

**CFR 47 FCC PART 22 H  
CFR 47 FCC PART 24 E**

**TEST REPORT**

*For*

**LTE Smart Phone**

**FCC ID: 2ADINS6008L**

**Model Name: S6008L, N12, NUU N12**

**Report Number: 4791358150-1-RF-1**

**Issue Date: August 22, 2024**

*Prepared for*

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*Prepared by*

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	Aug 22, 2024	Initial Issue	\

## Note:

1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.

2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 22 H >< CFR 47 FCC PART 24 E> > < when <Simple Acceptance> decision rule is applied.

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## 1. ATTESTATION OF TEST RESULTS

### Applicant Information

Company Name: Sun Cupid Technology (HK) Ltd.  
Address: 16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

### Manufacturer Information

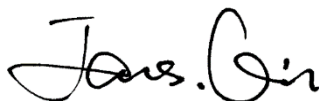
Company Name: Sun Cupid Technology (HK) Ltd.  
Address: 16/F, CEO Tower, 77 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

### EUT Information

EUT Name: LTE Smart Phone  
Model: S6008L  
Brand: NUU  
Sample Received Date: July 5, 2024  
Sample Status: Normal  
Sample ID: 7377676  
Date of Tested: July 09, 2024 ~ August 2, 2024

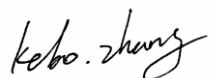
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 22 H	PASS
CFR 47 FCC PART 24 E	PASS

Prepared By:



James Qin  
Project Engineer

Checked By:



Kebo Zhang  
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Approved By:



Stephen Guo  
Operations Manager

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26-2015, 971168 D01 Power Meas License Digital Systems v03r01, 971168 D02 Misc Rev Approv License Devices v02r02, 412172 D01 v01r01 Determining ERP and EIRP, CFR 47 FCC Part 2, Part 22 H, Part 24 E.

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 4102.01)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>ISED (Company No.: 21320)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202)</b> UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202. Shielding Room B, the VCCI registration No. is C-20153 and T-20155.</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 40 GHz)	5.78 dB (1 GHz-18 GHz)
	5.23dB (18 GHz-26 GHz)
	5.64 dB (26 GHz-40 GHz)
Bandwidth	1.1 %
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.	

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

EUT Name:	LTE Smart Phone
Model:	S6008L
Series Model:	N12, NUU N12
Model Difference:	N12, NUU N12 have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with S6008L. The difference lies only the model number. all these changes do not degrade the unwanted emissions of the certified product.

### 5.2. TEST CHANNEL CONFIGURATION

Band	Mode	Low	Middle	High
GSM850	GRPS/EGPRS	128	190	251
		824.2 MHz	836.6 MHz	848.8 MHz
GSM1900	GRPS/EGPRS	512	661	810
		1850.2 MHz	1880.0 MHz	1909.8 MHz

### 5.3. MAXIMUM AVERAGE OUTPUT POWER

<b>GSM 850</b>					
Part 22H					
ERP Limit(W)		7			
Antenna Gain (dBi)		0.27			
Mode	Frequency Range (MHz)	Conducted Average power (dBm)	ERP (W)	99% OBW (MHz)	Emission Designator
GSM	824.2 ~ 848.8	33.00	1.294	0.251	251KGXW
GRPS(GMSK)	824.2 ~ 848.8	33.01	1.297	0.245	245KGXW
EGPRS(8PSK)	824.2 ~ 848.8	26.20	0.270	0.248	248KG7W

<b>GSM 1900</b>					
Part 24					
EIRP Limit(W)		2.0			
Antenna Gain (dBi)		1.06			
Mode	Frequency Range (MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
GSM	1850.2 ~ 1909.8	27.29	0.684	0.245	245KGXW
GRPS(GMSK)	1850.2 ~ 1909.8	27.28	0.682	0.246	246KGXW
EGPRS(8PSK)	1850.2 ~ 1909.8	26.88	0.622	0.243	243KG7W



#### **5.4. WORST-CASE CONFIGURATION AND MODE**

The radiated spurious emissions measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that X orientation was the worst-case orientation.

Radiated spurious emissions were investigated below 30 MHz, 30 MHz - 1 GHz and above 1 GHz. There were no emissions found on below 1GHz and above 18 GHz, the emissions between 1 GHz – 18 GHz were tested at the low, mid, high channel and the worst configuration.

For GSM850/1900, GPRS worst results are shown in test report.

## 5.5. DESCRIPTION OF AVAILABLE ANTENNAS

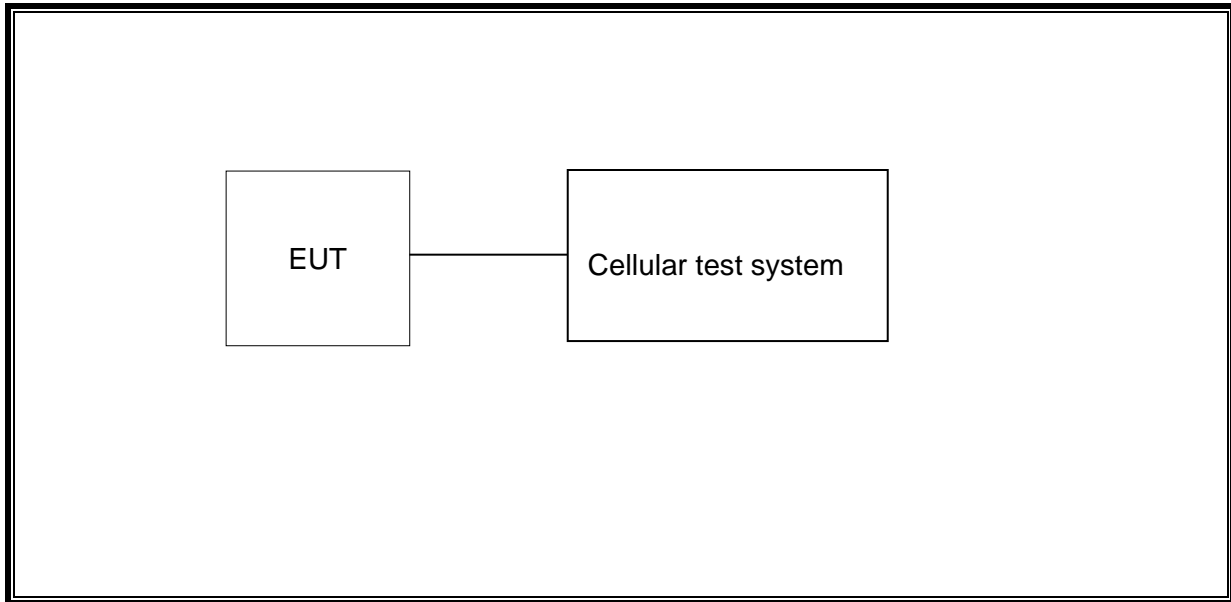
Antenna	Band	Antenna Type	MAX Antenna Gain (dBi)
Ant0	GSM850	FPC Antenna	0.27
Ant0	GSM1900	FPC Antenna	1.06

Band	Transmit and Receive Mode	Description
GSM850	<input checked="" type="checkbox"/> 1TX, 2RX	Ant0 antenna can be used as transmitting/receiving antenna, DIV antenna can be used as receiving antenna
GSM1900	<input checked="" type="checkbox"/> 1TX, 2RX	Ant0 antenna can be used as transmitting/receiving antenna, DIV antenna can be used as receiving antenna

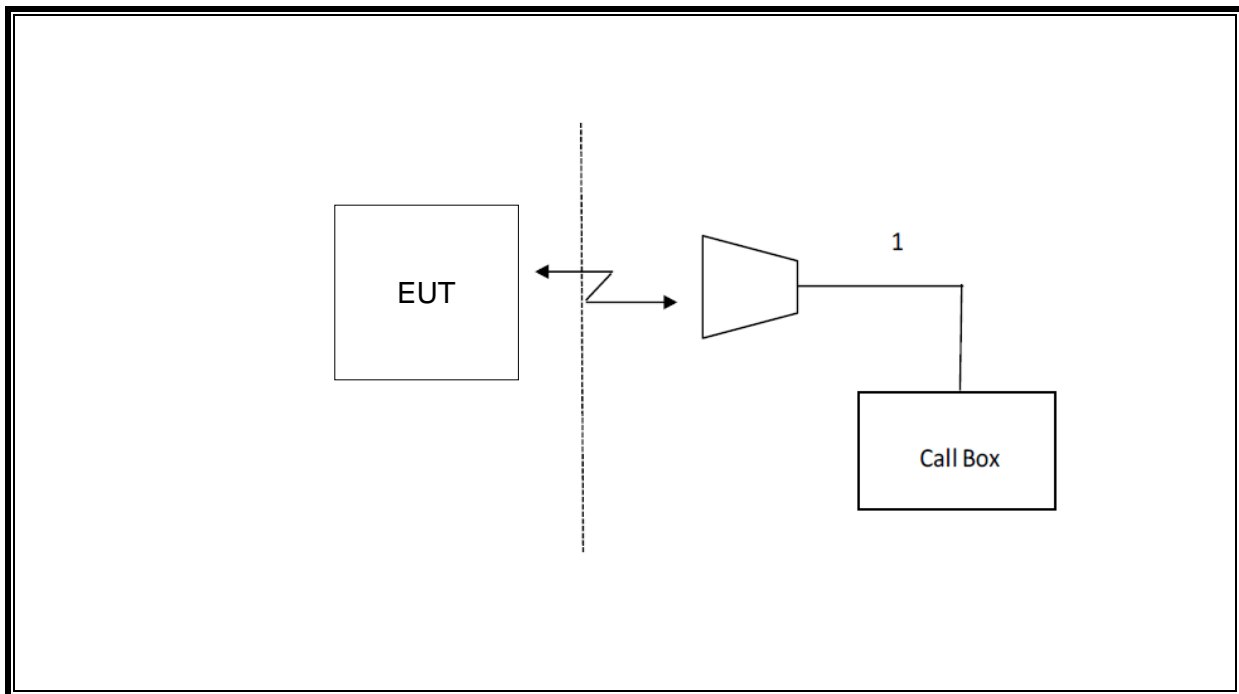
Note: The value of the antenna gain was declared by customer.

## 5.6. DESCRIPTION OF TEST SETUP

Conducted



Radiated



## 6. MEASURING INSTRUMENT AND SOFTWARE USED

Antenna Terminal Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	R&S	FSV40	S422060001	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.12, 2023	Oct.11, 2024
Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Tonsend Cellular Test System		Tonsend	JS1120 RF Auto Test System		3.1.46
Radiated Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jun. 28, 2024	Jun. 27, 2027
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	April 29, 2022	April 30, 2025
<input checked="" type="checkbox"/>	Horn Antenna	Schwarzbeck	BBHA9170	856	Feb 28, 2022	Feb 28, 2025
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.12, 2023	Oct.11, 2024
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Dec.14, 2021	Dec.13, 2024
<input checked="" type="checkbox"/>	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.12, 2023	Oct.11, 2024
Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1

## 7. ANTENNA TERMINAL TEST RESULTS

### 7.1. EFFECTIVE (ISOTROPIC) RADIATED POWER OF TRANSMITTER

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232

#### LIMITS

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(c) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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 watts EIRP.

