	-57.08	2.38	-59.46	-13	Vertical
2532	-58.16	2.38	-60.54	-13	Horizontal
2532	-60.66	2.38	-63.04	-13	Vertical

Band 41:

Mode 1					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5012	-56.69	2.38	-59.07	-13	Horizontal
5012	-55.73	2.38	-58.11	-13	Vertical
7518	-55.65	2.38	-58.03	-13	Horizontal
7518	-57.65	2.38	-60.03	-13	Vertical

Mode 2					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5186	-58.63	2.38	-61.01	-13	Horizontal
5186	-56.65	2.38	-59.03	-13	Vertical
7779	-58.64	2.38	-61.02	-13	Horizontal
7779	-56.33	2.38	-58.71	-13	Vertical

Mode 3					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit（dBm）	Polarity
5360	-60.77	2.38	-63.15	-13	Horizontal
5360	-57.08	2.38	-59.46	-13	Vertical
8040	-58.16	2.38	-60.54	-13	Horizontal
8040	-60.66	2.38	-63.04	-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.

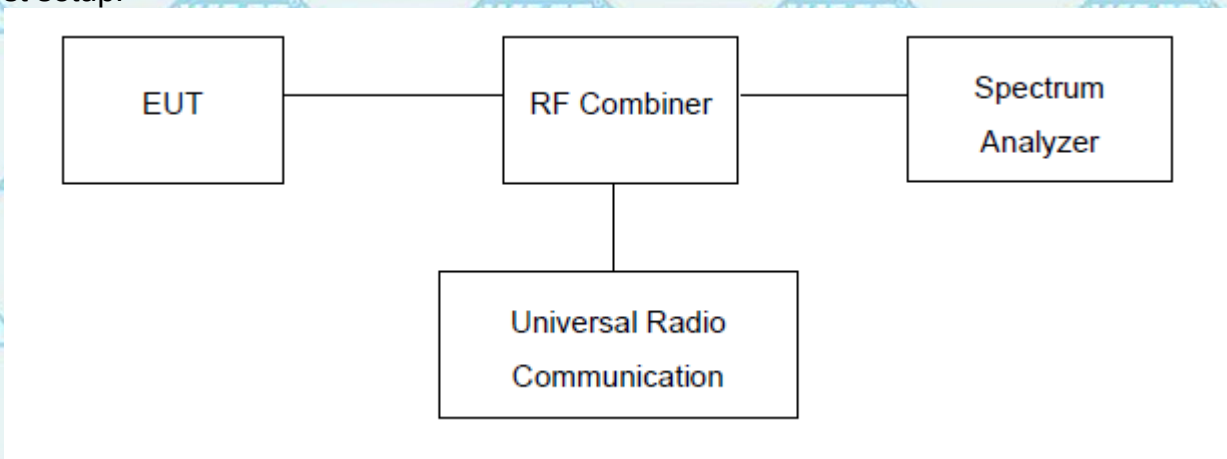
e) Set the detection mode to peak, and the trace mode to max hold..

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/GPRS/EGPRS):

