

3.5 Conducted Out of Band Emissions

3.5.1 Requirement

According to FCC section 22.717(a) and FCC section 24.235(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43+10\log(P)$ dB. This calculated to be -13dBm.

3.5.2 Test Description

See section 3.1.2 of this report.

3.5.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

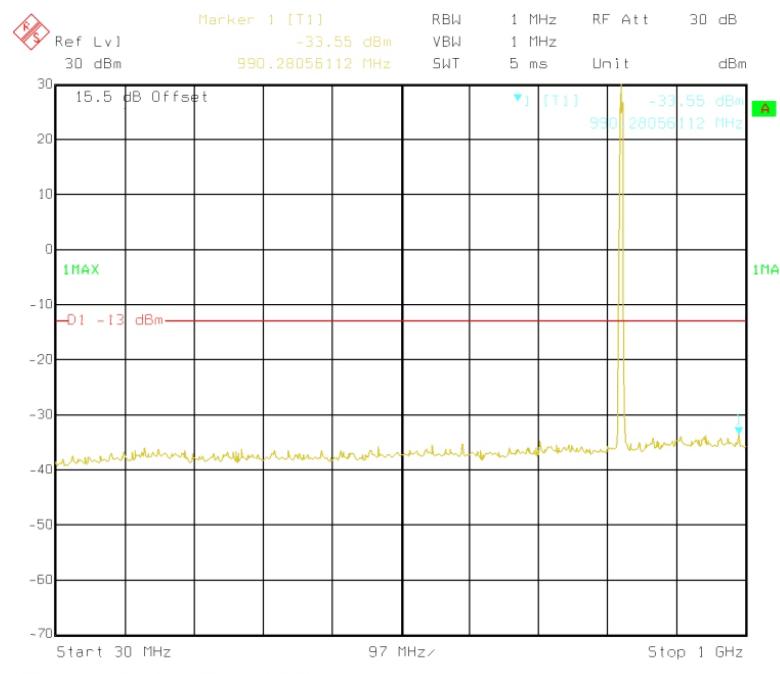
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-24.66	Plot A1/A2	-13	PASS
	190	836.6	-24.87	Plot B1/B2		PASS
	251	848.8	-24.94	Plot C1/C2		PASS
GSM 1900MHz	512	1850.2	-24.45	Plot D1/D2	-13	PASS
	661	1880.0	-24.70	Plot E1/E2		PASS
	810	1909.8	-27.71	Plot F1/F2		PASS
GPRS 850MHz	128	824.2	-26.37	Plot A3/A4	-13	PASS
	190	836.6	-25.05	Plot B3/B4		PASS
	251	848.8	-26.08	Plot C3/C4		PASS
GPRS 1900MHz	512	1850.2	-24.43	Plot D3/D4	-13	PASS
	661	1880.0	-24.45	Plot E3/E4		PASS
	810	1909.8	-25.04	Plot F3/F4		PASS

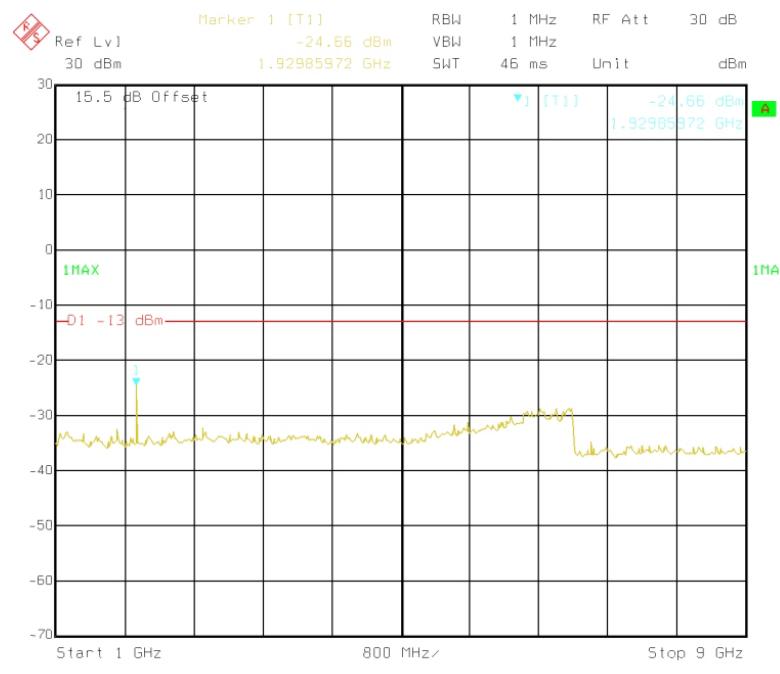
2. Test Plot for the Whole Measurement Frequency Range:

Note: the power of the EUT transmitting frequency should be ignored.

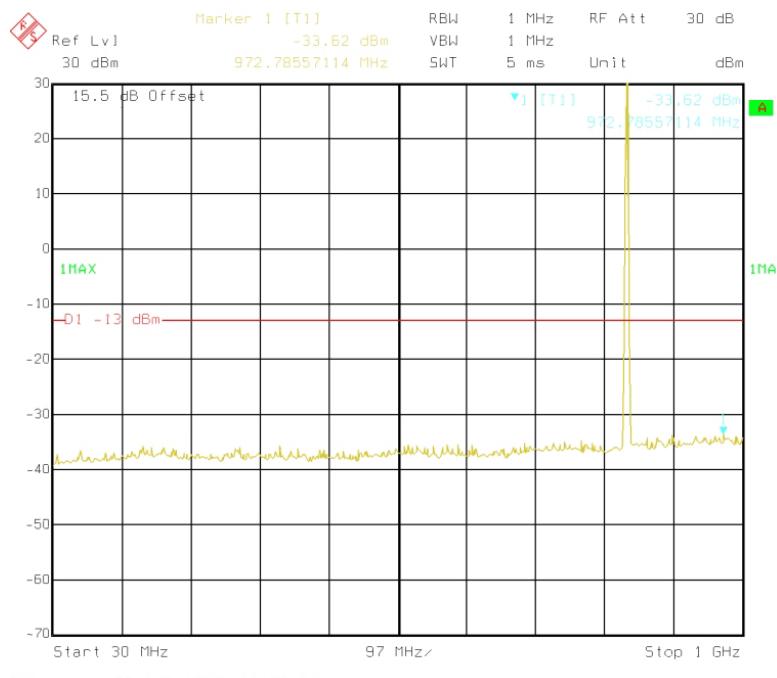
Test Plot of GSM



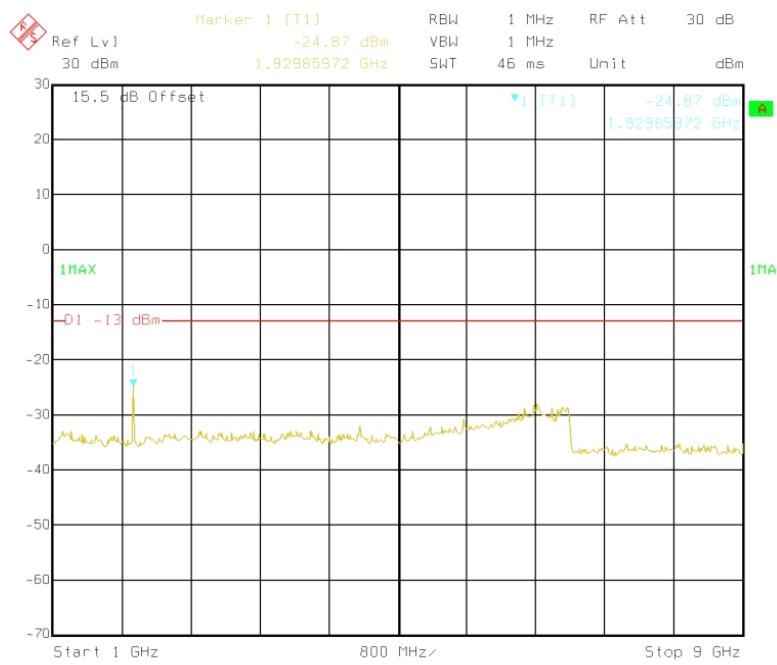
(Plot A1:GSM 850MHz Channel = 128, 30MHz to 1GHz)



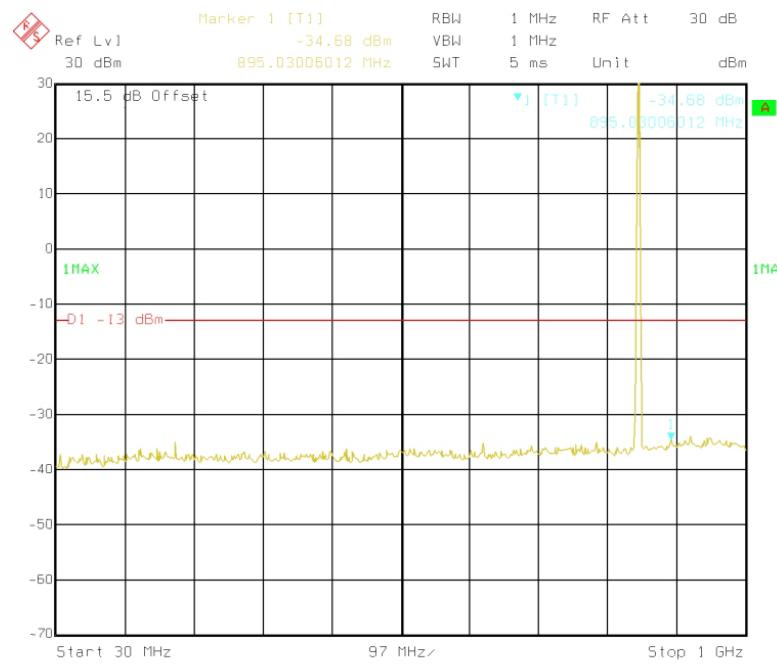
(Plot A2: GSM 850MHz Channel = 128, 1GHz to 9GHz)



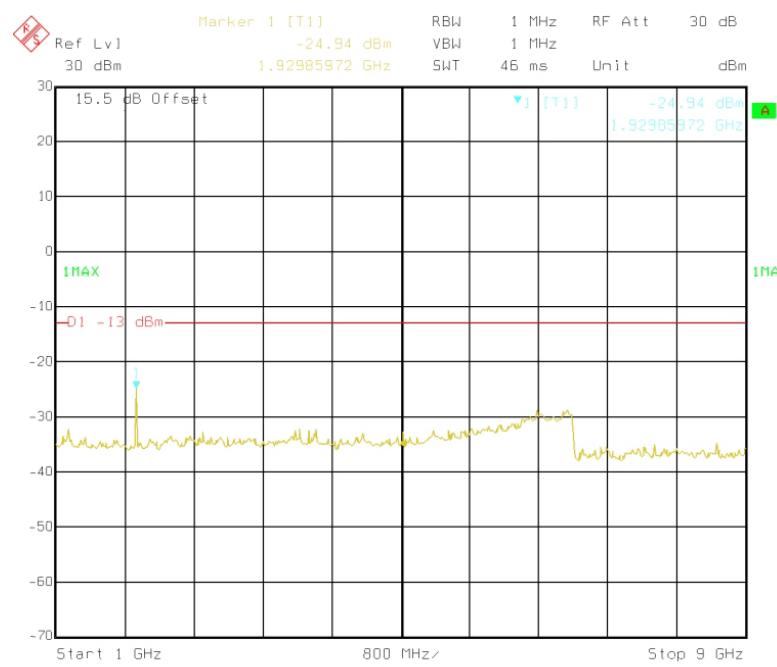
(Plot B1: GSM 850MHz Channel = 190, 30MHz to 1GHz)