27.50(h) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

#### TEST PROCEDURE

Refer to ANSI C63.26:2015 and KDB 971168 D01 Section 5.6

$ERP/EIRP = P_{Meas} + GT - LC$

where:

ERP or EIRP = effective or equivalent isotropically radiated power, respectively (expressed in the same units as  $P_{Meas}$ , typically dBW or dBm);

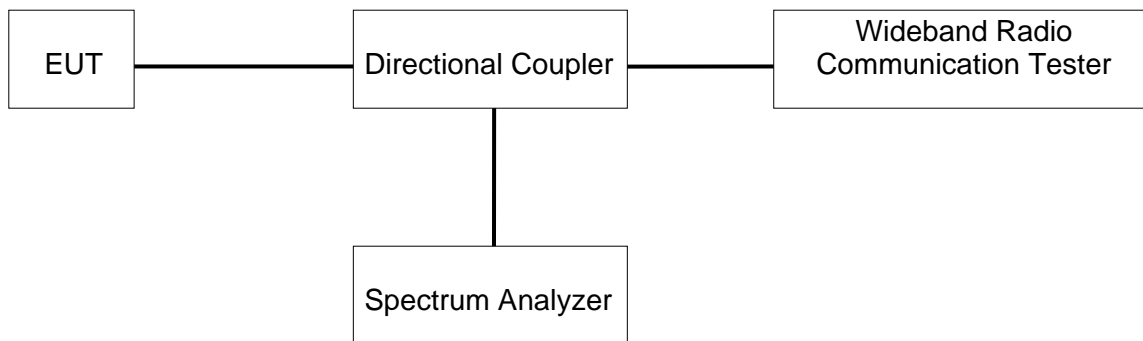
$P_{Meas}$  = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB

The transmitter has a maximum output powers as follows and maximum ERP/EIRP is tabulated in section 5.3.

### TEST SETUP



### TEST ENVIRONMENT

Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

### Test Result

Band		Channel	Channel	Channel
		128	190	251
GSM850 (CS)		32.89	32.97	33.00
GPRS/EGPRS (GMSK)	1 TimeSlot	32.95	32.99	33.01
	2 TimeSlots	30.94	30.97	30.99
	3 TimeSlots	29.27	29.29	29.30
	4 TimeSlots	27.23	27.25	27.24
EGPRS (8PSK)	1 TimeSlot	25.92	26.20	26.02
	2 TimeSlots	24.58	24.86	24.69
	3 TimeSlots	22.62	22.92	22.73
	4 TimeSlots	20.54	20.81	20.67

Band		Channel	Channel	Channel
		512	661	810
GSM1900 (CS)		27.29	27.23	27.29
GPRS/EGPRS (GMSK)	1 TimeSlot	27.19	27.15	27.28
	2 TimeSlots	24.75	25.02	25.21
	3 TimeSlots	23.21	23.48	23.71
	4 TimeSlots	21.32	21.52	21.74
EGPRS (8PSK)	1 TimeSlot	26.79	26.76	26.88
	2 TimeSlots	24.36	24.63	24.81
	3 TimeSlots	22.82	23.09	23.32
	4 TimeSlots	20.93	21.13	21.34

## 7.2. PEAK TO AVERAGE RADIO

### LIMITS

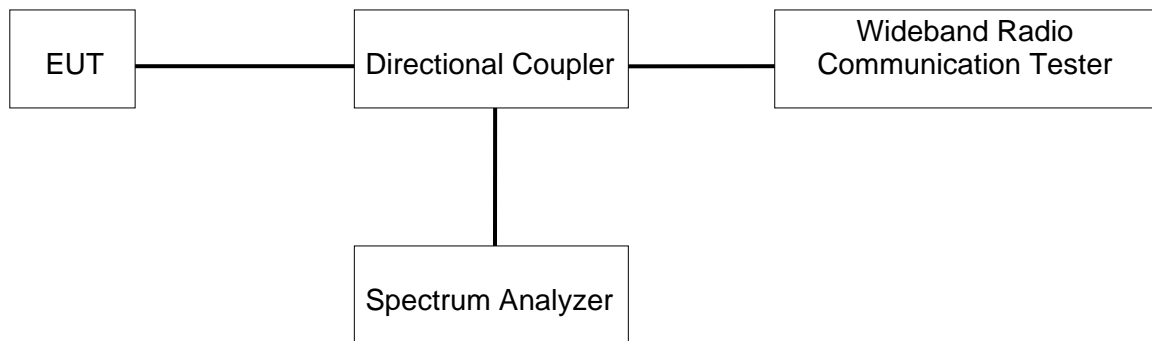
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

### TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The PAR was measured on the Spectrum Analyzer.

### TEST SETUP



### TEST ENVIRONMENT

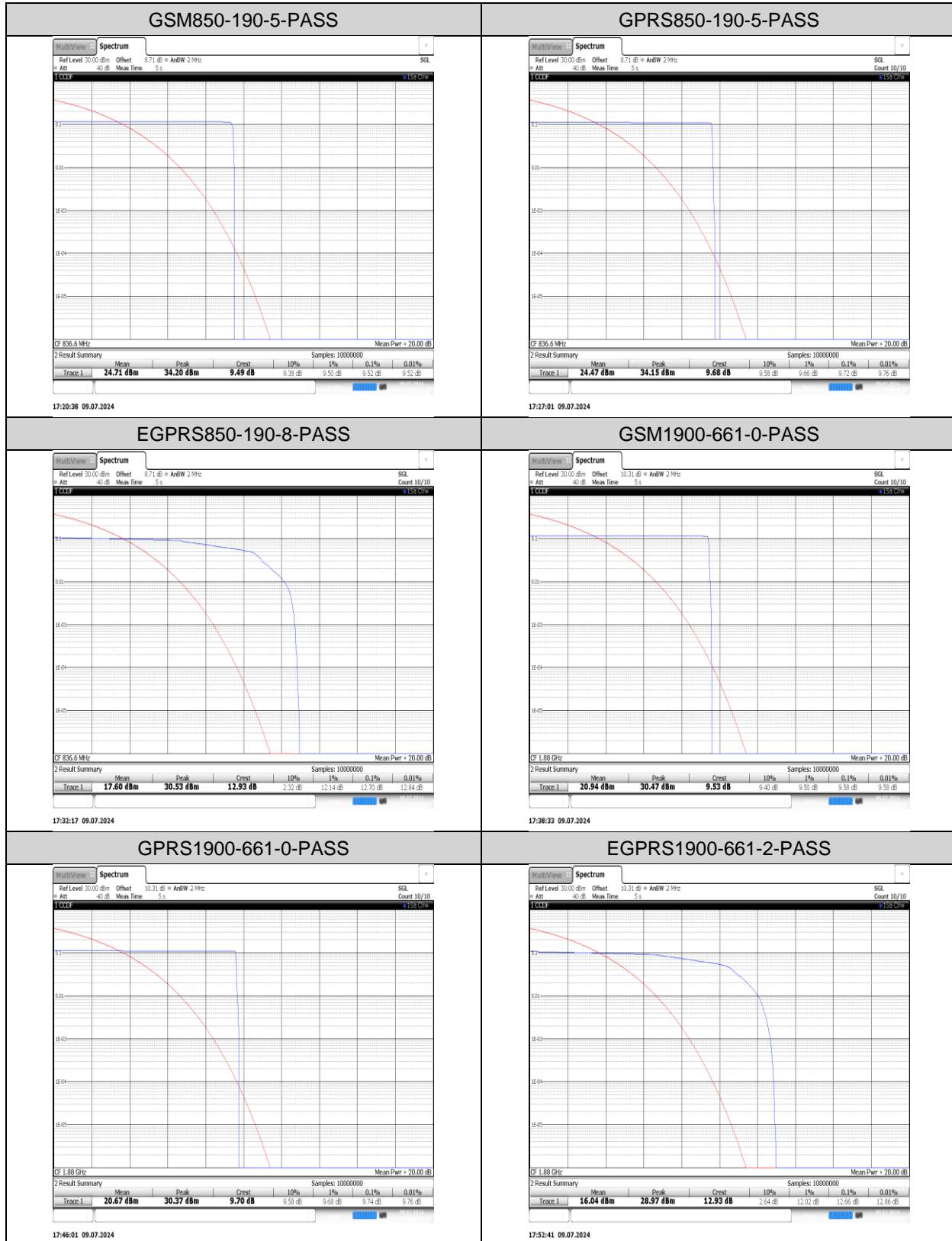
Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

### Test Result

Middle was used to measure as the worst case. The results from all CCDF plots are passed with 13dB peak-to-average power ratio criteria.

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	190	9.52	13	PASS
GPRS850	190	9.72	13	PASS
EGPRS850	190	12.70	13	PASS
GSM1900	661	9.58	13	PASS
GPRS1900	661	9.74	13	PASS
EGPRS1900	661	12.66	13	PASS

## Test Graphs





### 7.3. OCCUPIED BANDWIDTH

#### RULE PART(S)

FCC: §2.1049.

#### LIMITS

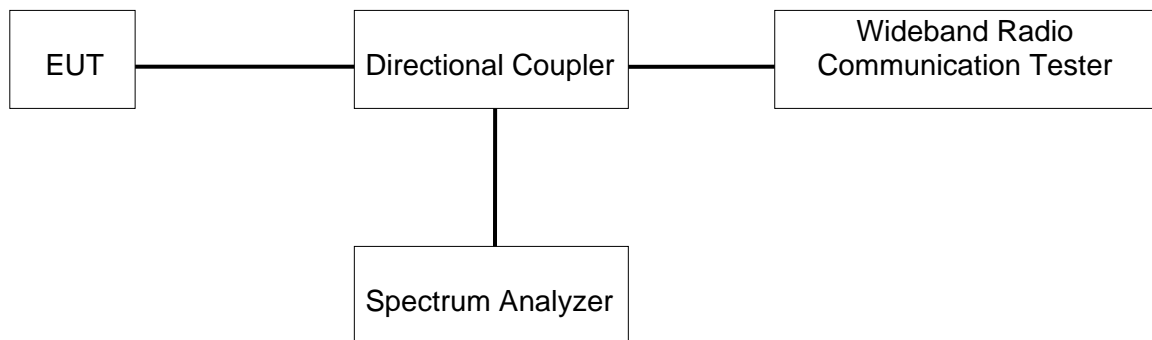
For reporting purposes only.