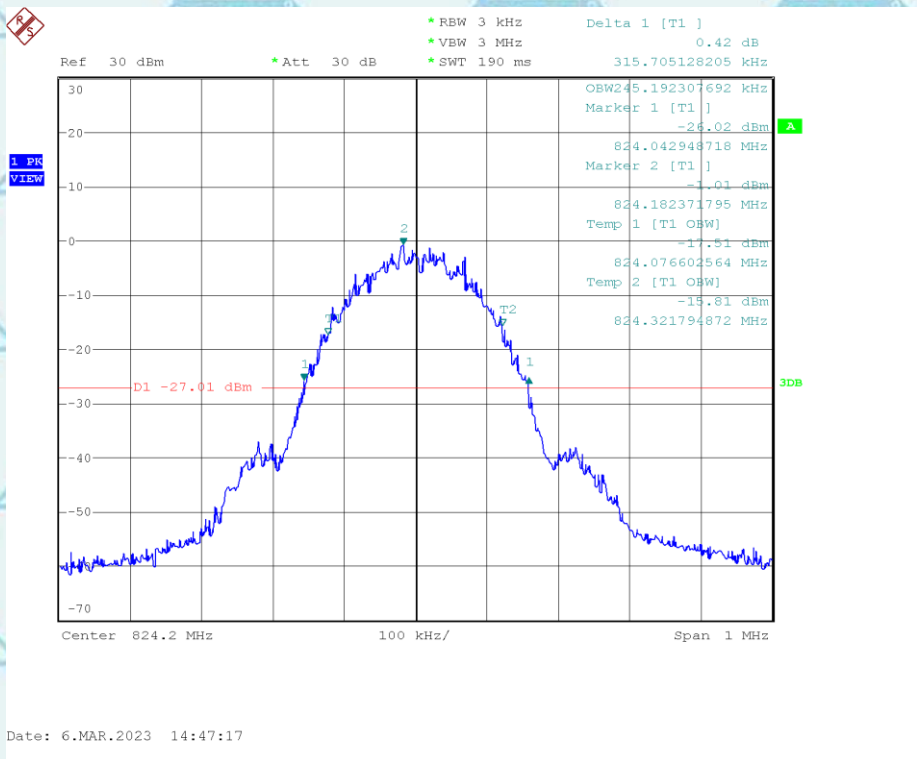
Frequency	OBW(99%)	26dB BW
824.2	245.192KHz	315.705KHz
836.6	243.590KHz	318.910KHz
848.8	243.590KHz	312.500KHz

1900(PCS /GPRS/EGPRS):

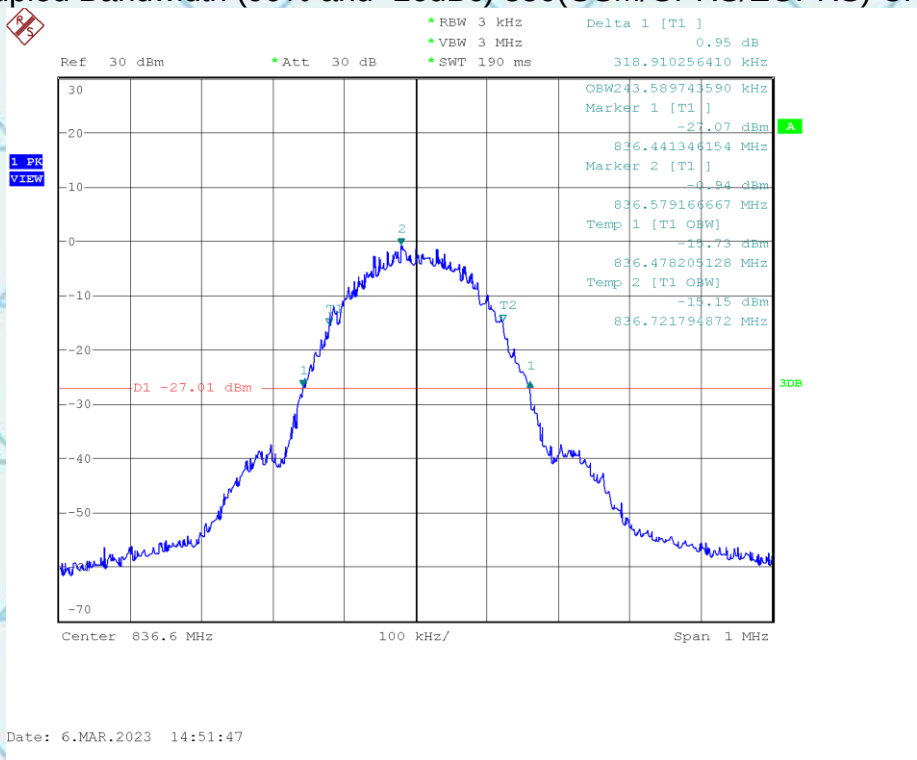
Frequency	OBW(99%)	26dB BW
1850.2	241.987KHz	315.705KHz
1880	245.192KHz	314.103KHz
1909.8	245.192KHz	309.295KHz

Test Plot (Worst)