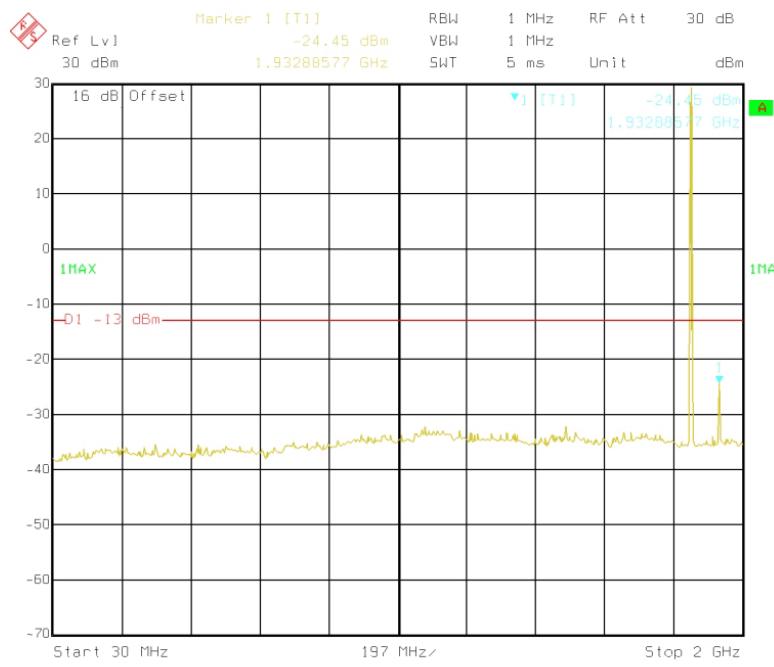
(Plot B2:GSM 850MHz Channel = 190, 1GHz to 9GHz)



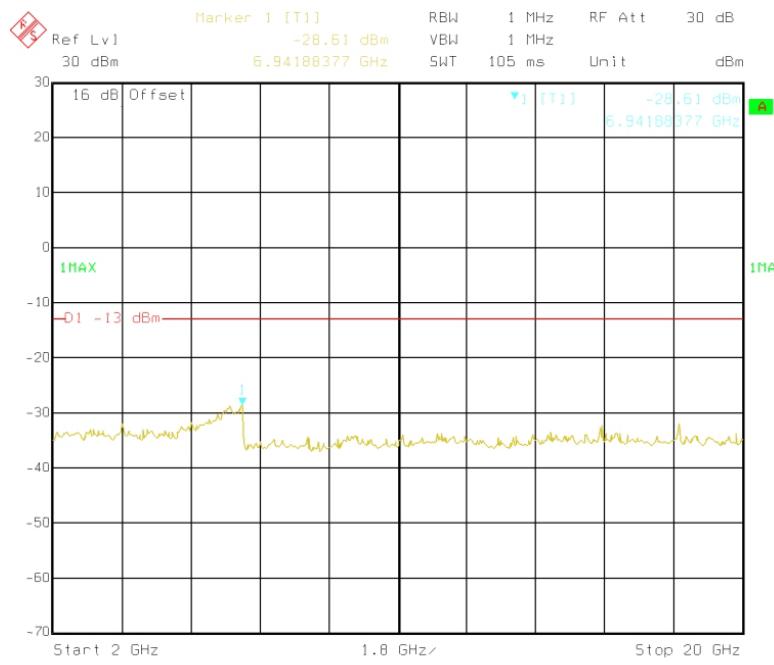
(Plot C1:GSM 850MHz Channel = 251, 30MHz to 1GHz)



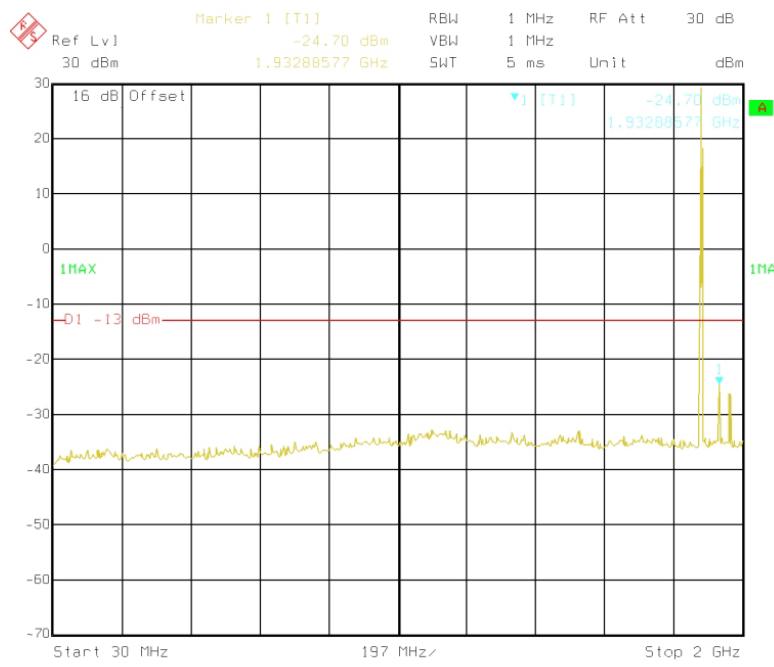
(Plot C2:GSM 850MHz Channel = 251, 1GHz to 9GHz)



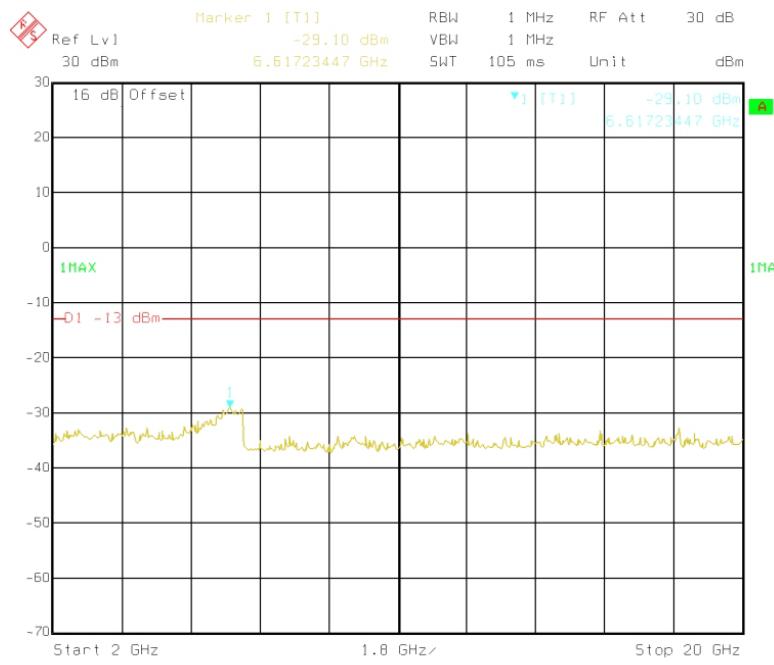
(Plot D1:GSM 1900MHz Channel = 512, 30MHz to 2GHz)



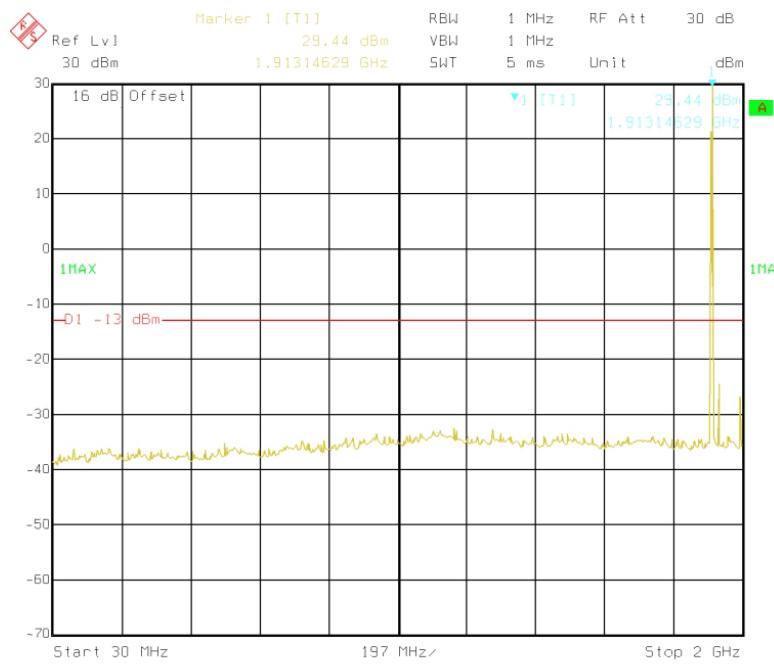
(Plot D2:GSM 1900MHz Channel = 512, 2GHz to 20GHz)



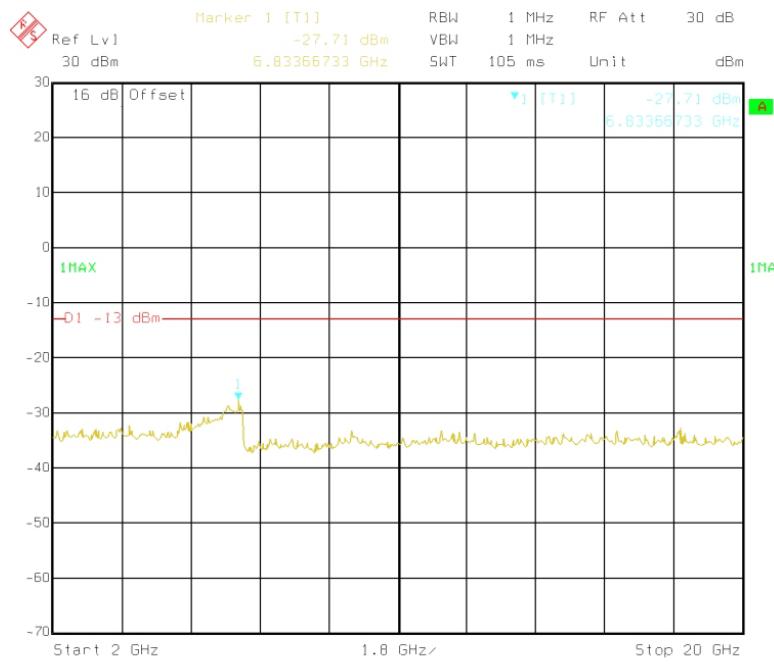
(Plot E1:GSM 1900MHz Channel = 661, 30MHz to 2GHz)



(Plot E2:GSM 1900MHz Channel = 661, 2GHz to 20GHz)

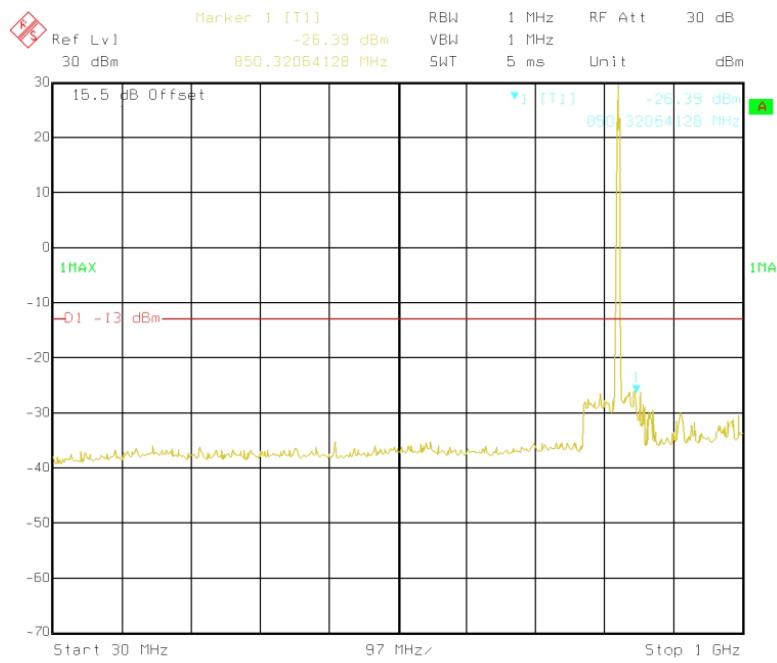


(Plot F1:GSM 1900MHz Channel = 810, 30MHz to 2GHz)