#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01)

#### TEST SETUP



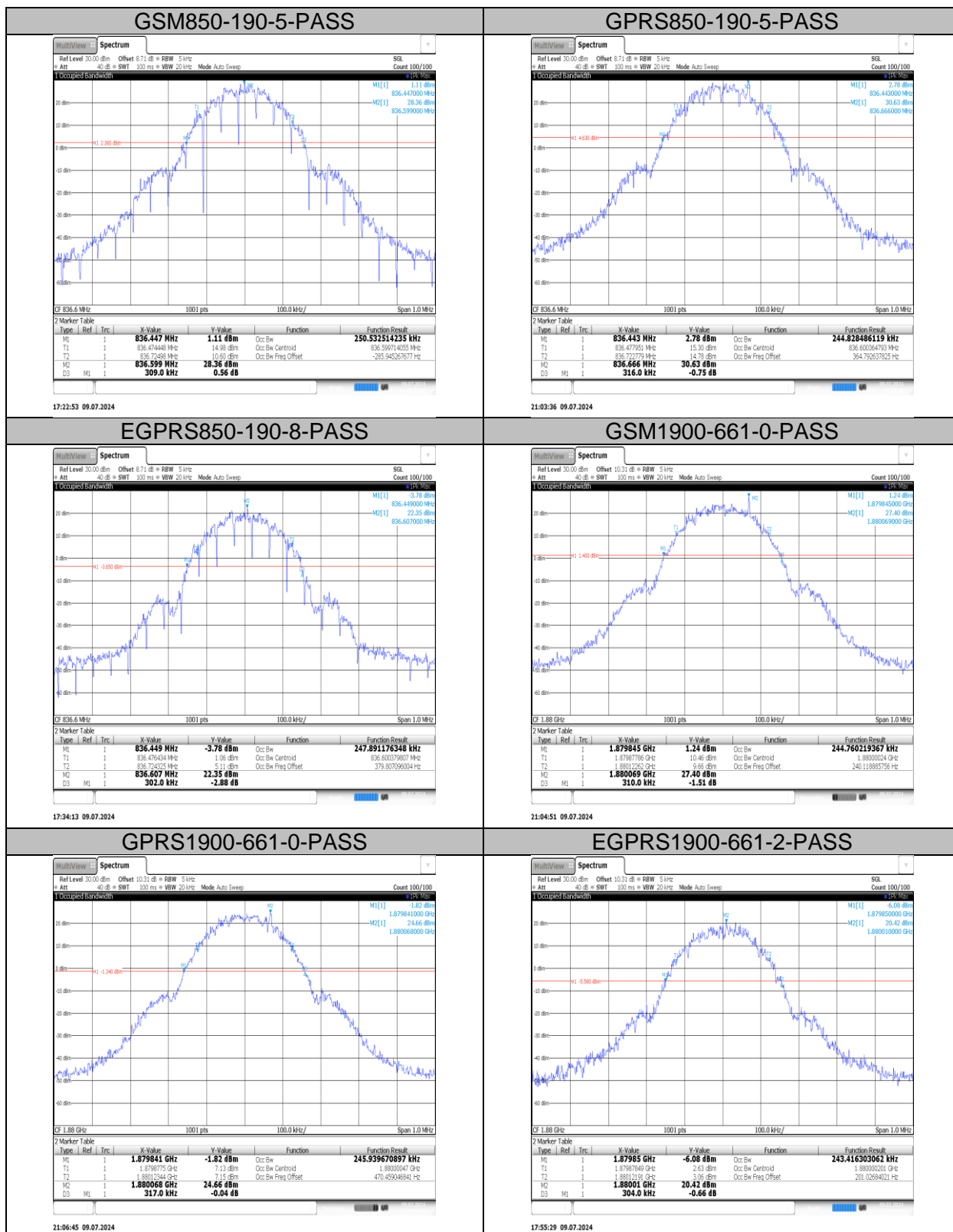
#### TEST ENVIRONMENT

Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

#### Test Result

There is no limit required and power is the same for low, middle and high channel, therefore, only middle channel was tested.

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GSM850	190	0.251	0.31	---	PASS
GPRS850	190	0.245	0.32	---	PASS
EGPRS850	190	0.248	0.30	---	PASS
GSM1900	661	0.245	0.31	---	PASS
GPRS1900	661	0.246	0.32	---	PASS
EGPRS1900	661	0.243	0.30	---	PASS

**Test Graphs**


## 7.4. BAND EDGE EMISSIONS

### RULE PART(S)

FCC §2.1051, §22.917, §24.238

### LIMITS

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.

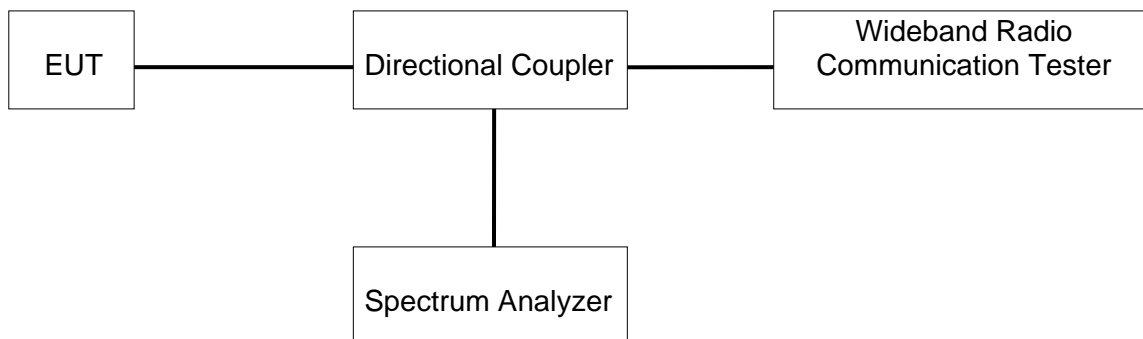
### TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

- a) Set the RBW = 1 ~ 1.5 % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points  $\geq 2 \times$  Span/RBW;
- g) Trace mode = Average (100);