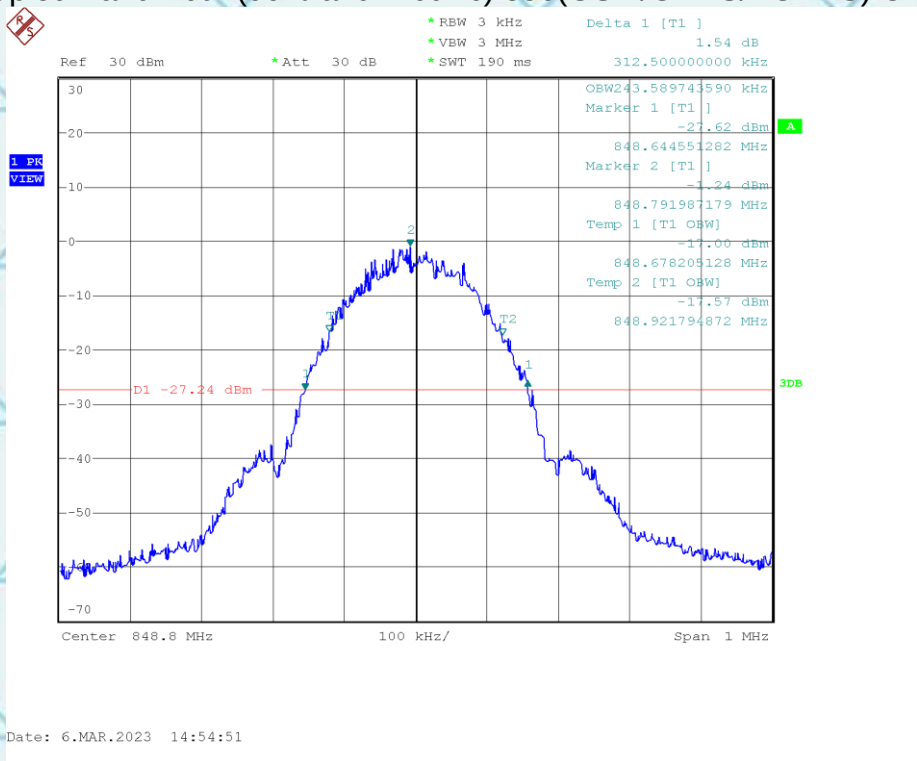
Occupied Bandwidth (99% and -26dBc) 850(GSM/GPRS/EGPRS) CH 128



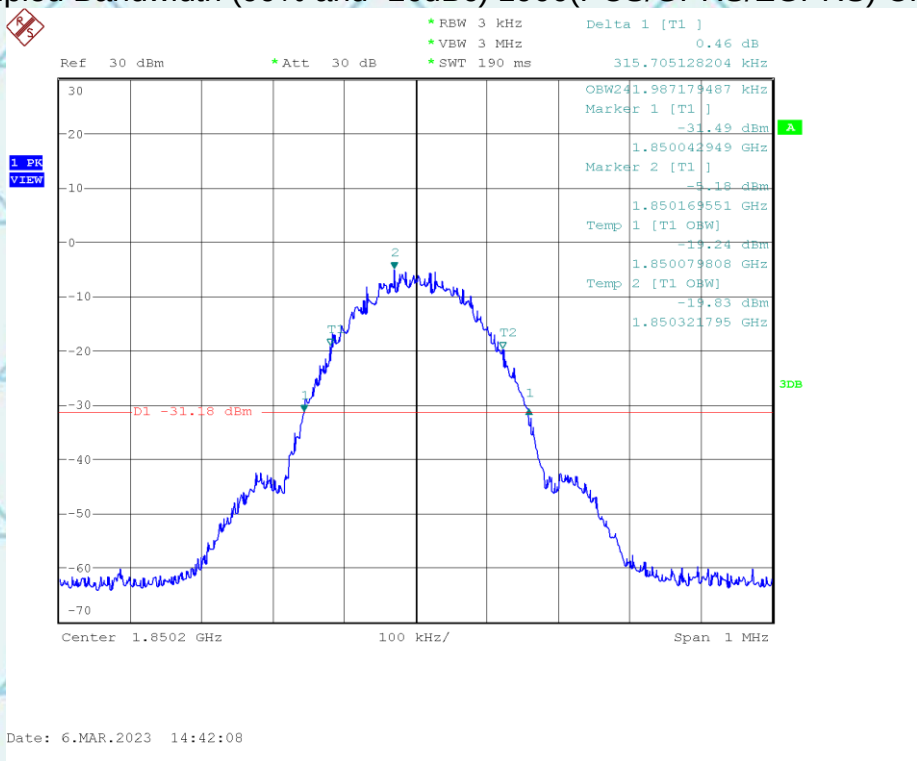
Occupied Bandwidth (99% and -26dBc) 850(GSM/GPRS/EGPRS) CH 190