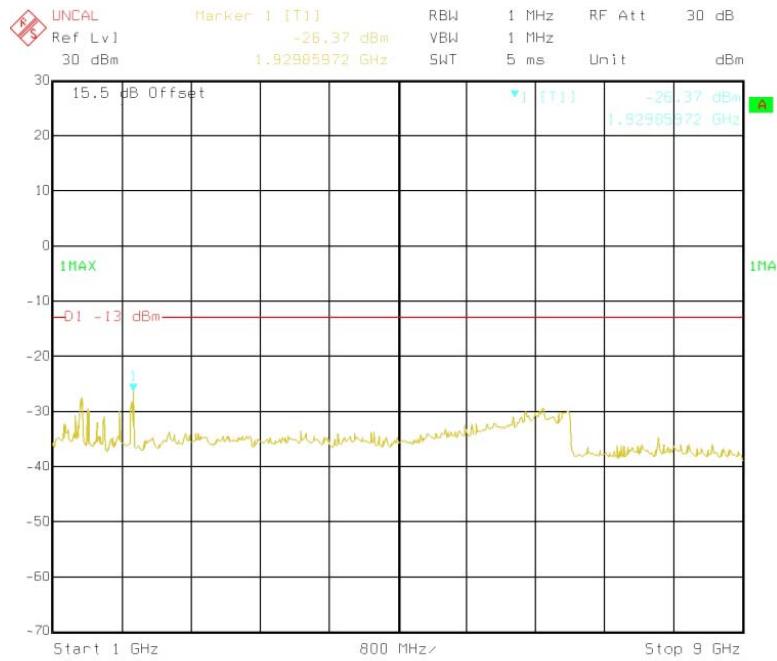


(Plot F2:GSM 1900MHz Channel = 810, 2GHz to 20GHz)

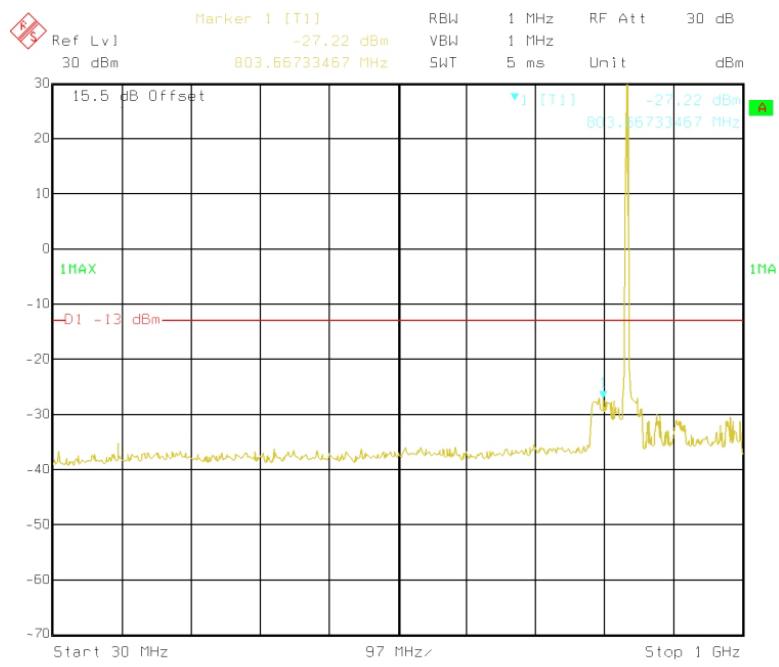
Test Plot of GPRS:



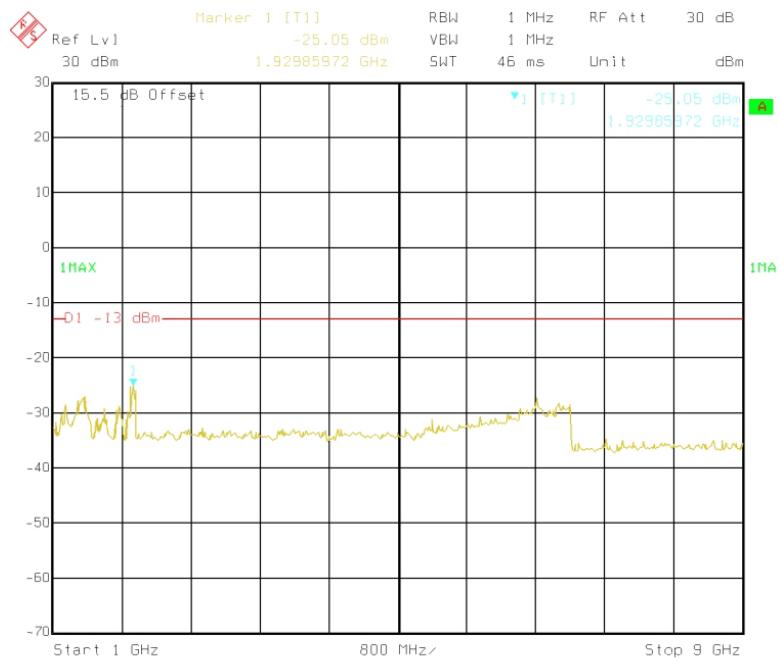
(Plot A3: GPRS 850MHz Channel = 128, 30MHz to 1GHz)



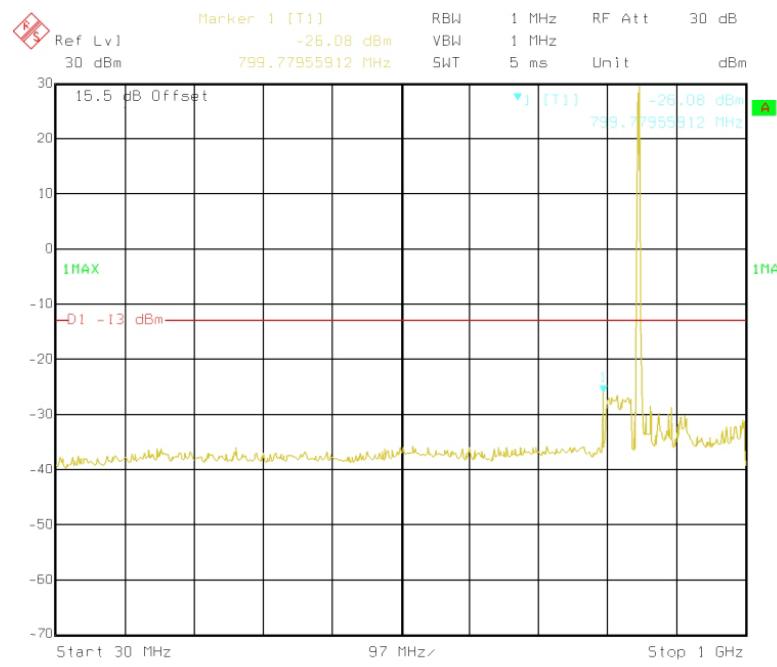
(Plot A4: GPRS 850MHz Channel = 128, 1GHz to 9GHz)



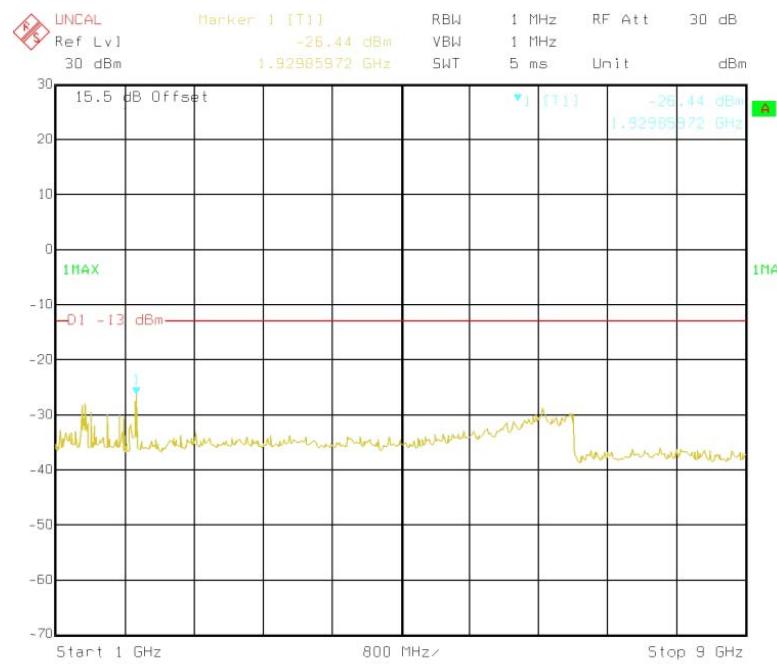
(Plot B3: GPRS 850MHz Channel = 190, 30MHz to 1GHz)



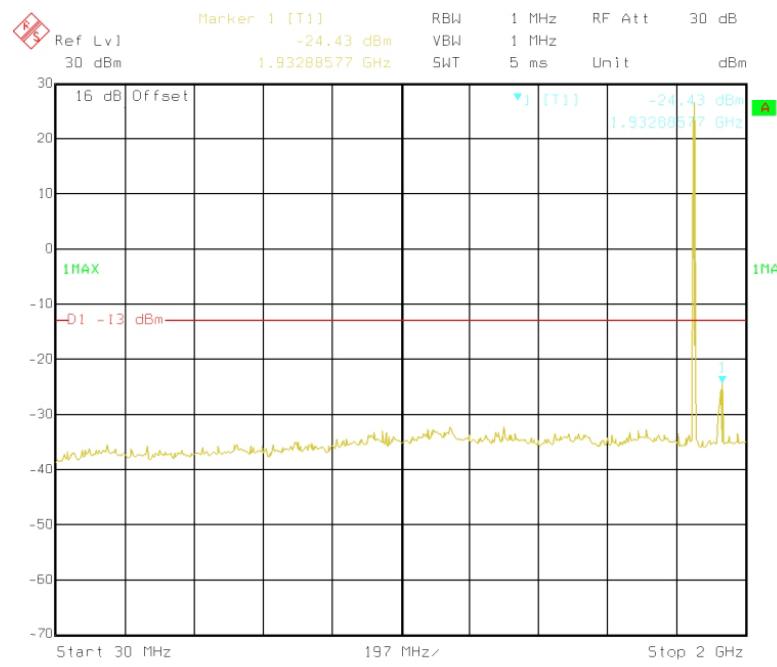
(Plot B4: GPRS 850MHz Channel = 190, 1GHz to 9GHz)



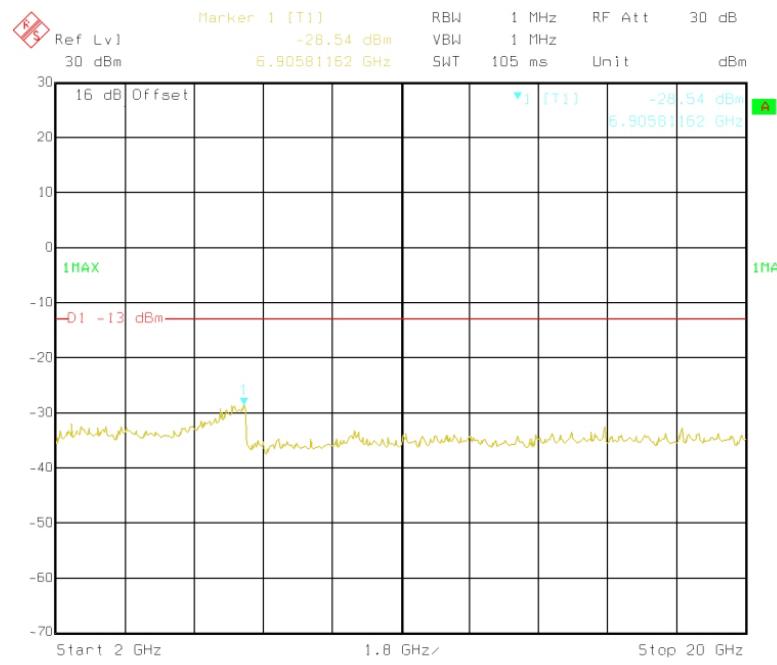
(Plot C3: GPRS 850MHz Channel = 251, 30MHz to 1GHz)



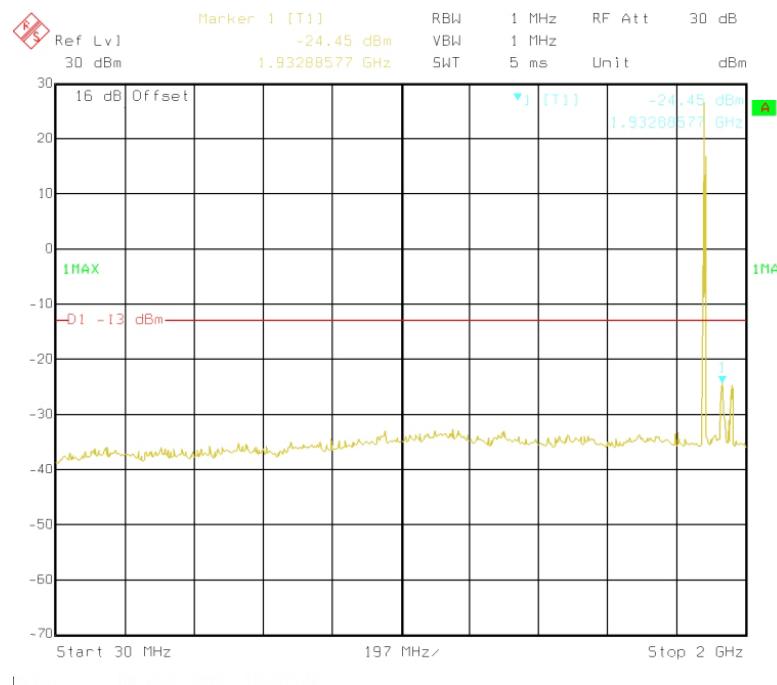
(Plot C4: GPRS 850MHz Channel = 251, 1GHz to 9GHz)