### TEST SETUP



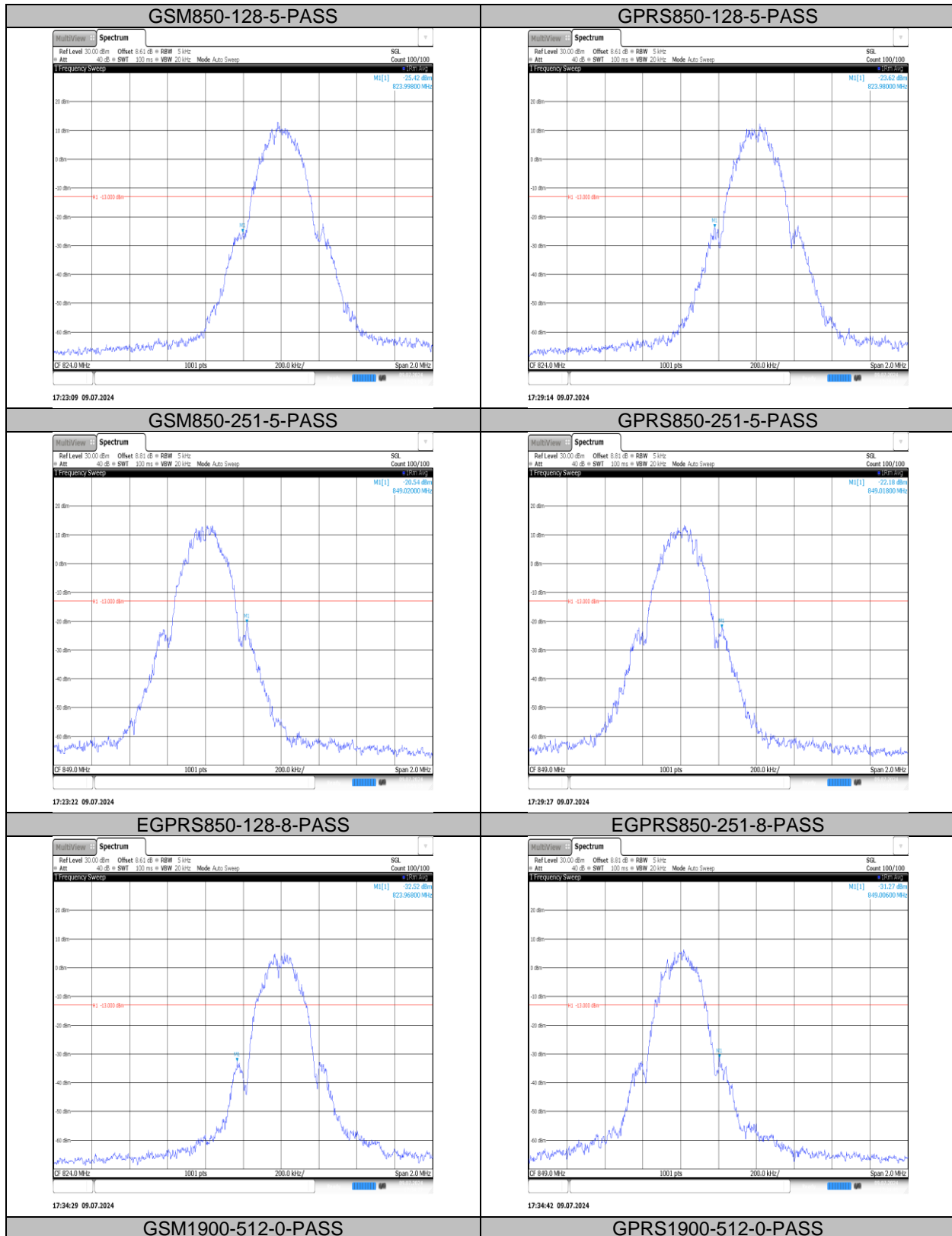
### TEST ENVIRONMENT

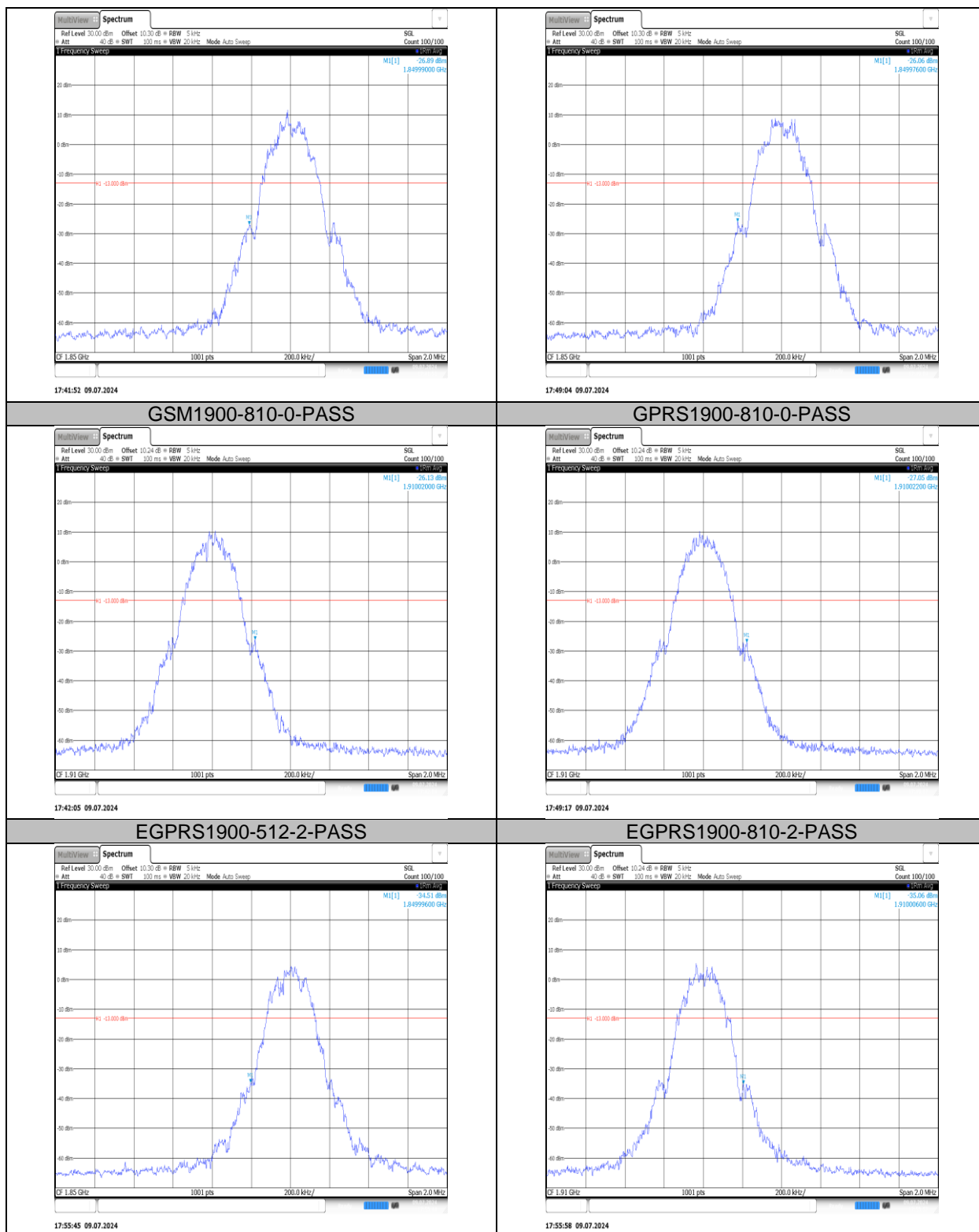
Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

### Test Result

Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GSM850	128	824.00	-25.42	-13	PASS
GPRS850	128	823.98	-23.62	-13	PASS
GSM850	251	849.02	-20.54	-13	PASS
GPRS850	251	849.02	-22.18	-13	PASS
EGPRS850	128	823.97	-32.52	-13	PASS
EGPRS850	251	849.01	-31.27	-13	PASS
GSM1900	512	1849.99	-26.89	-13	PASS
GPRS1900	512	1849.98	-26.06	-13	PASS
GSM1900	810	1910.02	-26.13	-13	PASS
GPRS1900	810	1910.02	-27.05	-13	PASS
EGPRS1900	512	1850.00	-34.51	-13	PASS
EGPRS1900	810	1910.01	-35.06	-13	PASS

## Test Graphs





## 7.5. SPURIOUS EMISSION AT ANTENNA TERMINAL

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238

### LIMITS

FCC: §22.901, §22.917, §24.238

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.

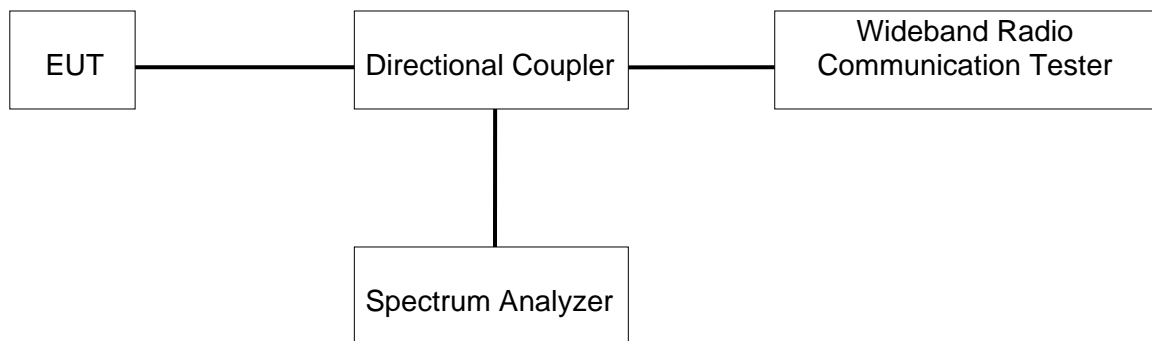
### TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

- a) Set the RBW = 100 kHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1 MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace mode = trace average for continuous emissions, max hold for pulse emissions;

### TEST SETUP



## TEST ENVIRONMENT

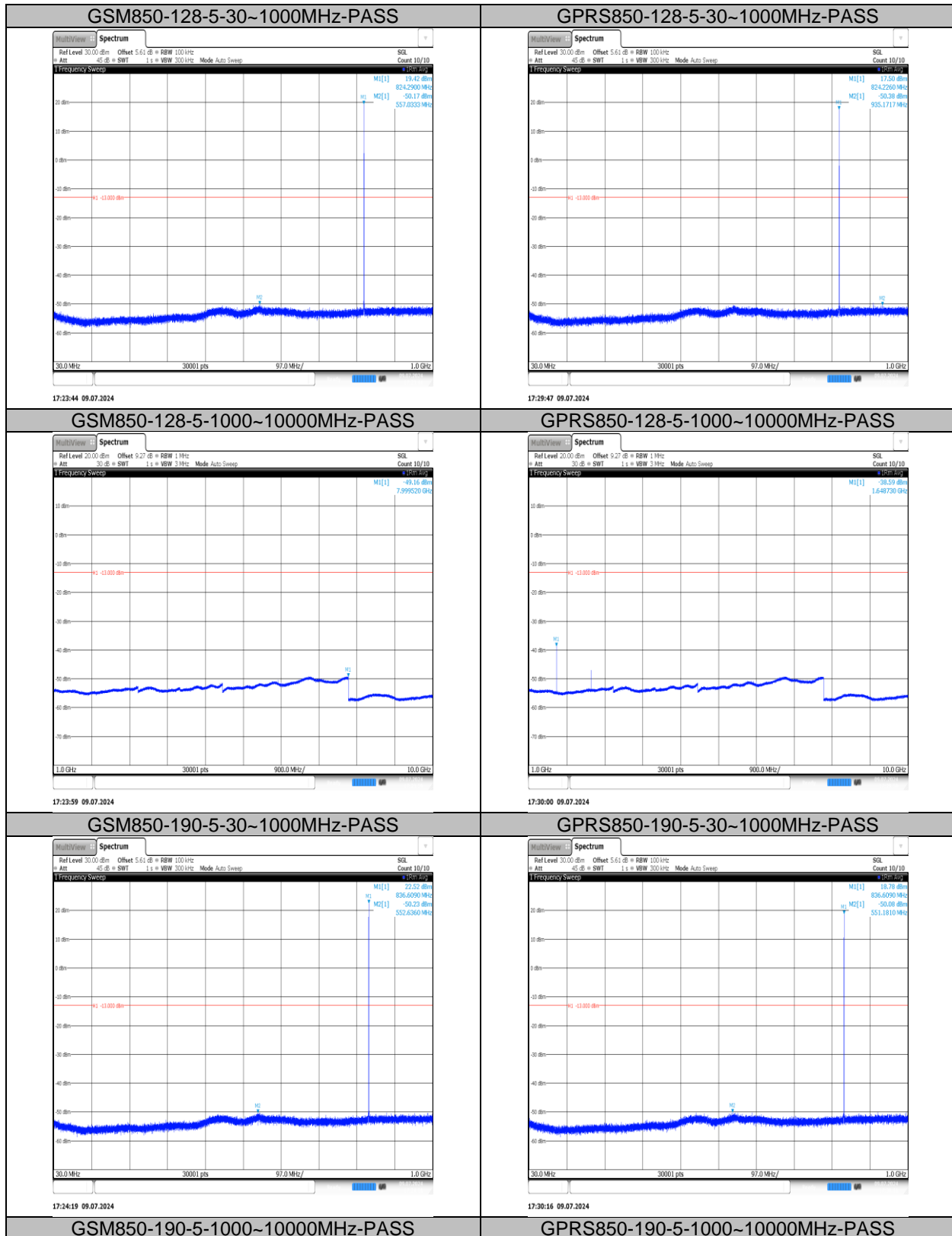
Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