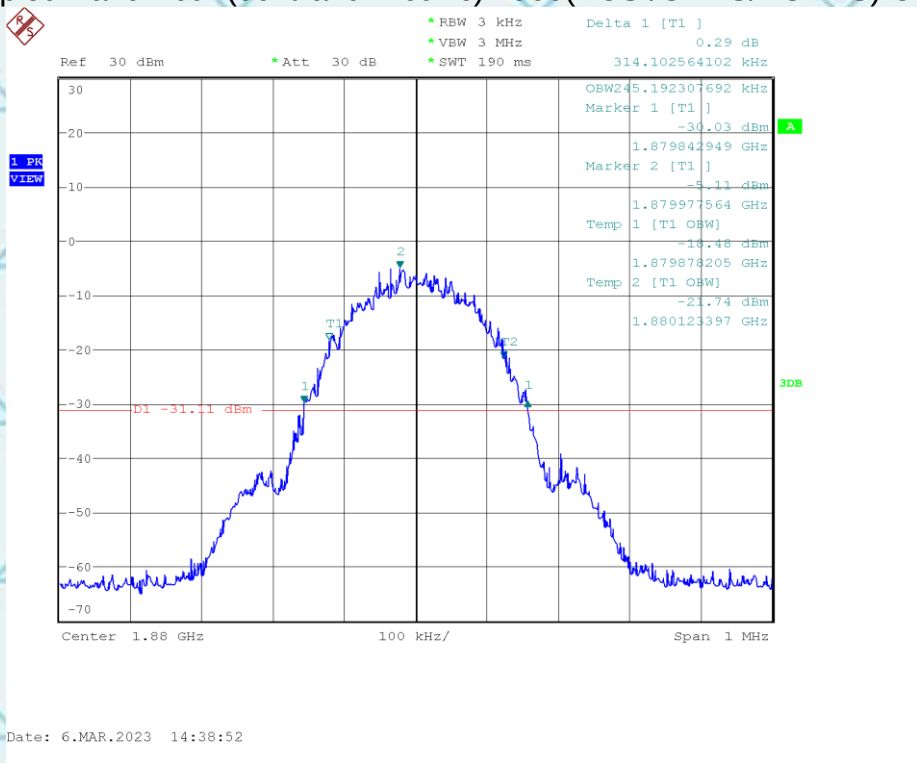
Occupied Bandwidth (99% and -26dBc) 850(GSM/GPRS/EGPRS) CH 251