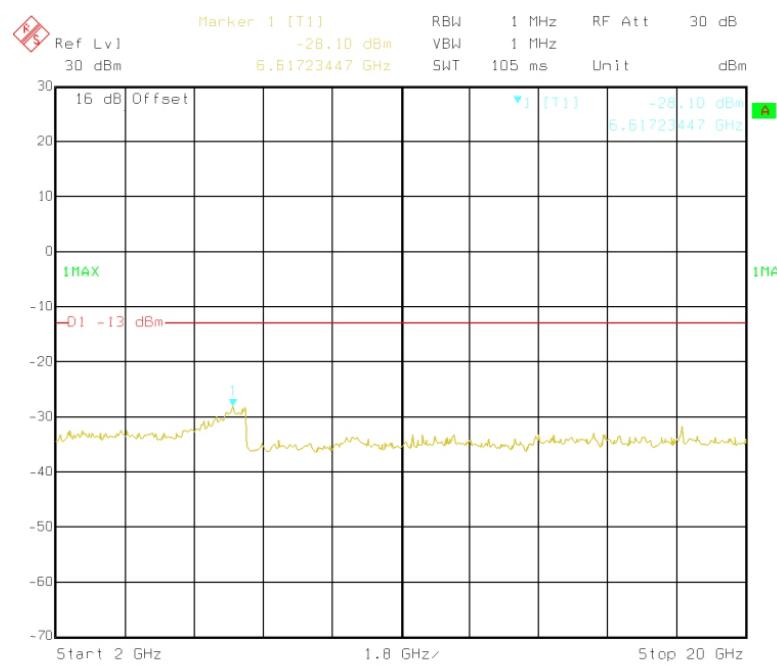
(Plot D3: GPRS 1900MHz Channel = 512, 30MHz to 2GHz)



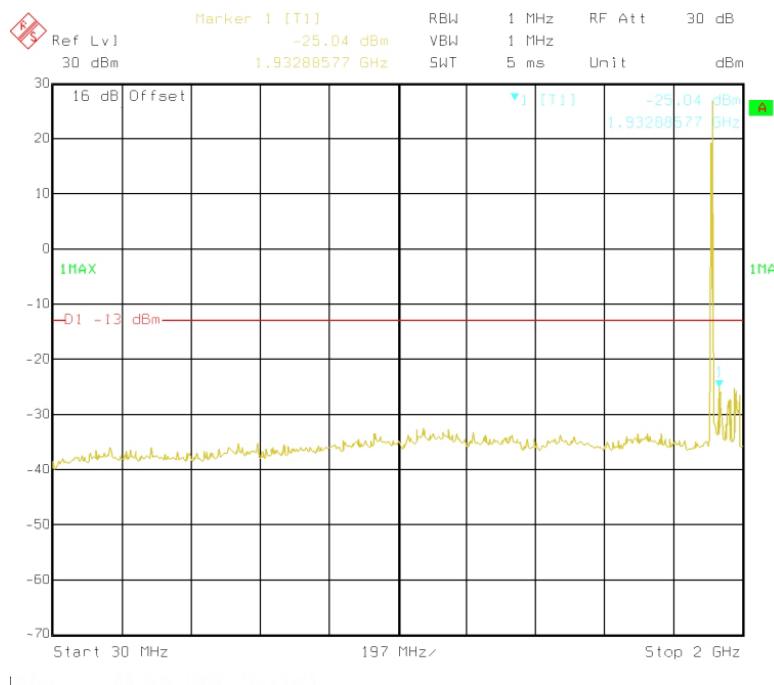
(Plot D4: GPRS 1900MHz Channel = 512, 2GHz to 20GHz)



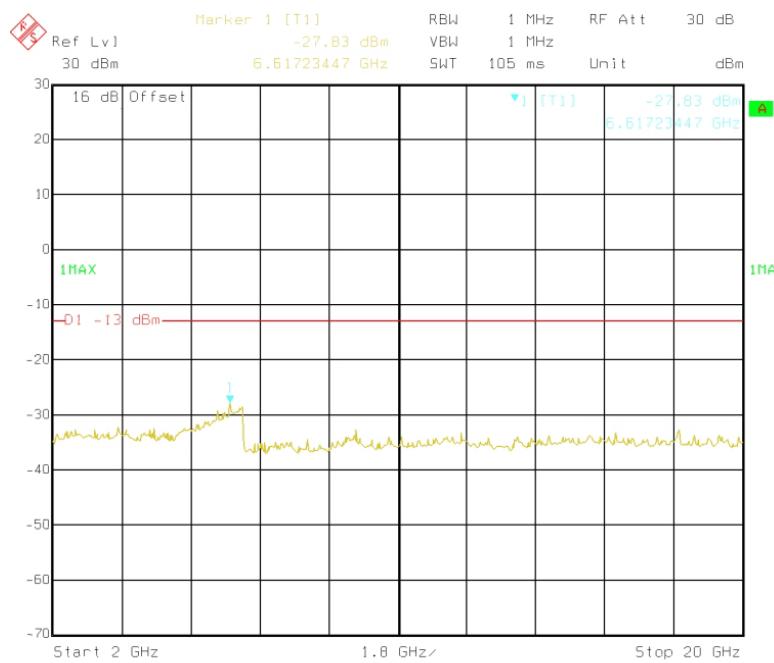
(Plot E3: GPRS 1900MHz Channel = 661, 30MHz to 2GHz)



(Plot E4: GPRS 1900MHz Channel = 661, 2GHz to 20GHz)



(Plot F3: GPRS 1900MHz Channel = 810, 30MHz to 2GHz)



(Plot F4: GPRS 1900MHz Channel = 810, 2GHz to 20GHz)

3.6 Band Edge

3.6.1 Requirement

According to FCC section 22.717(b) and FCC section 24.235(b), in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

3.6.2 Test Description

See section 3.1.2 of this report.

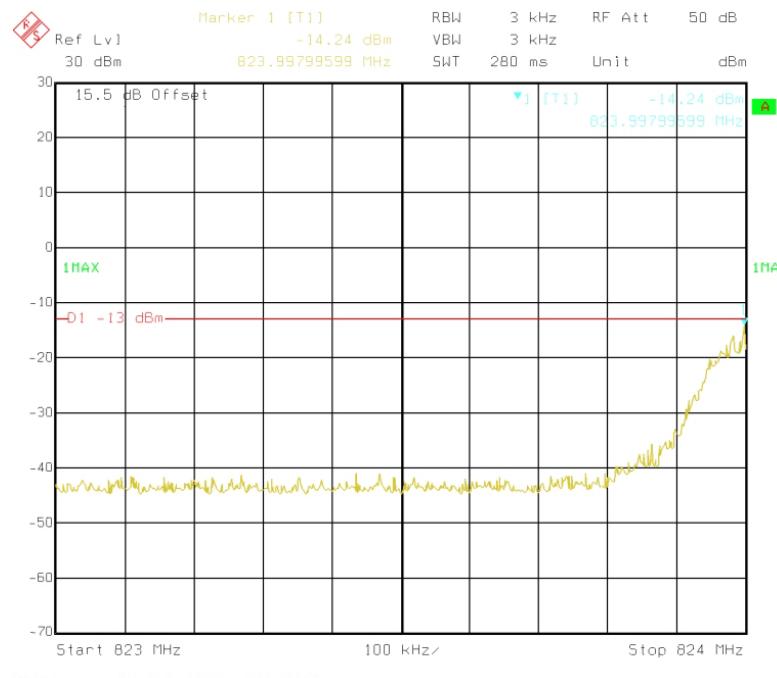
3.6.3 Test Result

The lowest and highest channels are tested to verify the band edge emissions.

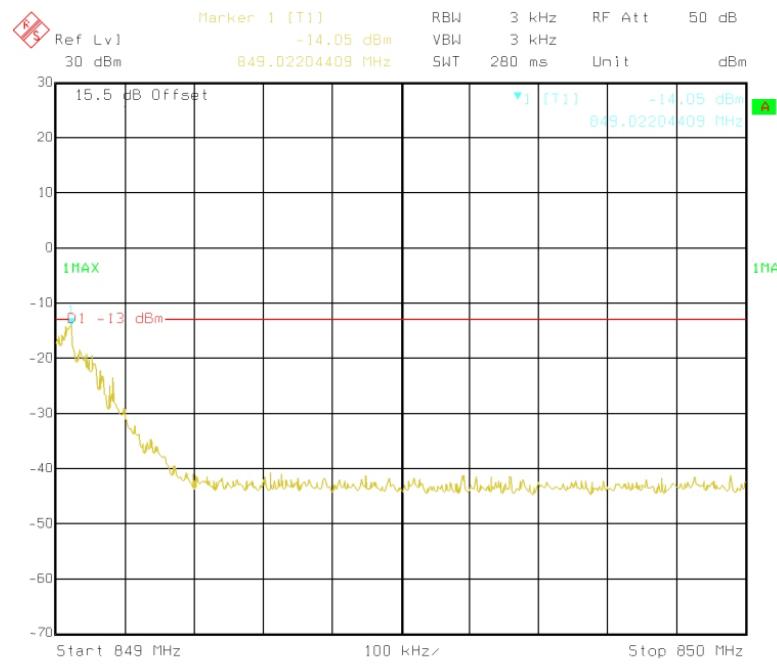
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-14.24	Plot A1	-13	PASS
	251	848.8	-14.05	Plot B1		PASS
GSM 1900MHz	512	1850.2	-14.65	Plot C1	-13	PASS
	810	1909.8	-14.07	Plot D1		PASS
GPRS 850MHz	128	824.2	-13.43	Plot A2	-13	PASS
	251	848.8	-13.81	Plot B2		PASS
GPRS 1900MHz	512	1850.2	-16.34	Plot C2	-13	PASS
	810	1909.8	-14.97	Plot D2		PASS

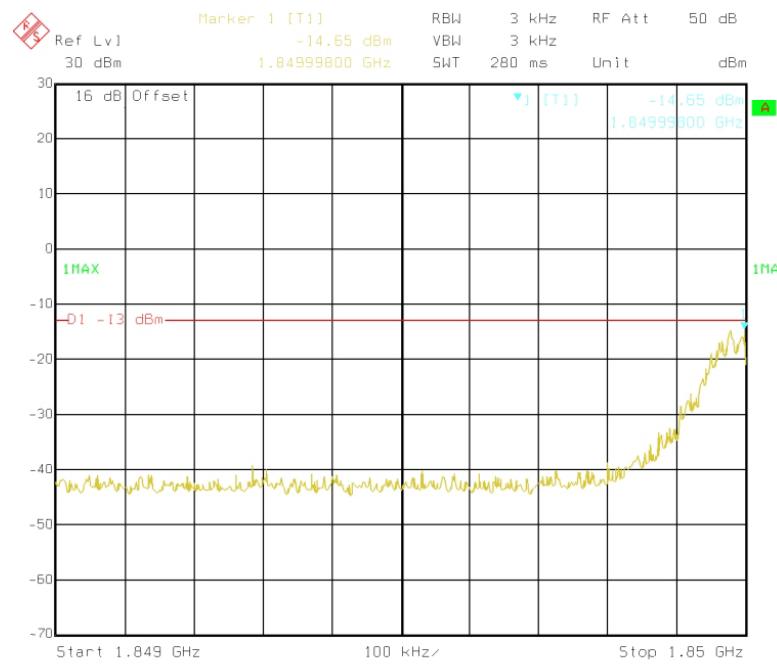
2. Test Plot of GSM:



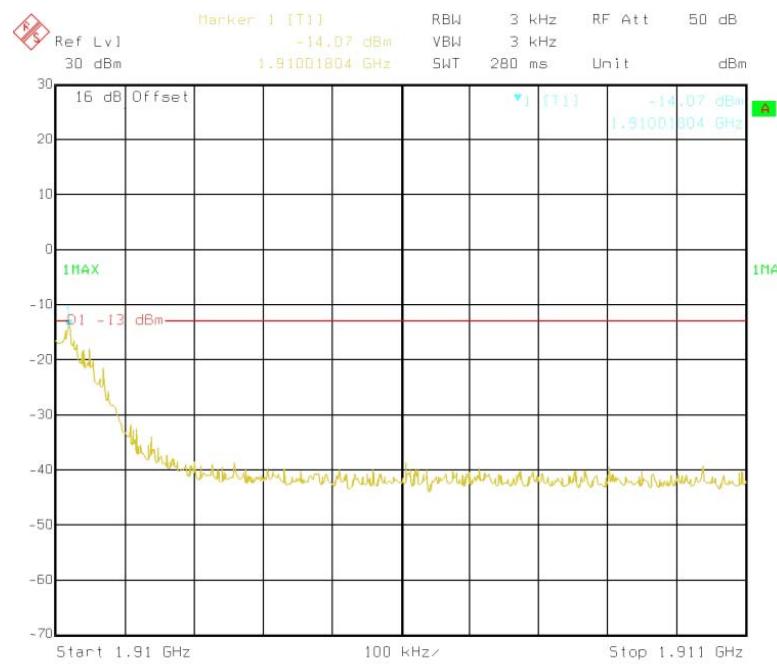
(Plot A1:GSM 850MHz Channel = 128)



(Plot B1:GSM 850MHz Channel = 251)

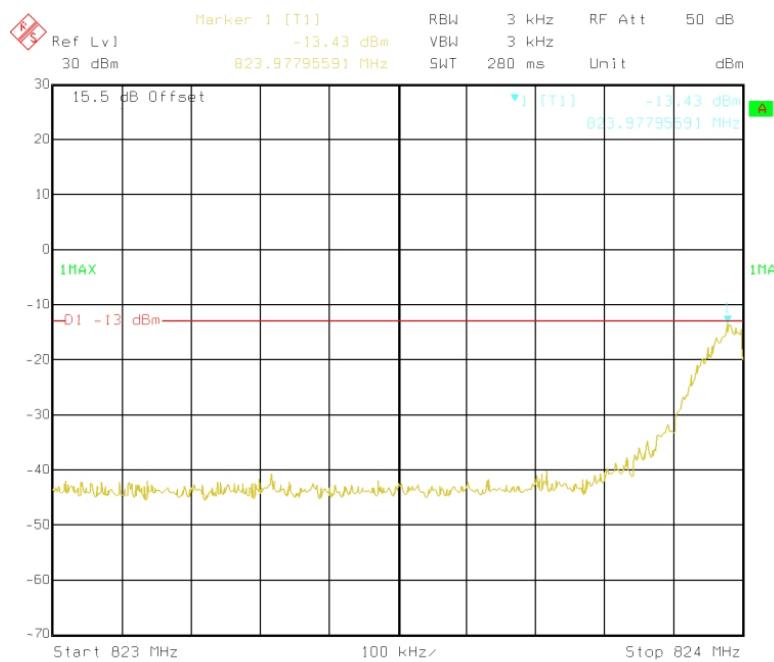


(Plot C1: GSM 1900MHz Channel = 512)

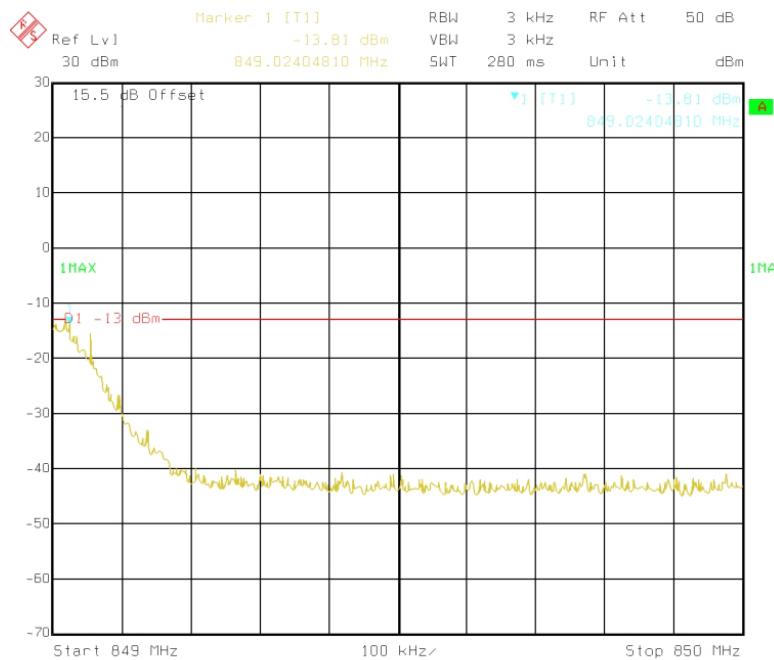


(Plot D1: GSM 1900MHz Channel = 810)

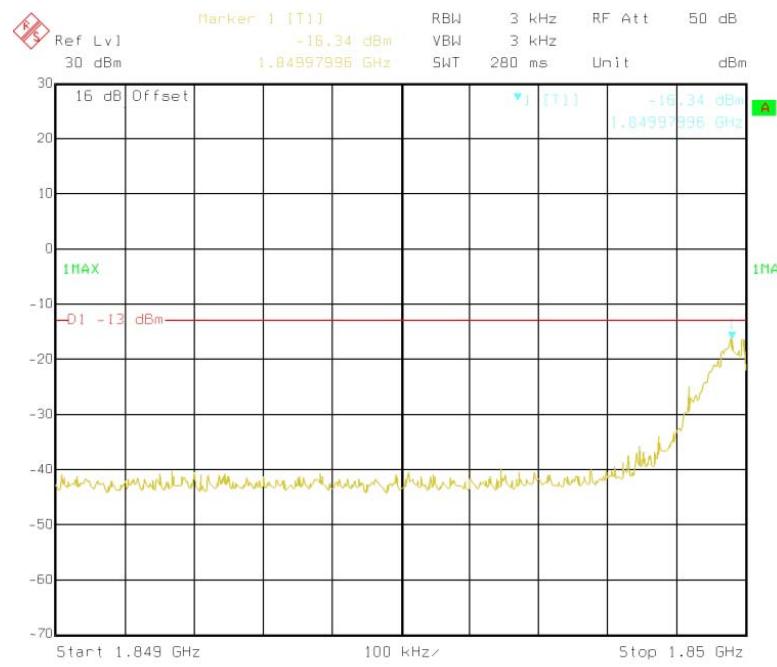
3. Test Plot of GPRS:



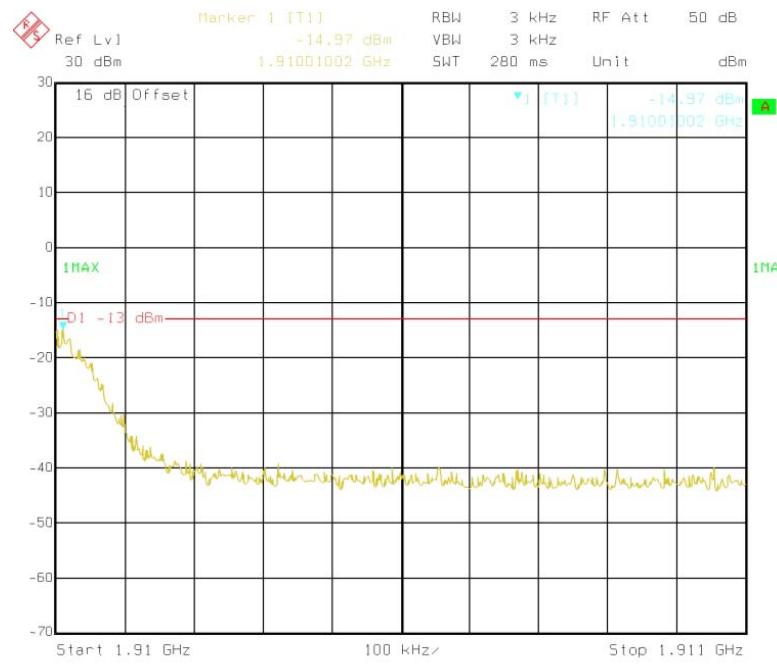
(Plot A2;GPRS 850MHz Channel = 128)



(Plot B2;GPRS 850MHz Channel = 251)



(Plot C2:GPRS 1900MHz Channel = 512)



(Plot D2:GPRS 1900MHz Channel = 810)

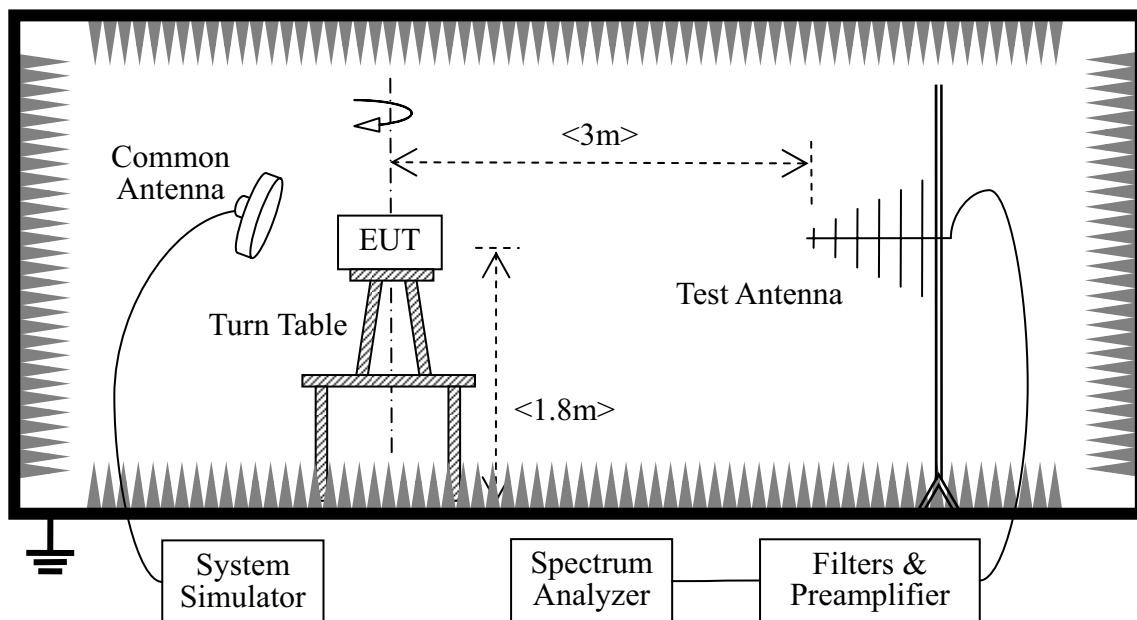
3.7 Transmitter Radiated Power (EIRP/ERP)

3.7.1 Requirement

According to FCC section 22.713, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2Watts e.i.r.p. peak power.

3.7.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. GSM550MHz band Power Control Level (PCL) = 5 and Power Class = 4 and GSM1700MHz band Power Control Level (PCL) = 0 and Power Class = 1. A call is established between the EUT and the SS via a Common Antenna.