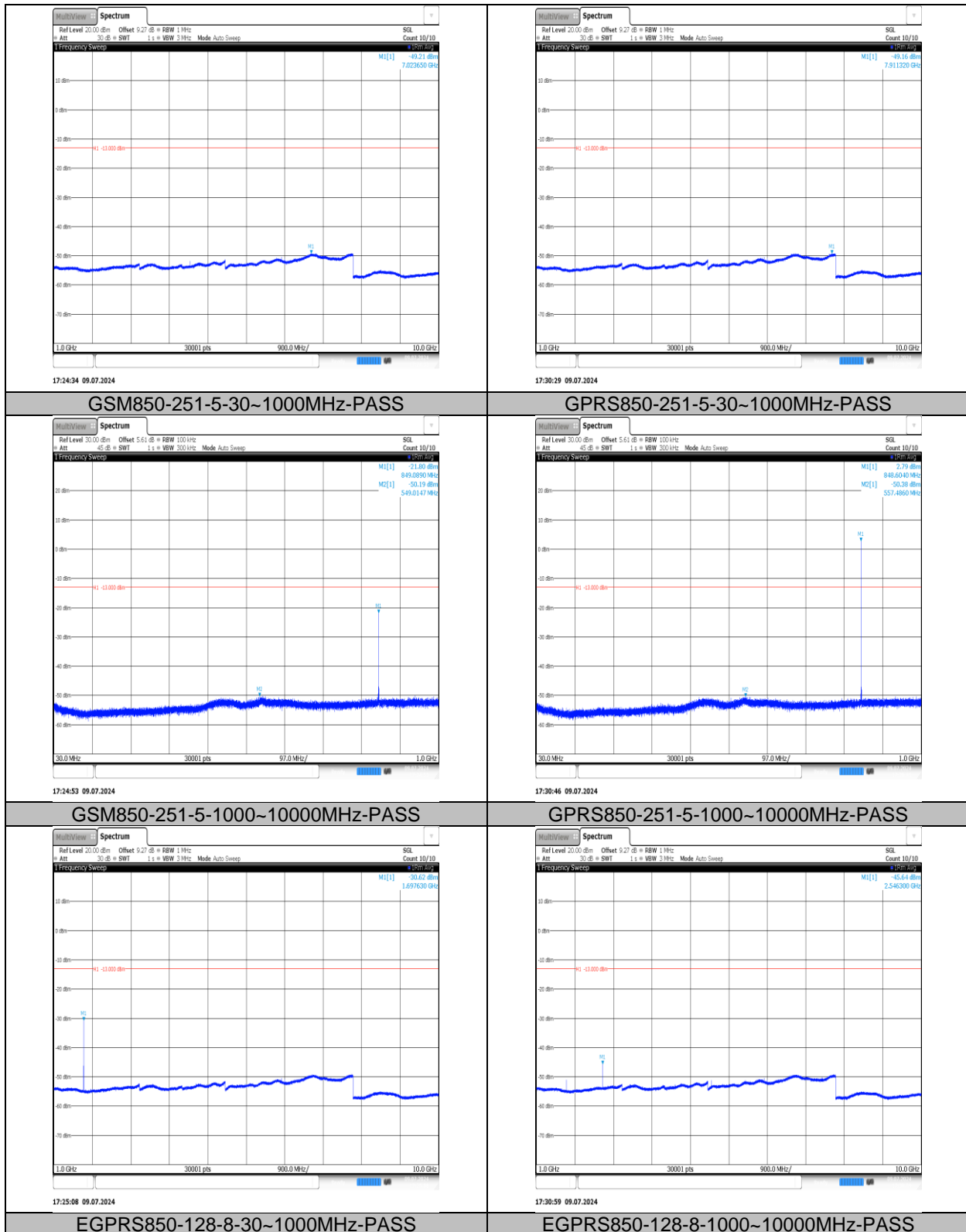
## Test Result

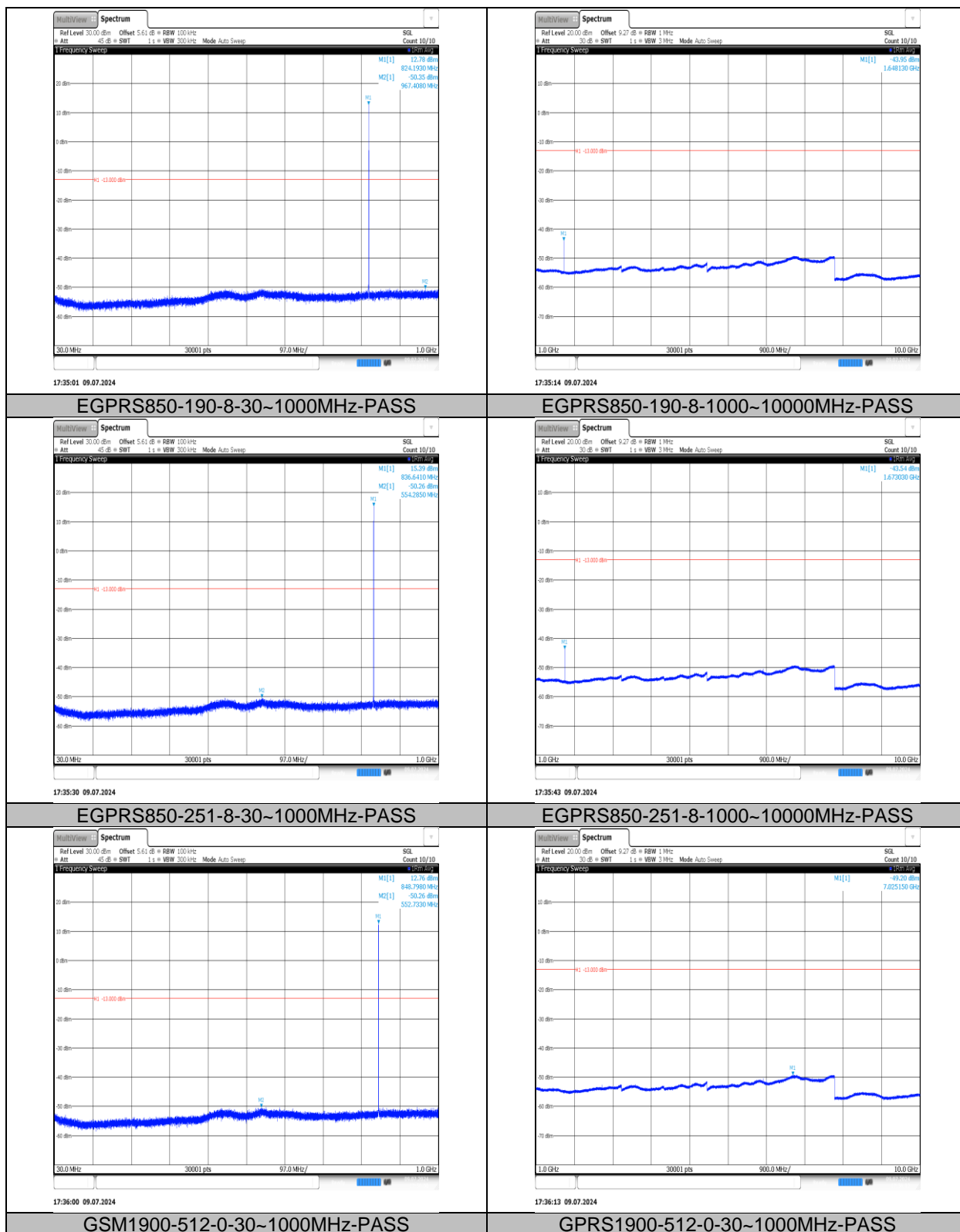
Band	Channel	Frequency Range(MHz)	Max.Freq. (MHz)	Result (dBm)	Limit (dBm)	Verdict
GSM850	128	30~1000MHz	557.03	-50.17	-13	PASS
GPRS850	128	30~1000MHz	935.17	-50.38	-13	PASS
GSM850	128	1000~10000MHz	7999.52	-49.16	-13	PASS
GPRS850	128	1000~10000MHz	1648.73	-38.59	-13	PASS
GSM850	190	30~1000MHz	552.64	-50.23	-13	PASS
GPRS850	190	30~1000MHz	551.18	-50.08	-13	PASS
GSM850	190	1000~10000MHz	7023.65	-49.21	-13	PASS
GPRS850	190	1000~10000MHz	7911.32	-49.16	-13	PASS
GSM850	251	30~1000MHz	549.01	-50.19	-13	PASS
GPRS850	251	30~1000MHz	557.49	-50.38	-13	PASS
GSM850	251	1000~10000MHz	1697.63	-30.62	-13	PASS
GPRS850	251	1000~10000MHz	2546.3	-45.64	-13	PASS
EGPRS850	128	30~1000MHz	967.41	-50.35	-13	PASS
EGPRS850	128	1000~10000MHz	1648.13	-43.95	-13	PASS
EGPRS850	190	30~1000MHz	554.29	-50.26	-13	PASS
EGPRS850	190	1000~10000MHz	1673.03	-43.54	-13	PASS
EGPRS850	251	30~1000MHz	552.73	-50.26	-13	PASS
EGPRS850	251	1000~10000MHz	7025.15	-49.2	-13	PASS
GSM1900	512	30~1000MHz	555.12	-46.85	-13	PASS
GPRS1900	512	30~1000MHz	551.92	-46.93	-13	PASS
GSM1900	512	1000~3000MHz	2998.67	-37.35	-13	PASS
GPRS1900	512	1000~3000MHz	2998.53	-37.45	-13	PASS
GSM1900	512	3000~18000MHz	7919.09	-46.75	-13	PASS
GPRS1900	512	3000~18000MHz	7114.61	-46.61	-13	PASS
GSM1900	661	30~1000MHz	556.03	-46.64	-13	PASS
GPRS1900	661	30~1000MHz	558.23	-46.87	-13	PASS
GSM1900	661	1000~3000MHz	2998.47	-37.28	-13	PASS
GPRS1900	661	1000~3000MHz	2987.53	-37.5	-13	PASS
GSM1900	661	3000~18000MHz	3760.22	-39.64	-13	PASS
GPRS1900	661	3000~18000MHz	7966.08	-46.67	-13	PASS
GSM1900	810	30~1000MHz	553.57	-46.78	-13	PASS
GPRS1900	810	30~1000MHz	556.45	-46.83	-13	PASS
GSM1900	810	1000~3000MHz	2984.2	-37.52	-13	PASS
GPRS1900	810	1000~3000MHz	2994.6	-37.26	-13	PASS
GSM1900	810	3000~18000MHz	7981.08	-46.75	-13	PASS
GPRS1900	810	3000~18000MHz	7023.12	-46.68	-13	PASS
EGPRS1900	512	30~1000MHz	554.28	-46.68	-13	PASS
EGPRS1900	512	1000~3000MHz	2990.93	-37.42	-13	PASS
EGPRS1900	512	3000~18000MHz	7987.08	-46.68	-13	PASS
EGPRS1900	661	30~1000MHz	556.06	-46.84	-13	PASS
EGPRS1900	661	1000~3000MHz	2982.6	-37.39	-13	PASS
EGPRS1900	661	3000~18000MHz	7053.11	-46.75	-13	PASS
EGPRS1900	810	30~1000MHz	555.06	-46.94	-13	PASS
EGPRS1900	810	1000~3000MHz	2972.33	-37.5	-13	PASS
EGPRS1900	810	3000~18000MHz	7950.58	-46.68	-13	PASS