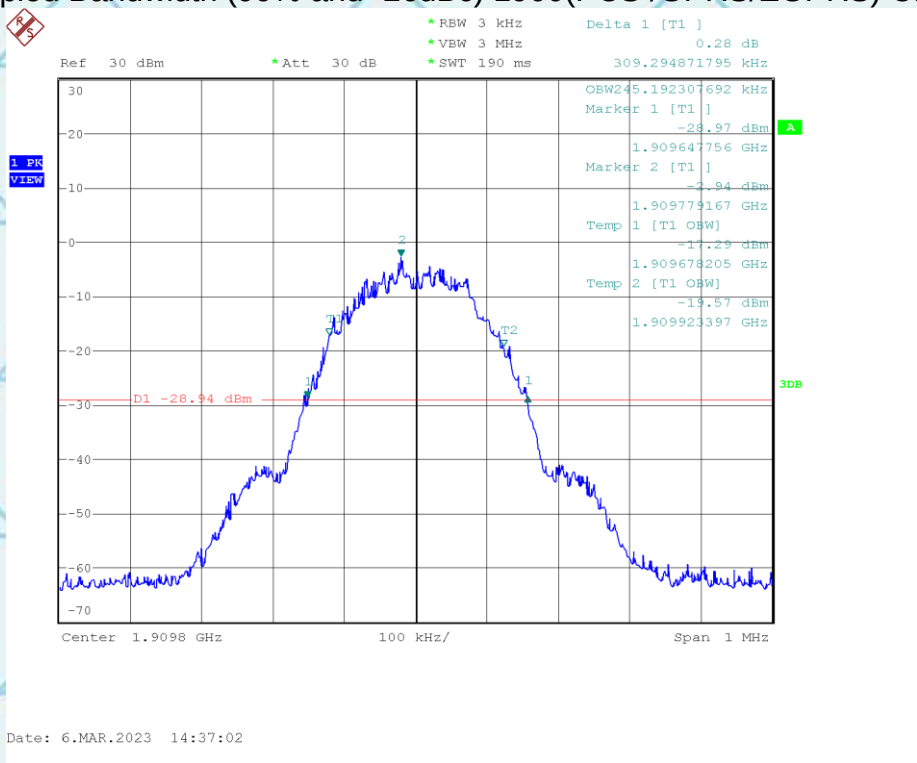
Occupied Bandwidth (99% and -26dBc) 1900(PCS/GPRS/EGPRS) CH 512



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



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



9. BAND EDGE

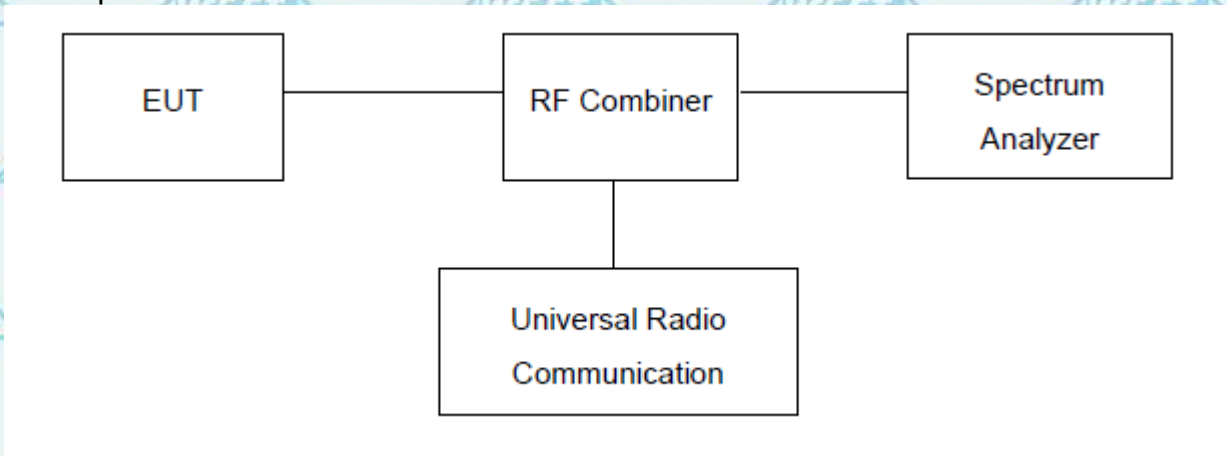
Test Limit:

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.