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	R&S	CMU200	105571	2008.12	1year
Spectrum Analyzer	R&S	FSP30	101020	2008.10	1year
Full-Anechoic Chamber	ETS • LINDGREN	9m*6m*6m	(n.a.)	2008.10	2year
Bi-Log Antenna	R&S	HL562	100385	2008.10	1year
Horn Antenna	R&S	HF906	100565	2008.10	1year

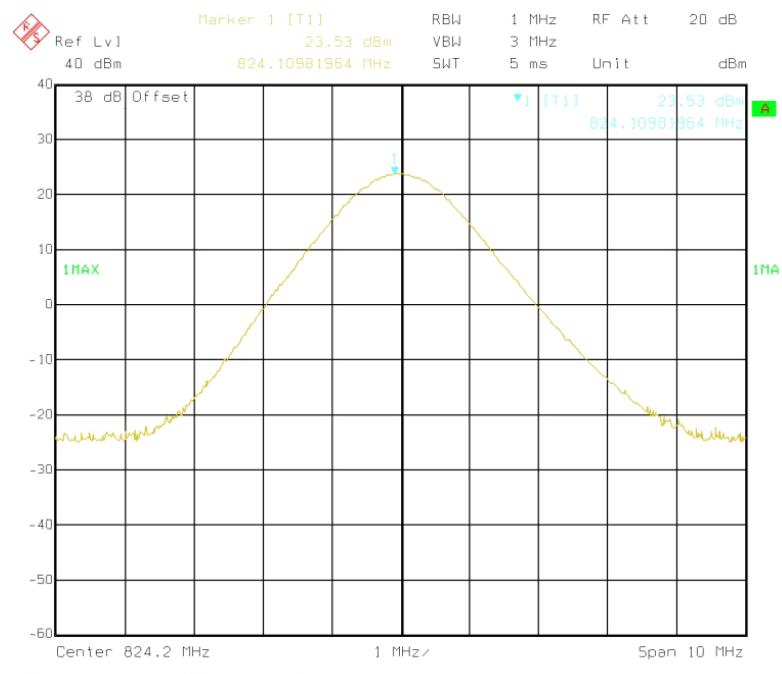
3.7.3 Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

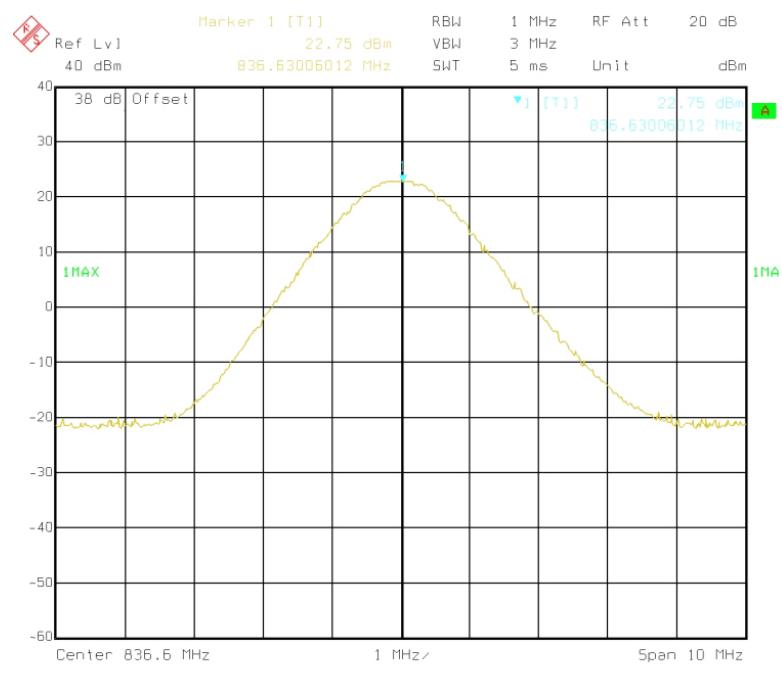
1. Test Verdict:

Band	Chann el	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.2	23.53	0.23	Plot A1	35.45	7	PASS
	190	836.6	22.75	0.19	Plot B1			PASS
	251	848.8	24.68	0.29	Plot C1			PASS
GSM 1900MHz	512	1850.2	17.28	0.05	Plot D1	33	2	PASS
	661	1880.0	17.74	0.06	Plot E1			PASS
	810	1909.8	18.37	0.07	Plot F1			PASS
GPRS 850MHz	128	824.2	22.30	0.17	Plot A2	35.45	7	PASS
	190	836.6	23.87	0.24	Plot B2			PASS
	251	848.8	23.87	0.24	Plot C2			PASS
GPRS 1900MHz	512	1850.2	17.87	0.06	Plot D2	33	2	PASS
	661	1880.0	18.63	0.07	Plot E2			PASS
	810	1909.8	18.63	0.07	Plot F2			PASS

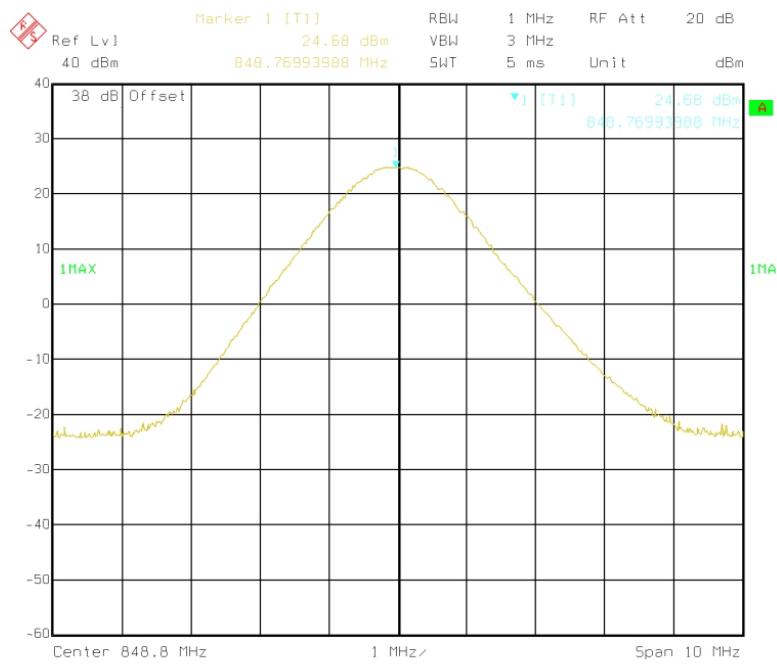
2. Test Plot of GSM:



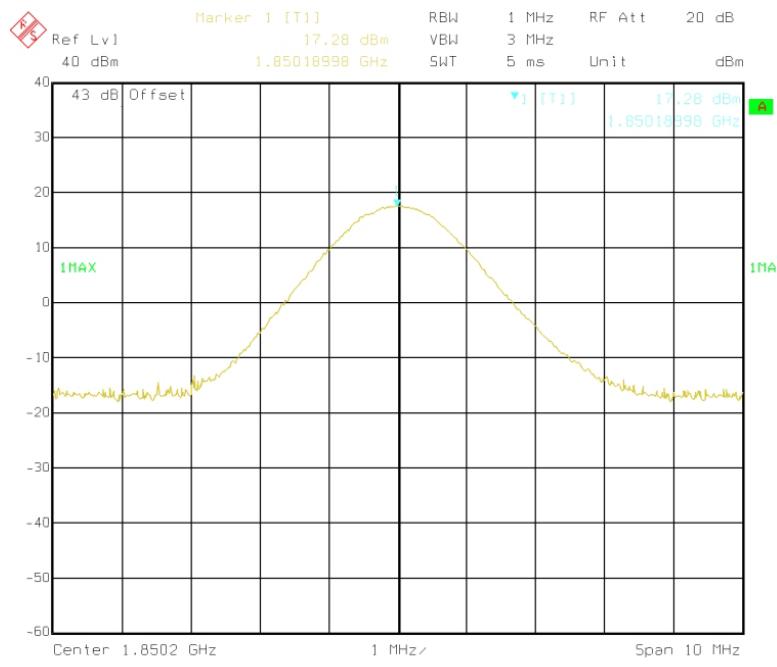
(Plot A1:GSM 850MHz Channel = 128)



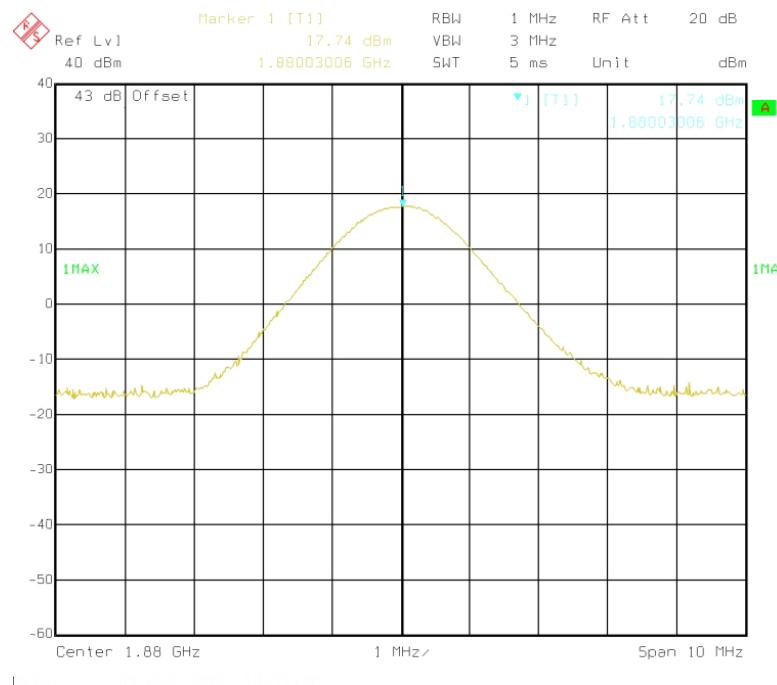
(Plot B1: GSM 850MHz Channel = 190)



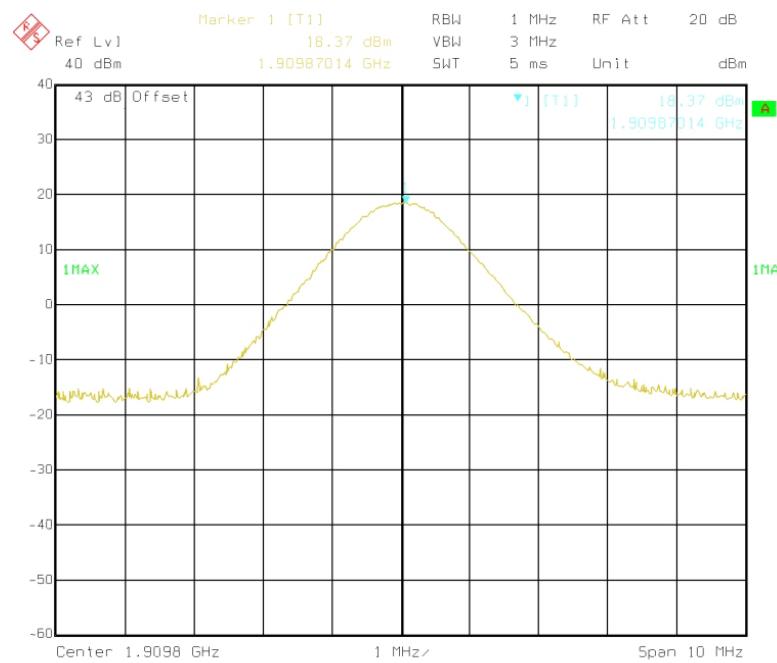
(Plot C1:GSM 850MHz Channel = 251)



(Plot D1: GSM 1900MHz Channel = 512)

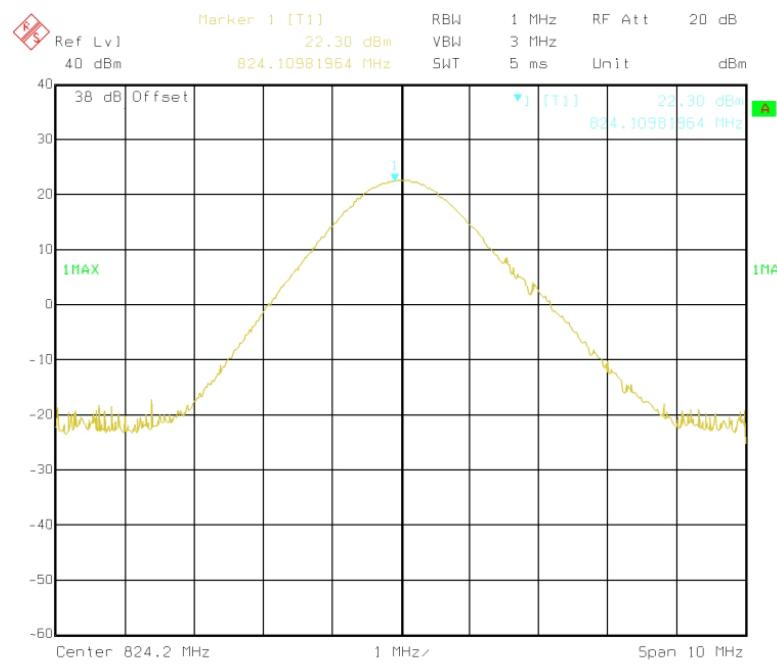


(Plot E1: GSM 1900MHz Channel = 661)