## Test Graphs

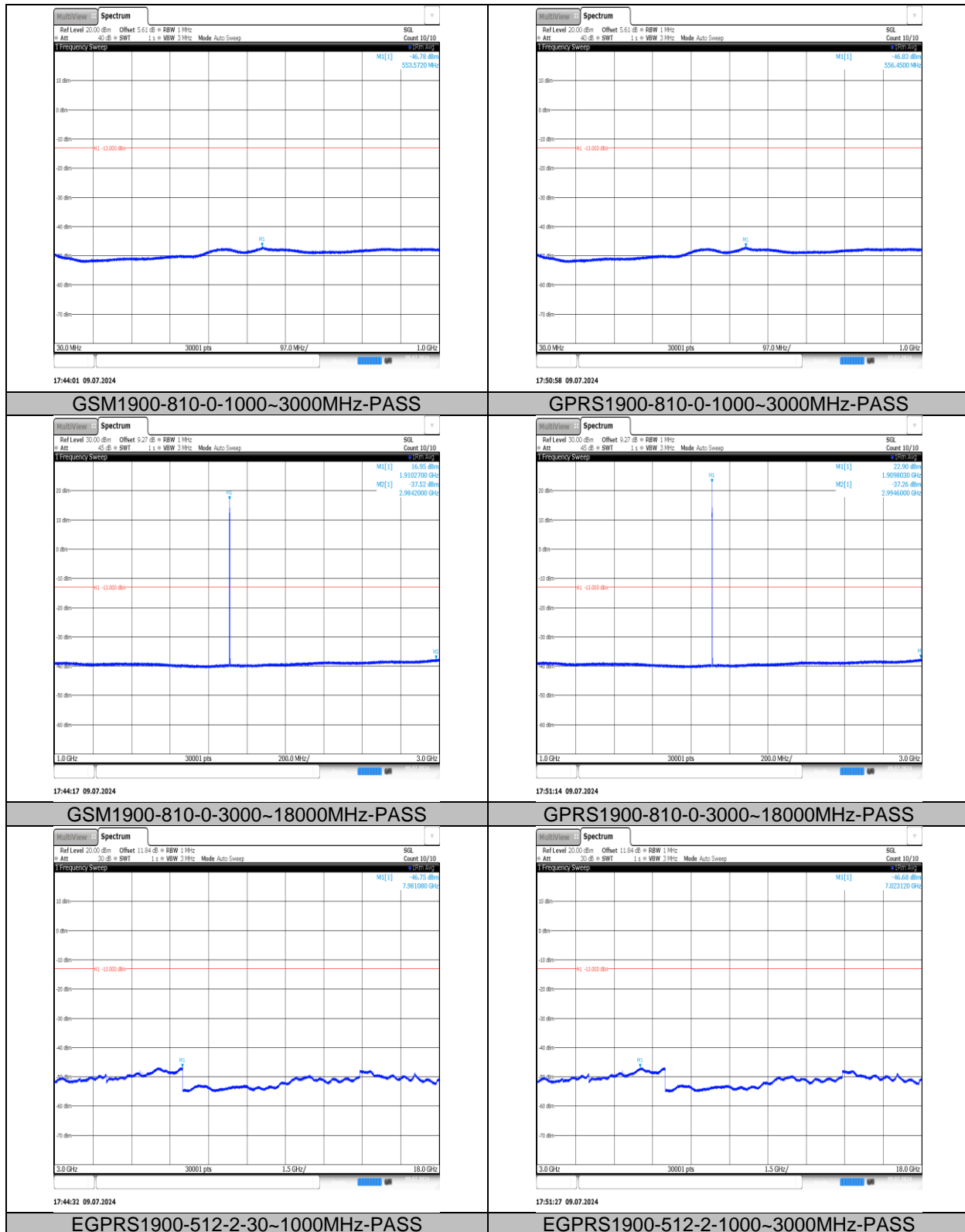


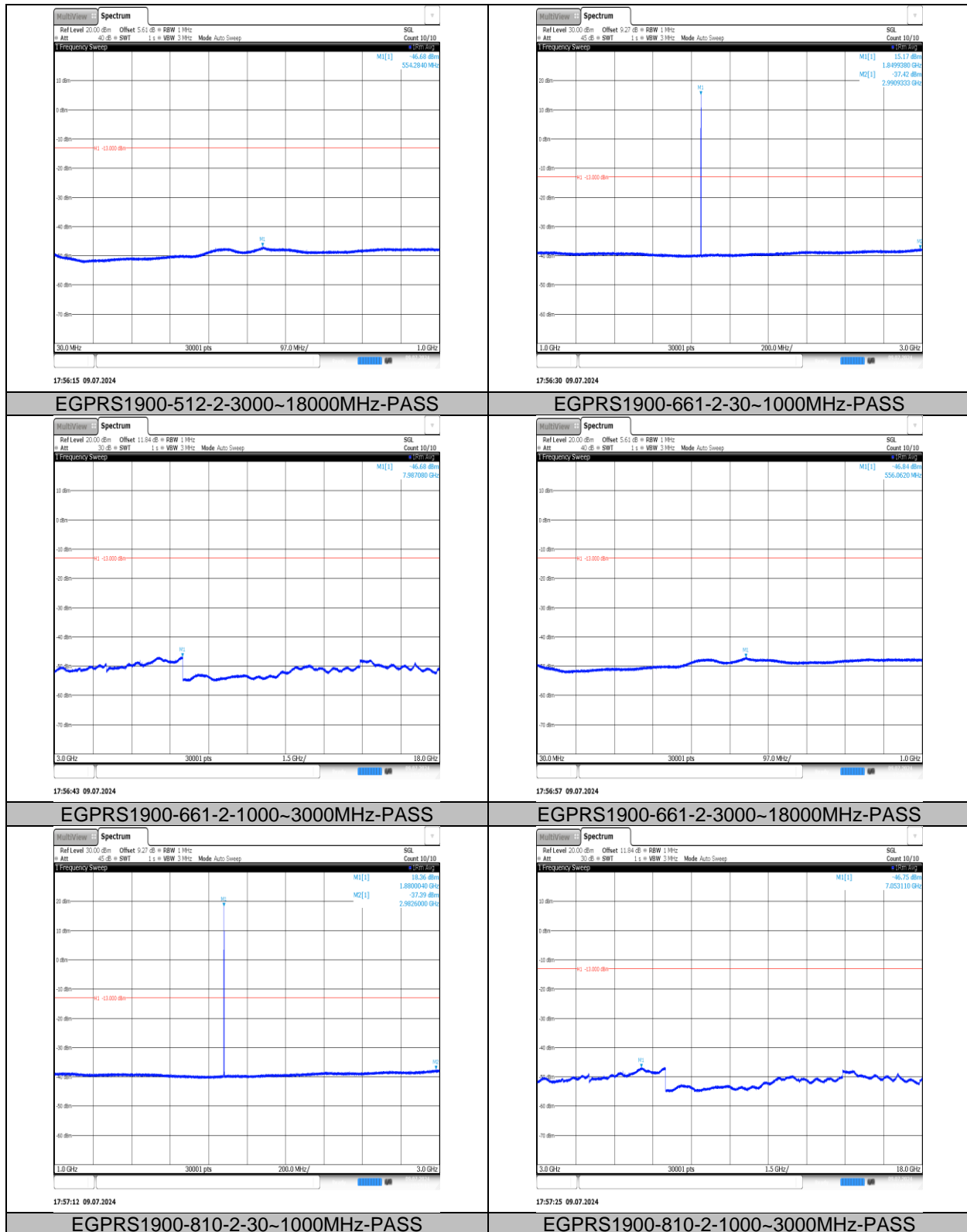


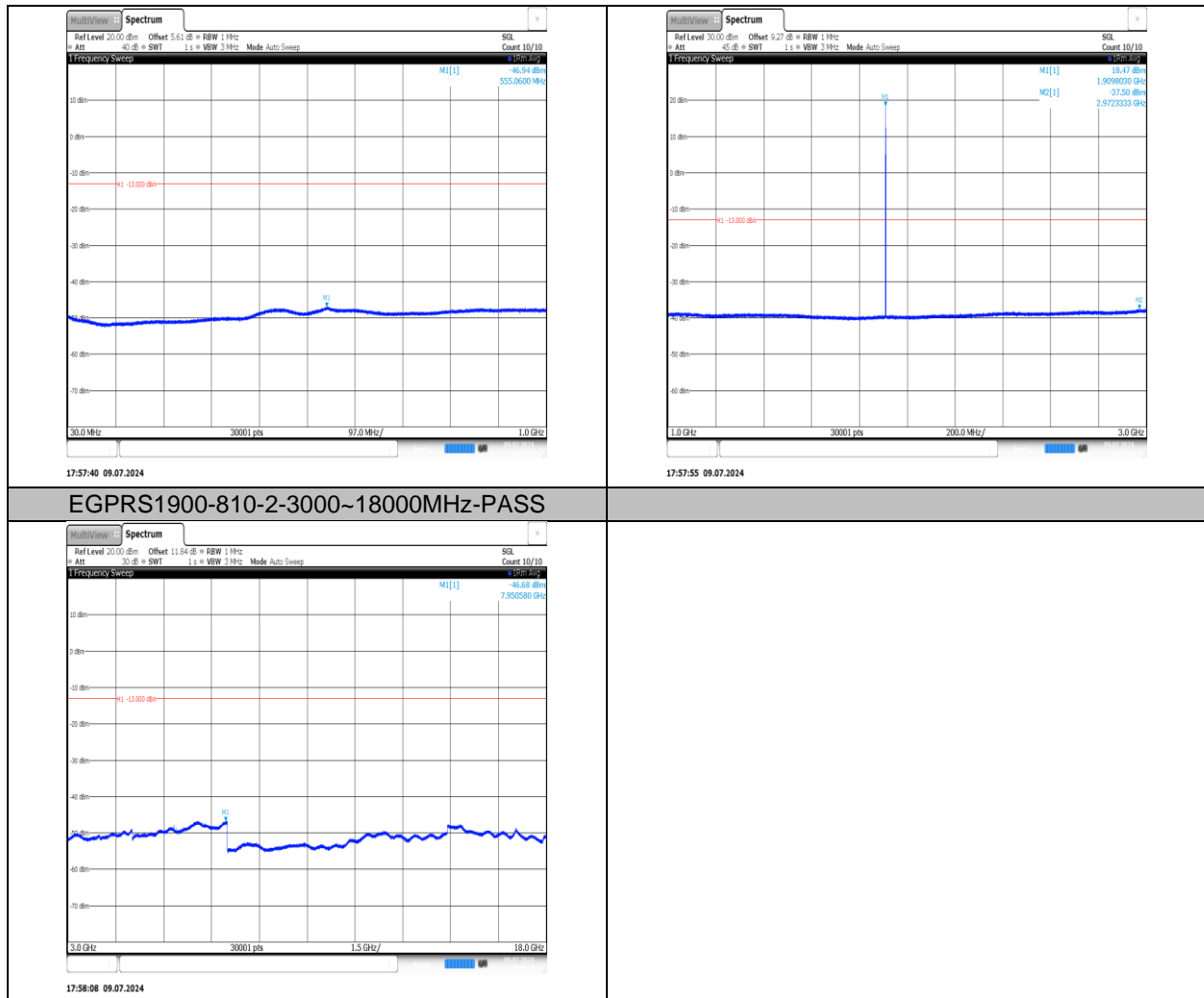














## 7.6. FREQUENCY STABILITY

### Rule Part:

FCC: §2.1055, §22.355, §24.235

### LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

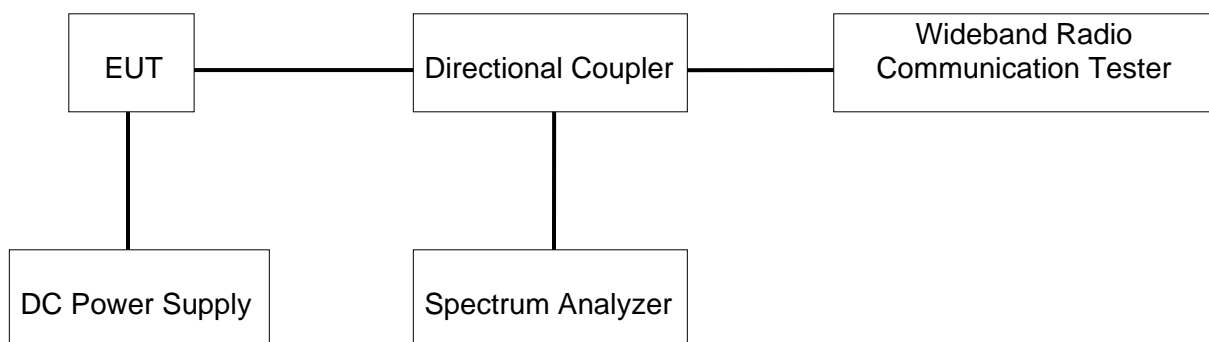
§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

	Normal Test Conditions	Extreme Test Conditions
Relative Humidity	45 % - 75 %	/
Atmospheric Pressure	100 kPa ~102 kPa	/
Temperature	T <sub>N</sub> (Normal Temperature): 24.5 °C	T <sub>L</sub> (Low Temperature): -30 °C T <sub>H</sub> (High Temperature): 50 °C
Supply Voltage	V <sub>N</sub> (Normal Voltage): DC 3.8 V	V <sub>L</sub> (Low Voltage): DC 3.2 V V <sub>H</sub> (High Voltage): DC 4.4 V

### TEST SETUP



### TEST ENVIRONMENT

Temperature	23.8°C	Relative Humidity	63.8%
Atmosphere Pressure	101kPa	Test Voltage	/

## Test Result

The peak frequency error is recorded (worst-case).