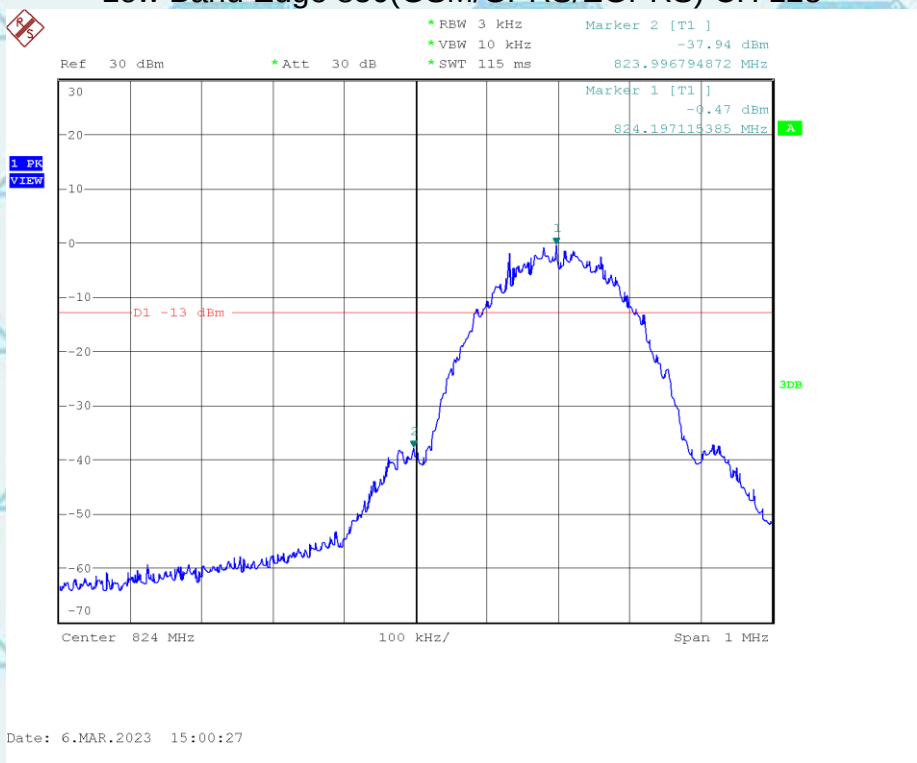
Test setup:



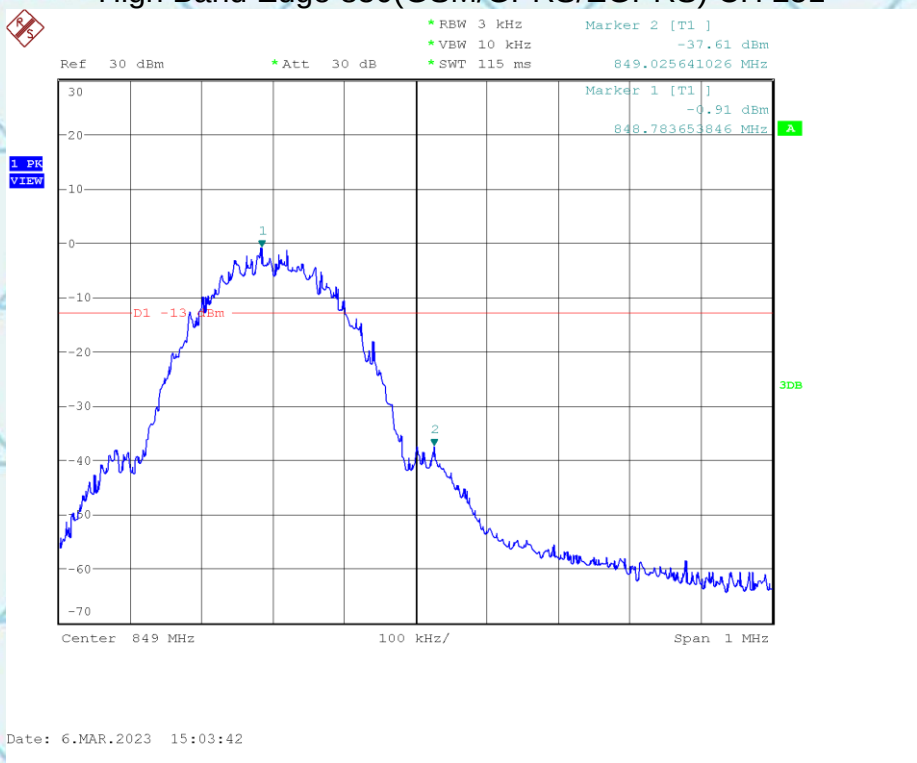
Measurement Result

Test Plot (Worst)