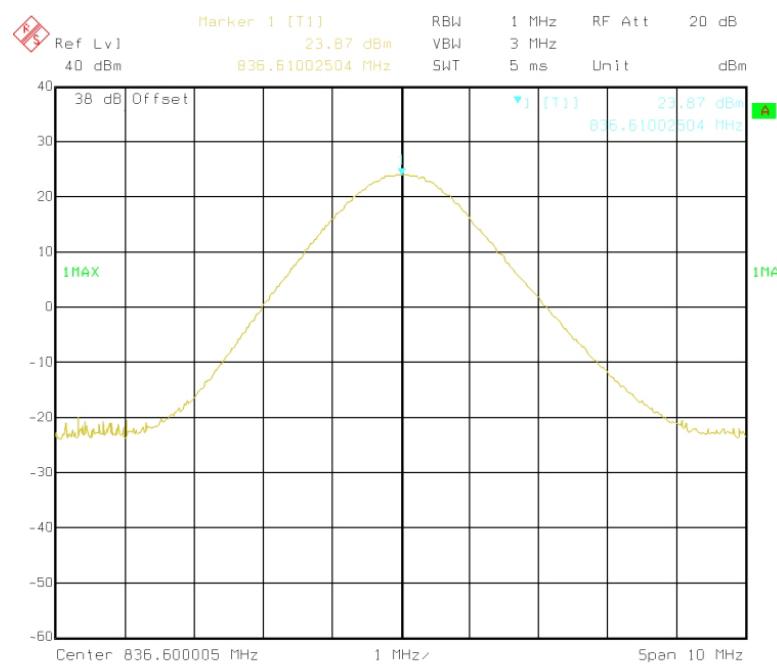


(Plot F1: GSM 1900MHz Channel = 810)

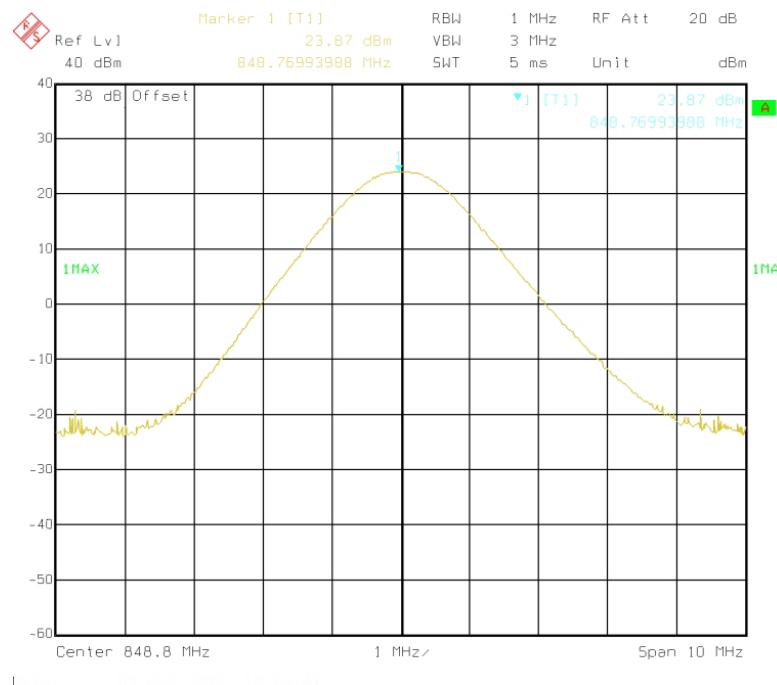
3. Test Plot of GPRS:



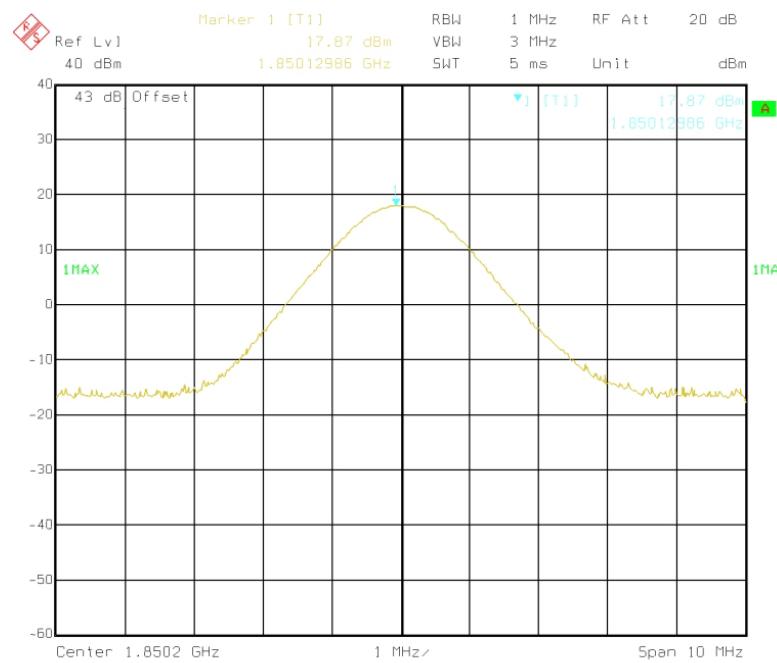
(Plot A2:GPRS 850MHz Channel = 128)



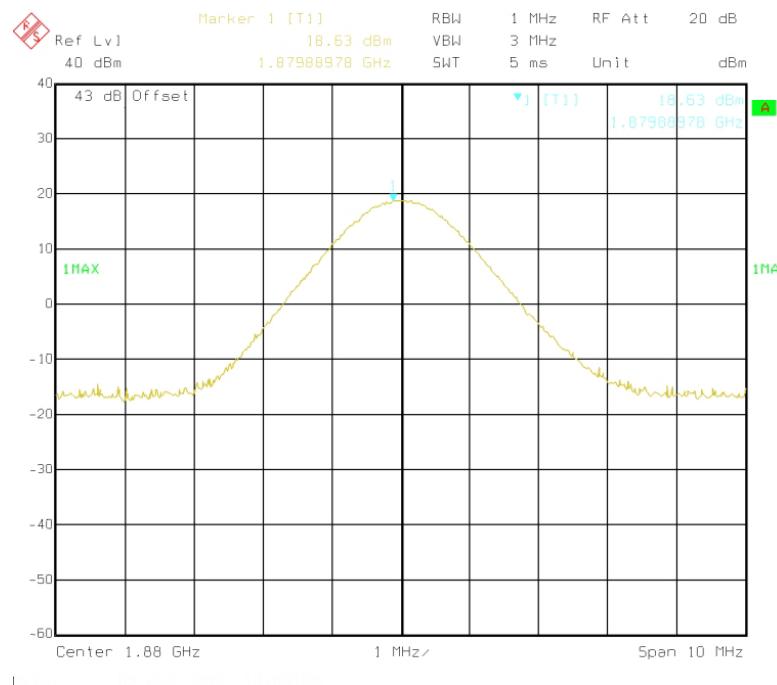
(Plot B2:GPRS 850MHz Channel = 190)



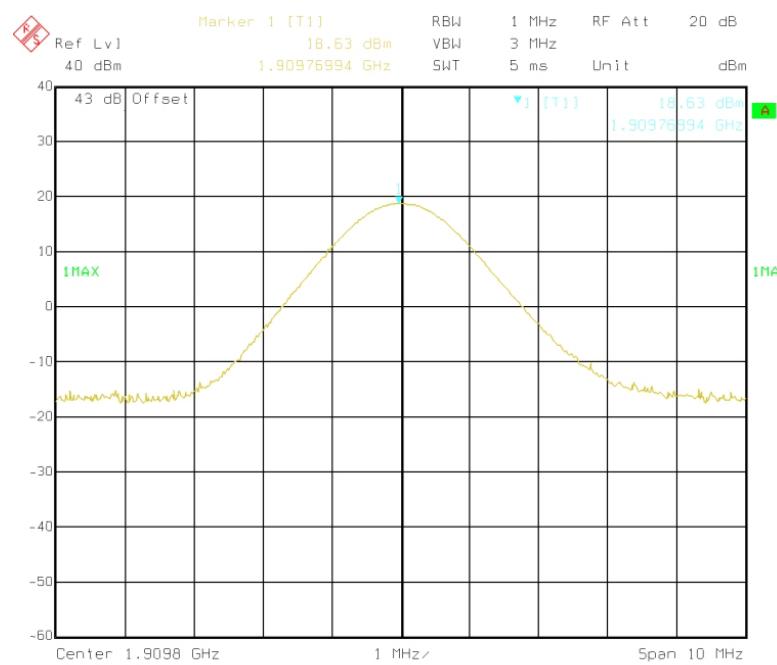
(Plot C2:GPRS 850MHz Channel = 251)



(Plot D2:GPRS 1900MHz Channel = 512)



(Plot E2:GPRS 1900MHz Channel = 661)



(Plot F2:GPRS 1900MHz Channel = 810)

3.8 Radiated Out of Band Emissions

3.8.1 Requirement

According to FCC section 22.717(a) and section 24.235(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43+10*\log(P)$ dB. This calculated to be -13dBm.

3.8.2 Test Description

See section 3.7.2 of this report.

3.8.3 Test Result

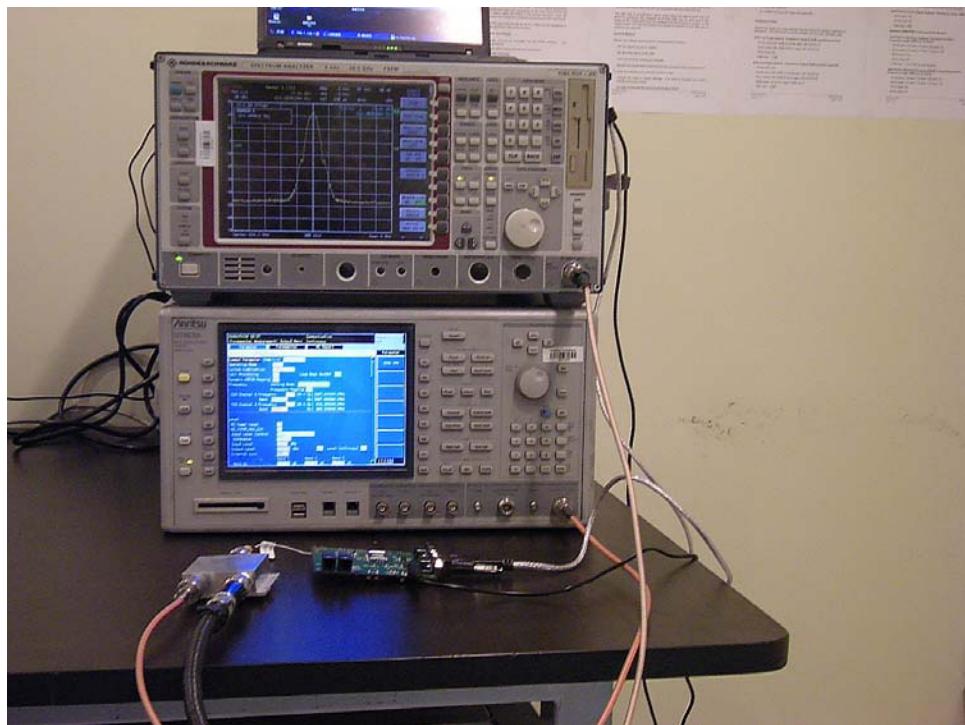
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360° , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical		
GSM 850MHz	128	824.2	< -30	< -30	-13	PASS
	190	836.6	< -30	< -30		PASS
	251	848.8	< -30	< -30		PASS
GSM 1900MHz	512	1850.2	< -25	< -25	-13	PASS
	661	1880.0	< -25	< -25		PASS
	810	1909.8	< -25	< -25		PASS