Temperature							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	190	V <sub>N</sub>	-30	-0.87	-0.001040	±2.5	PASS
GSM850	190	V <sub>N</sub>	-20	-13.50	-0.016137	±2.5	PASS
GSM850	190	V <sub>N</sub>	-10	-7.01	-0.008379	±2.5	PASS
GSM850	190	V <sub>N</sub>	0	-5.91	-0.007064	±2.5	PASS
GSM850	190	V <sub>N</sub>	10	-12.04	-0.014392	±2.5	PASS
GSM850	190	V <sub>N</sub>	20	-7.59	-0.009072	±2.5	PASS
GSM850	190	V <sub>N</sub>	30	-5.10	-0.006096	±2.5	PASS
GSM850	190	V <sub>N</sub>	40	-4.16	-0.004973	±2.5	PASS
GSM850	190	V <sub>N</sub>	50	-5.17	-0.006180	±2.5	PASS
GPRS850	190	V <sub>N</sub>	-30	-5.29	-0.006323	±2.5	PASS
GPRS850	190	V <sub>N</sub>	-20	-6.20	-0.007411	±2.5	PASS
GPRS850	190	V <sub>N</sub>	-10	-3.97	-0.004745	±2.5	PASS
GPRS850	190	V <sub>N</sub>	0	-6.65	-0.007949	±2.5	PASS
GPRS850	190	V <sub>N</sub>	10	-5.00	-0.005977	±2.5	PASS
GPRS850	190	V <sub>N</sub>	20	-5.10	-0.006096	±2.5	PASS
GPRS850	190	V <sub>N</sub>	30	-4.55	-0.005439	±2.5	PASS
GPRS850	190	V <sub>N</sub>	40	-8.27	-0.009885	±2.5	PASS
GPRS850	190	V <sub>N</sub>	50	-2.71	-0.003239	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	-30	-2.52	-0.003012	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	-20	-3.45	-0.004124	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	-10	-1.52	-0.001817	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	0	1.00	0.001195	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	10	-1.10	-0.001315	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	20	-3.65	-0.004363	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	30	3.81	0.004554	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	40	-3.75	-0.004482	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	50	-2.29	-0.002737	±2.5	PASS
GSM1900	661	V <sub>N</sub>	-30	-800.00	-0.425532	±2.5	PASS
GSM1900	661	V <sub>N</sub>	-20	150.00	0.079787	±2.5	PASS
GSM1900	661	V <sub>N</sub>	-10	950.00	0.505319	±2.5	PASS
GSM1900	661	V <sub>N</sub>	0	1350.00	0.718085	±2.5	PASS
GSM1900	661	V <sub>N</sub>	10	-100.00	-0.053191	±2.5	PASS
GSM1900	661	V <sub>N</sub>	20	300.00	0.159574	±2.5	PASS
GSM1900	661	V <sub>N</sub>	30	250.00	0.132979	±2.5	PASS
GSM1900	661	V <sub>N</sub>	40	400.00	0.212766	±2.5	PASS
GSM1900	661	V <sub>N</sub>	50	50.00	0.026596	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	-30	-600.00	-0.319149	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	-20	950.00	0.505319	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	-10	1050.00	0.558511	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	0	100.00	0.053191	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	10	1250.00	0.664894	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	20	-350.00	-0.186170	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	30	50.00	0.026596	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	40	-500.00	-0.265957	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	50	600.00	0.319149	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	-30	1950.00	1.037234	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	-20	800.00	0.425532	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	-10	-650.00	-0.345745	±2.5	PASS

EGPRS1900	661	V <sub>N</sub>	0	600.00	0.319149	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	10	1250.00	0.664894	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	20	-950.00	-0.505319	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	30	250.00	0.132979	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	40	200.00	0.106383	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	50	-250.00	-0.132979	±2.5	PASS

Voltage							
Band	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
GSM850	190	V <sub>N</sub>	NT	-11.01	-0.013160	±2.5	PASS
GSM850	190	V <sub>L</sub>	NT	-9.75	-0.011654	±2.5	PASS
GSM850	190	V <sub>H</sub>	NT	-15.79	-0.018874	±2.5	PASS
GPRS850	190	V <sub>N</sub>	NT	-4.88	-0.005833	±2.5	PASS
GPRS850	190	V <sub>L</sub>	NT	-5.81	-0.006945	±2.5	PASS
GPRS850	190	V <sub>H</sub>	NT	-7.23	-0.008642	±2.5	PASS
EGPRS850	190	V <sub>N</sub>	NT	0.19	0.000227	±2.5	PASS
EGPRS850	190	V <sub>L</sub>	NT	-2.49	-0.002976	±2.5	PASS
EGPRS850	190	V <sub>H</sub>	NT	-2.97	-0.003550	±2.5	PASS
GSM1900	661	V <sub>N</sub>	NT	450.00	0.239362	±2.5	PASS
GSM1900	661	V <sub>L</sub>	NT	200.00	0.106383	±2.5	PASS
GSM1900	661	V <sub>H</sub>	NT	-950.00	-0.505319	±2.5	PASS
GPRS1900	661	V <sub>N</sub>	NT	1950.00	1.037234	±2.5	PASS
GPRS1900	661	V <sub>L</sub>	NT	-250.00	-0.132979	±2.5	PASS
GPRS1900	661	V <sub>H</sub>	NT	2400.00	1.276596	±2.5	PASS
EGPRS1900	661	V <sub>N</sub>	NT	750.00	0.398936	±2.5	PASS
EGPRS1900	661	V <sub>L</sub>	NT	350.00	0.186170	±2.5	PASS
EGPRS1900	661	V <sub>H</sub>	NT	-550.00	-0.292553	±2.5	PASS

## 8. RADIATED SPURIOUS EMISSIONS

### LIMIT

FCC: §24.238(a) (GSM1900)

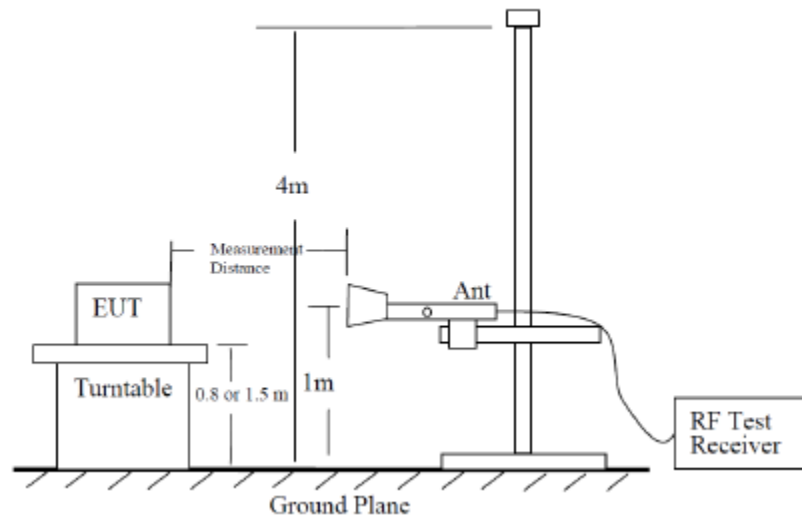
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

FCC: §22.917(a) (GSM850)

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.

### TEST PROCEDURE

Following the test configuration shown below, radiated emissions measured directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in section 5.5.1 of ANSI C63.26-2015. The field strength measurement method by using a test site validated to the requirement of ANSI C63.4 is an alternative method to the substitution measurement.



### **Radiated Power Measurement Calculation According to ANSI C63.26-2015**

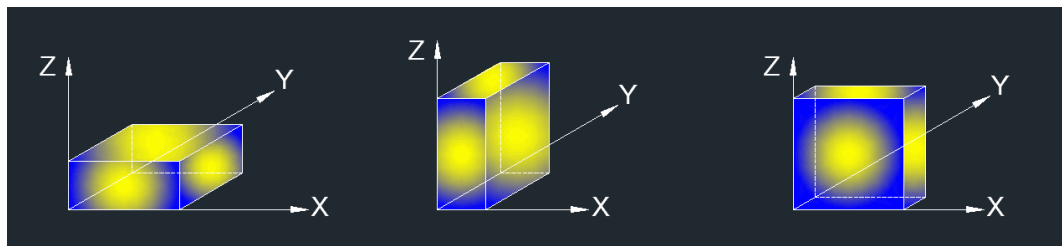
- a)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- b)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- c)  $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$ , where D is the measurement distance (in the far field region) in m.
- d)  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$ , where D is the measurement distance (in the far field region) in m.

So, from d)

The measuring distance is at 3m, then  $20 \cdot \log(3) = 9.5424$

Then,  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

X axis, Y axis, Z axis:



Note: The EUT was investigated in three orthogonal orientations X/Y/Z on ANT0 to determine the worst-case orientation. X orientation is finally determined the worst.