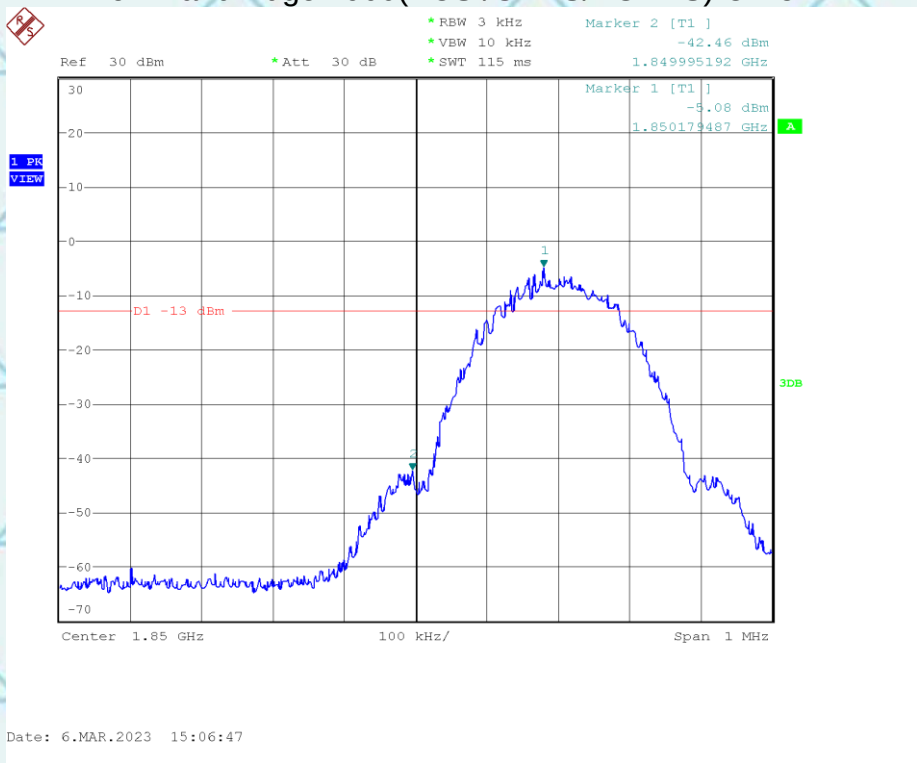
Low Band Edge 850(GSM/GPRS/EGPRS) CH 128



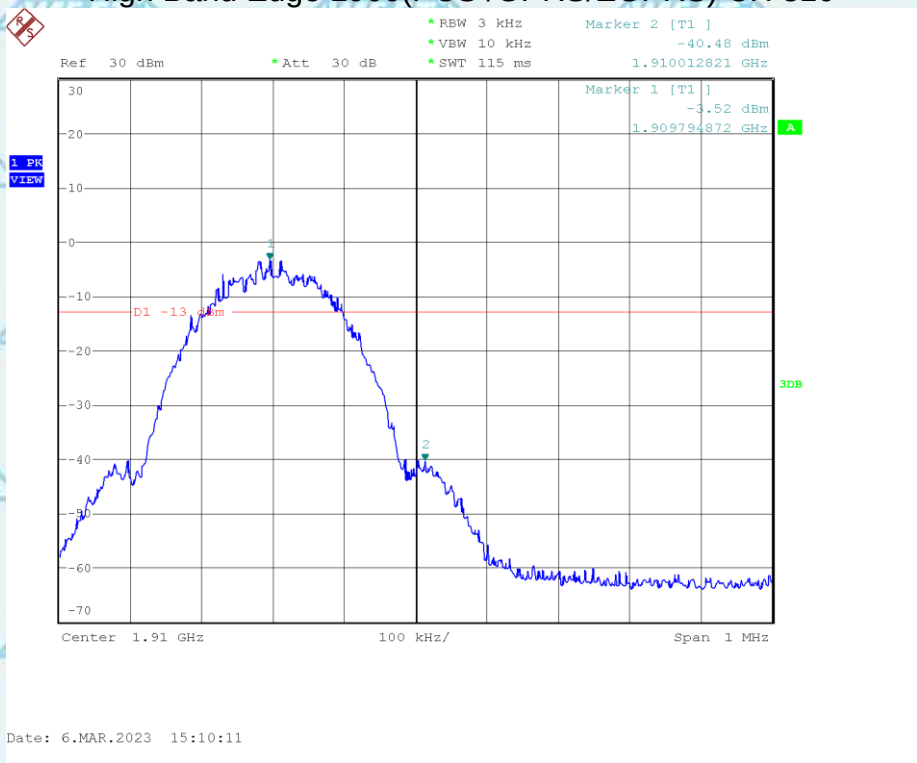
High Band Edge 850(GSM/GPRS/EGPRS) CH 251