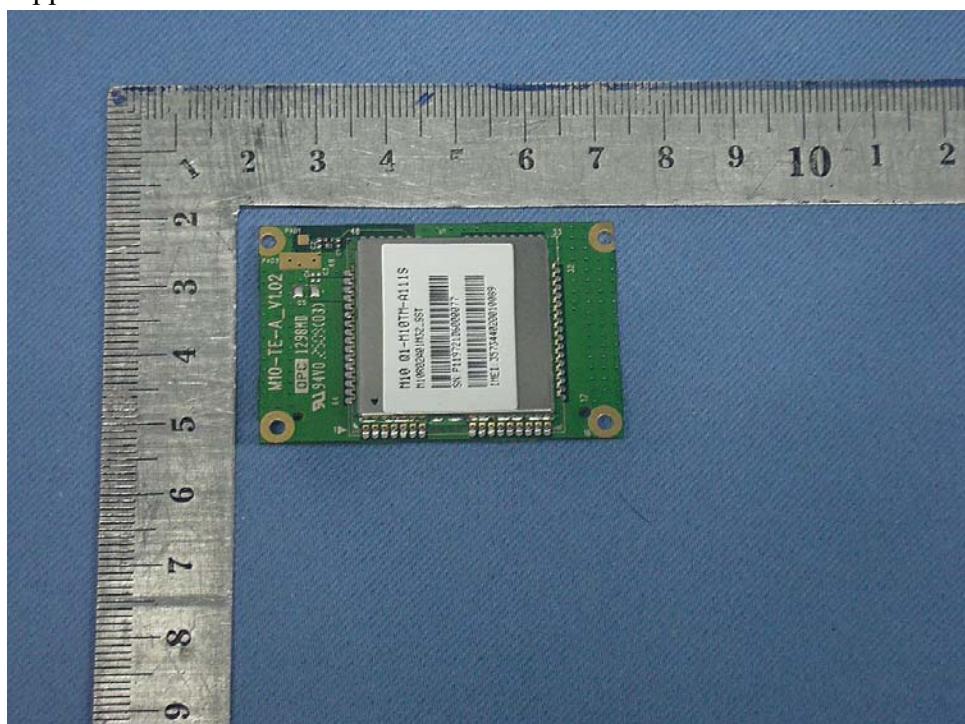
Appendix I: Photograph of the Test Setup

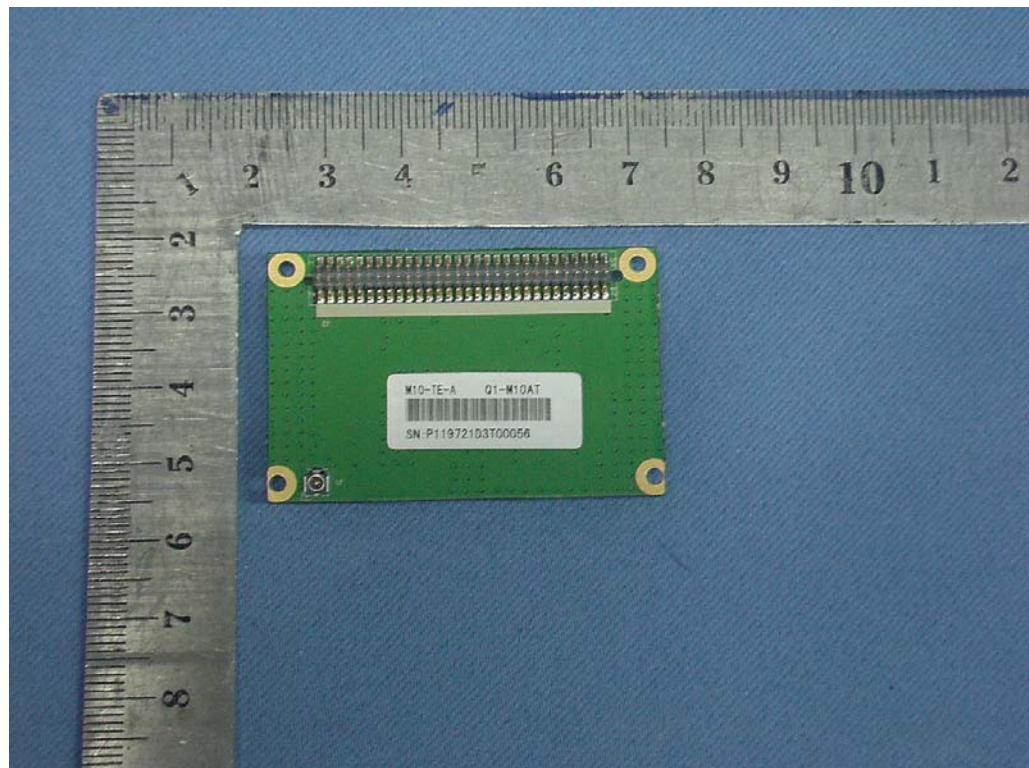
1. Conducted RF Test



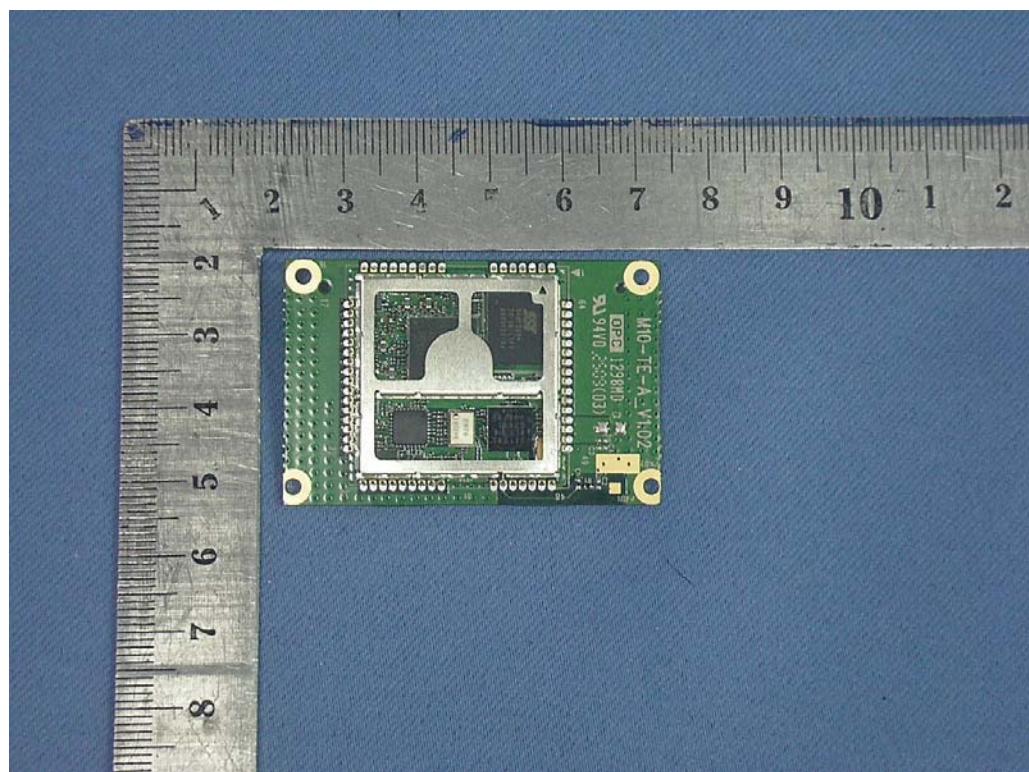
Appendix II: Photograph of the EUT

1. Appearance of the MS module

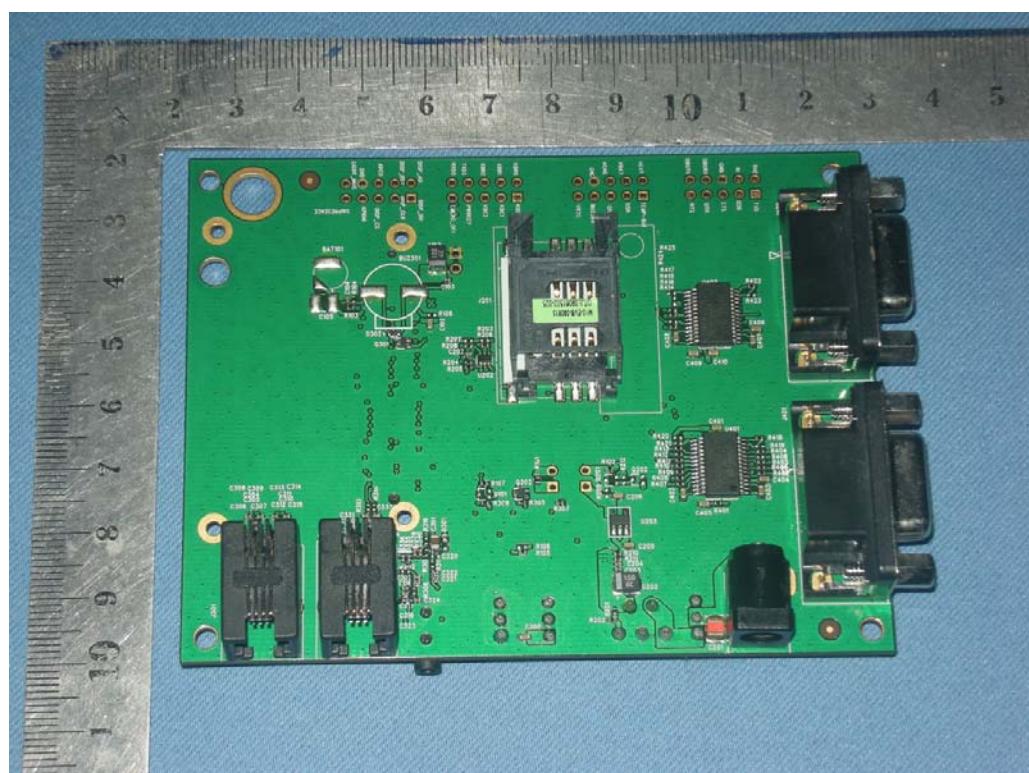
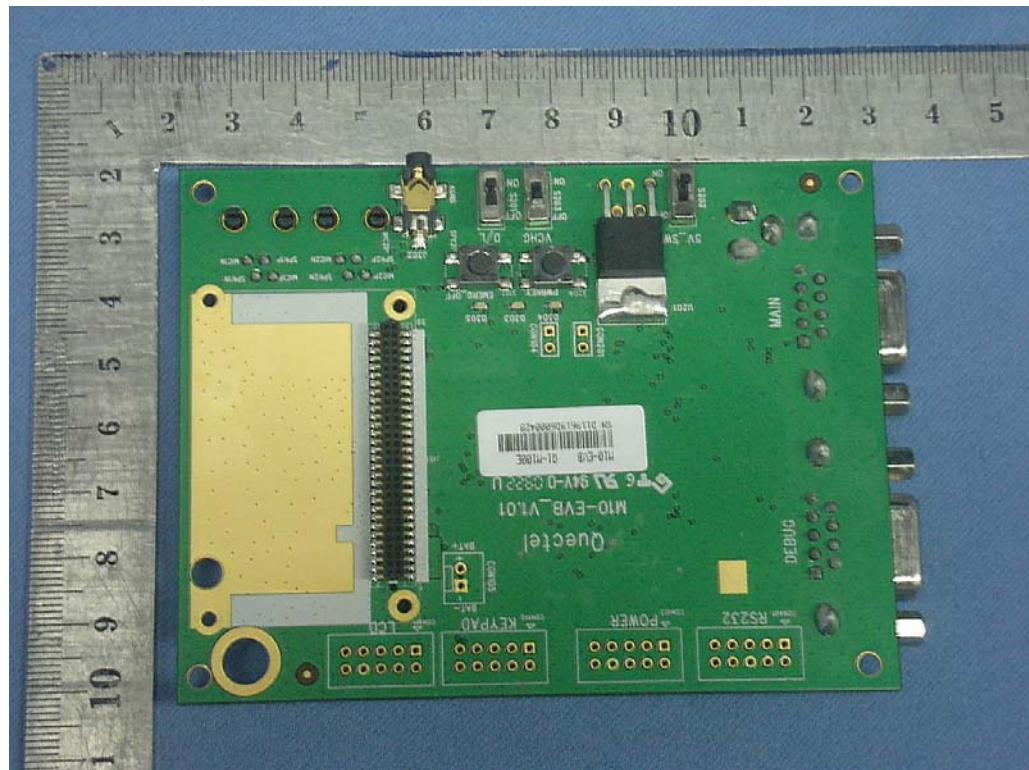




2. Inside of the MS module



3. Appearance of MS base



4. Appearance of the Charge



5. Cable



** END OF REPORT **