## TEST ENVIRONMENT

Temperature	24.3°C	Relative Humidity	61%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

## Test Result

GSM 850

GPRS- Low Channel- Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1666.000	52.50	-12.16	40.34	82.25	-41.91	peak
2	2503.000	50.29	-8.48	41.81	82.25	-40.44	peak
3	3349.000	48.74	-6.19	42.55	82.25	-39.70	peak
4	4186.000	48.33	-3.61	44.72	82.25	-37.53	peak
5	7498.000	39.30	5.69	44.99	82.25	-37.26	peak
6	9064.000	38.58	9.76	48.34	82.25	-33.91	peak

GPRS- Low Channel- Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1666.000	56.21	-12.16	44.05	82.25	-38.20	peak
2	2503.000	54.51	-8.48	46.03	82.25	-36.22	peak
3	4852.000	44.23	-0.74	43.49	82.25	-38.76	peak
4	7660.000	39.60	5.68	45.28	82.25	-36.97	peak
5	8938.000	38.46	9.31	47.77	82.25	-34.48	peak
6	9352.000	38.58	9.88	48.46	82.25	-33.79	peak

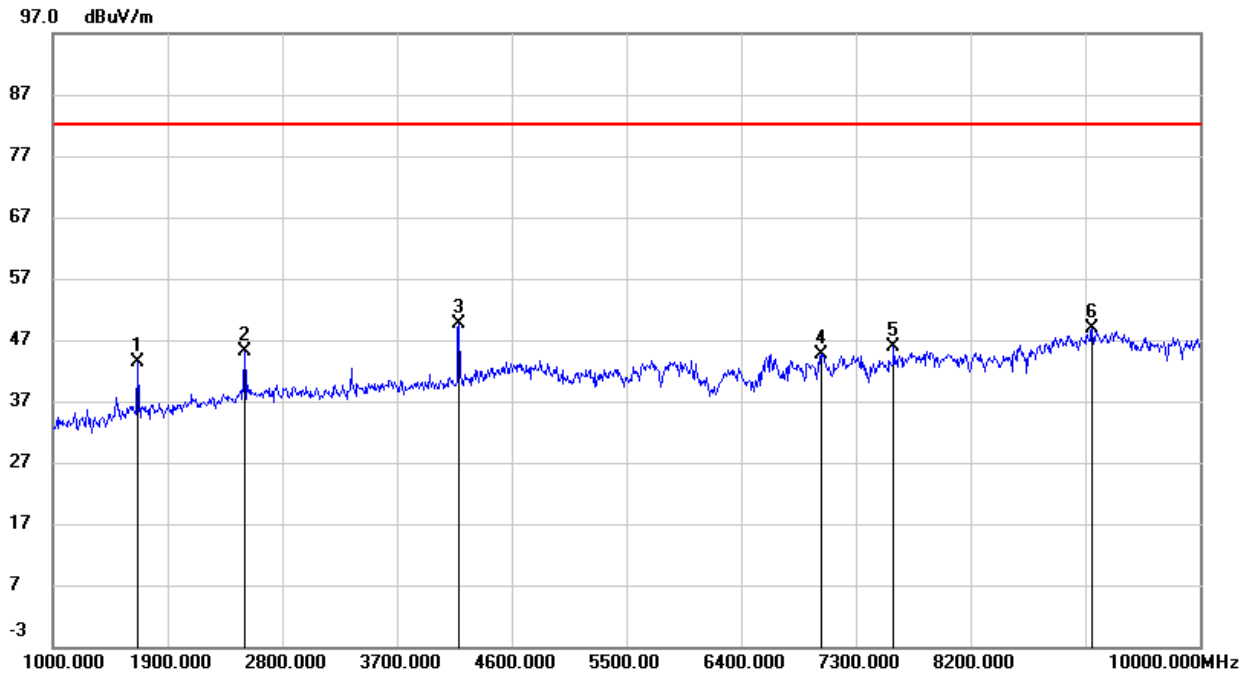
GPRS- Mid Channel- Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2503.000	48.81	-8.48	40.33	82.25	-41.92	peak
2	3340.000	47.44	-6.22	41.22	82.25	-41.03	peak
3	4186.000	51.95	-3.61	48.34	82.25	-33.91	peak
4	6670.000	42.20	4.57	46.77	82.25	-35.48	peak
5	7885.000	41.06	5.66	46.72	82.25	-35.53	peak
6	9352.000	38.60	9.88	48.48	82.25	-33.77	peak

GPRS- Mid Channel- Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1666.000	52.00	-12.16	39.84	82.25	-42.41	peak
2	2503.000	52.20	-8.48	43.72	82.25	-38.53	peak
3	4186.000	47.43	-3.61	43.82	82.25	-38.43	peak
4	7021.000	37.85	6.19	44.04	82.25	-38.21	peak
5	7714.000	39.49	5.68	45.17	82.25	-37.08	peak
6	8947.000	38.78	9.37	48.15	82.25	-34.10	peak

GPRS- High Channel- Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1666.000	55.63	-12.16	43.47	82.25	-38.78	peak
2	2503.000	53.64	-8.48	45.16	82.25	-37.09	peak
3	4186.000	53.34	-3.61	49.73	82.25	-32.52	peak
4	7030.000	38.47	6.18	44.65	82.25	-37.60	peak
5	7597.000	40.13	5.68	45.81	82.25	-36.44	peak
6	9154.000	39.14	9.80	48.94	82.25	-33.31	peak

#### GPRS- High Channel- Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1666.000	53.83	-12.16	41.67	82.25	-40.58	peak
2	2503.000	54.94	-8.48	46.46	82.25	-35.79	peak
3	4186.000	49.69	-3.61	46.08	82.25	-36.17	peak
4	6661.000	38.67	4.52	43.19	82.25	-39.06	peak
5	7723.000	40.11	5.67	45.78	82.25	-36.47	peak
6	8992.000	37.87	9.68	47.55	82.25	-34.70	peak

**GSM 1900**
**GPRS- Low Channel- Horizontal**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5715.000	41.13	1.46	42.59	82.25	-39.66	peak
2	7890.000	40.03	6.31	46.34	82.25	-35.91	peak
3	9135.000	38.42	10.55	48.97	82.25	-33.28	peak
4	11520.000	36.79	16.65	53.44	82.25	-28.81	peak
5	13995.000	33.68	21.95	55.63	82.25	-26.62	peak
6	17925.000	30.98	25.25	56.23	82.25	-26.02	peak

**GPRS- Low Channel- Vertical**

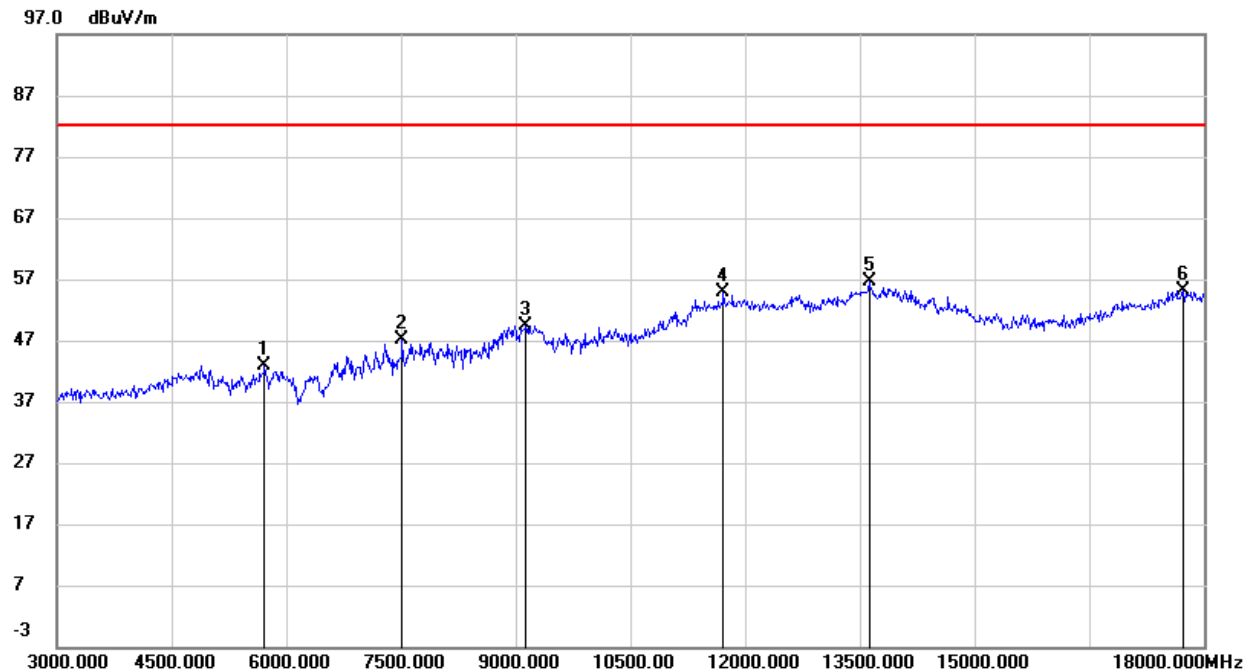
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5970.000	41.17	2.17	43.34	82.25	-38.91	peak
2	8895.000	39.40	9.71	49.11	82.25	-33.14	peak
3	11820.000	37.53	17.47	55.00	82.25	-27.25	peak
4	12690.000	37.52	18.02	55.54	82.25	-26.71	peak
5	13680.000	34.51	21.29	55.80	82.25	-26.45	peak
6	17100.000	33.46	21.26	54.72	82.25	-27.53	peak

**GPRS- Mid Channel- Horizontal**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5655.000	41.35	1.29	42.64	82.25	-39.61	peak
2	7725.000	40.58	6.32	46.90	82.25	-35.35	peak
3	8985.000	39.03	10.37	49.40	82.25	-32.85	peak
4	11790.000	37.41	17.38	54.79	82.25	-27.46	peak
5	13605.000	34.60	21.12	55.72	82.25	-26.53	peak
6	17865.000	30.53	24.89	55.42	82.25	-26.83	peak



### GPRS- Mid Channel- Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5715.000	41.37	1.46	42.83	82.25	-39.42	peak
2	7515.000	40.71	6.33	47.04	82.25	-35.21	peak
3	9135.000	38.88	10.55	49.43	82.25	-32.82	peak
4	11715.000	37.78	17.19	54.97	82.25	-27.28	peak
5	13620.000	35.53	21.15	56.68	82.25	-25.57	peak
6	17730.000	31.12	24.09	55.21	82.25	-27.04	peak

### GPRS- High Channel- Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4695.000	42.48	-0.71	41.77	82.25	-40.48	peak
2	6645.000	38.95	4.94	43.89	82.25	-38.36	peak
3	9255.000	37.89	10.59	48.48	82.25	-33.77	peak
4	11835.000	36.86	17.51	54.37	82.25	-27.88	peak
5	13605.000	35.52	21.12	56.64	82.25	-25.61	peak
6	17985.000	30.17	25.60	55.77	82.25	-26.48	peak

### GPRS- High Channel- Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4830.000	43.25	-0.20	43.05	82.25	-39.20	peak
2	7515.000	42.32	6.33	48.65	82.25	-33.60	peak
3	9060.000	38.91	10.51	49.42	82.25	-32.83	peak
4	11520.000	38.45	16.65	55.10	82.25	-27.15	peak
5	13875.000	34.17	21.70	55.87	82.25	-26.38	peak
6	17955.000	30.61	25.42	56.03	82.25	-26.22	peak

**END OF REPORT**