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



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



10. FREQUENCY STABILITY

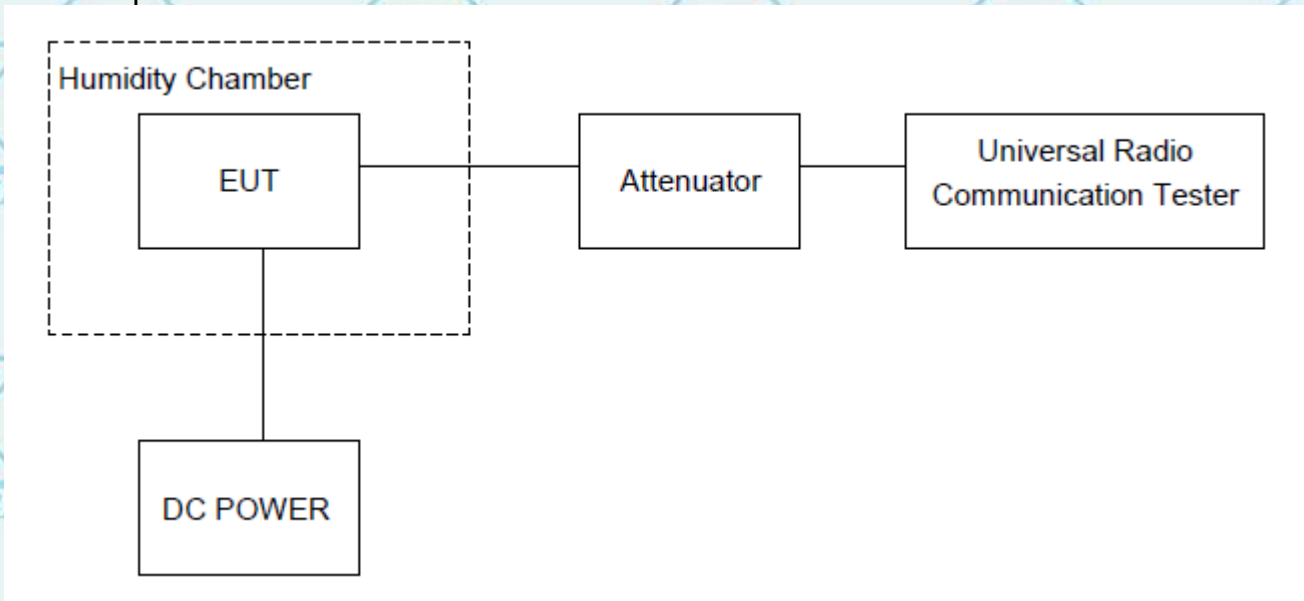
Test limit:

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	0.019
3.8	29	0.015
4.35	33	0.018

Frequency Error against Temperature for GSM 850 (836.4MHz)

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	39	0.021
0	37	0.020
10	40	0.022
20	30	0.016
30	39	0.021
40	34	0.018
50	32	0.017

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

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.45	37	0.044
3.8	28	0.034
4.35	37	0.044

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

Temperature(°C)	Frequency error(Hz)	Frequency error(ppm)
-10	34	0.041
0	30	0.036
10	36	0.044
20	40	0.048
30	32	0.038
40	28	0.034
50	40	0.048

Note: Please refer to Annex Acer One 8 T9-422L (E-UTRA Ban5/Band41) for more test data

---END OF REPORT---