



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

TEST REPORT

For

Payment terminal

MODEL NUMBER: SOLO

FCC ID: 2A39U-SOLO002

REPORT NUMBER: 4790095248-1

ISSUE DATE: March 29, 2022

Prepared for

SumUp Inc

2000 Central Ave Ste 100 Boulder Colorado 80301 United States

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	03/29/2022	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 <Accuracy Method> decision rule is applied.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: SumUp Inc
Address: 2000 Central Ave Ste 100 Boulder Colorado 80301 United States

Manufacturer Information

Company Name: SumUp Inc
Address: 2000 Central Ave Ste 100 Boulder Colorado 80301 United States

EUT Information

EUT Name: Payment terminal
Model: SOLO
Sample Received Date: January 06, 2022
Sample Status: Normal
Sample ID: 4405274
Date of Tested: January 06~Mar 29, 2022

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

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Laboratory 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 v02r01, 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>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) 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>ISED (Company No.: 21320) 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>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) 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-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011</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	Payment terminal
Model Name	SOLO
Battery	Li-ion 1.6 Ah, 3,8 Vdc
Ratings	5 Vdc via USB Type C

Item	Support Equipment	Brand Name	Model Name	Description
1	Adapter	SAMSUNG	ETA-U90CBC	5Vdc,2A

Item	Accessory	Brand Name	Model Name	Description
1	Type-C Cable	N/A	N/A	Length: 1.0 m No Ferrite Core shield

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
WCDMA Band 2	Rel99/HSDPA/HSUPA	9262	9400	9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
WCDMA Band 5	Rel99/HSDPA/HSUPA	4132	4182	4233
		826.4 MHz	836.4 MHz	846.6 MHz

5.3. MAXIMUM AVERAGE OUTPUT POWER

GSM 850						
Part 22H						
ERP Limit(W)		7				
Antenna Gain (dBi)		-0.3				
Mode	Ch	Freq(MHz)	Conducted Average	ERP	99%	Emission
			power (dBm)	(W)	OBW	Designator
					(MHz)	
GRPS(GMSK)	190	836.6	31.4	0.79	0.246	246KGXW
EGPRS(8PSK)	251	848.8	26.19	0.24	0.246	246KG7W

GSM 1900						
Part 24						
EIRP Limit(W)		2				
Antenna Gain (dBi)		-1.2				
Mode	Ch	Freq(MHz)	Conducted Average	EIRP	99%	Emission
			power (dBm)	(W)	OBW	Designator
					(MHz)	
GRPS(GMSK)	661	1880.0	25.99	0.30	0.246	246KGXW
EGPRS(8PSK)	810	1909.8	22.68	0.14	0.246	246KG7W

WCDMA Band2						
Part 24						
EIRP Limit(W)		2				
Antenna Gain (dBi)		-1.2				
Mode	Ch	Freq(MHz)	Conducted Average	EIRP	99%	Emission
			power (dBm)	(W)	OBW	Designator
					(MHz)	
Rel99	9538	1907.6	19.42	0.07	4.077	4M08F9W
HSDPA	9400	1800.0	18.91	0.06	4.073	4M07F9W
HSUPA	9400	1800.0	18.88	0.06	4.075	4M08F9W



WCDMA Band5						
Part 22						
ERP Limit(W)		7				
Antenna Gain (dBi)		-0.3				
Mode	Ch	Freq(MHz)	Conducted Average	ERP	99%	Emission
			power (dBm)	(W)	OBW	Designator
					(MHz)	
Rel99	4182	836.4	22.83	0.11	4.136	4M14F9W
HSDPA	4132	826.4	22.81	0.11	4.134	4M13F9W
HSUPA	4132	826.4	21.91	0.09	4.165	4M17F9W

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 the highest transmitting power channel and the worse configuration.

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

5.5. DESCRIPTION OF AVAILABLE ANTENNAS

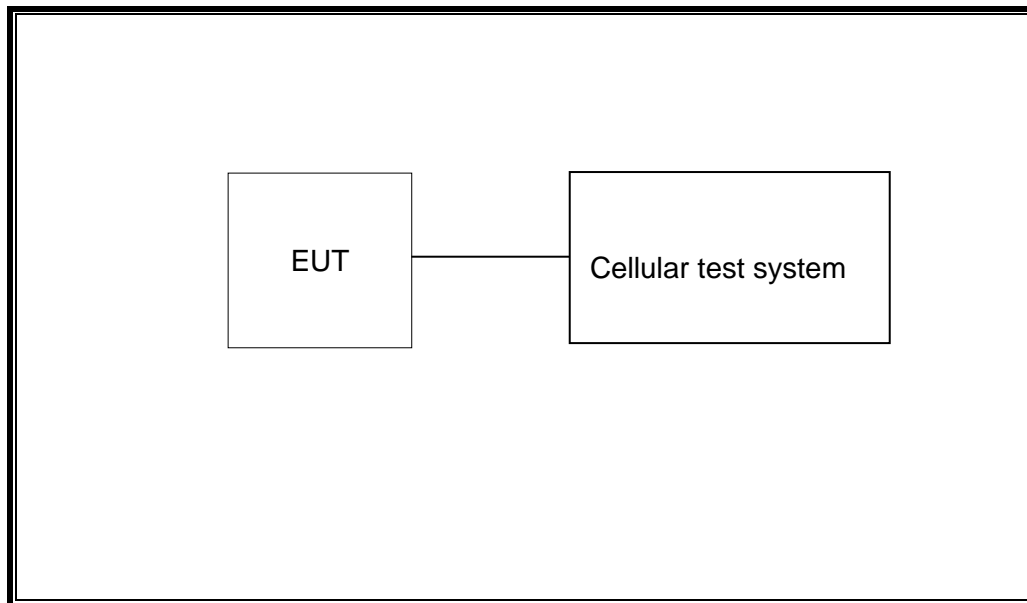
Antenna	Band	Antenna Type	MAX Antenna Gain (dBi)
1	GSM850	MID	-0.3
1	GSM1900	MID	-1.2
1	WCDMA Band 2	MID	-1.2
1	WCDMA Band 5	MID	-0.3

Band	Transmit and Receive Mode	Description
GSM850	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
GSM1900	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 2	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 5	<input checked="" type="checkbox"/> 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

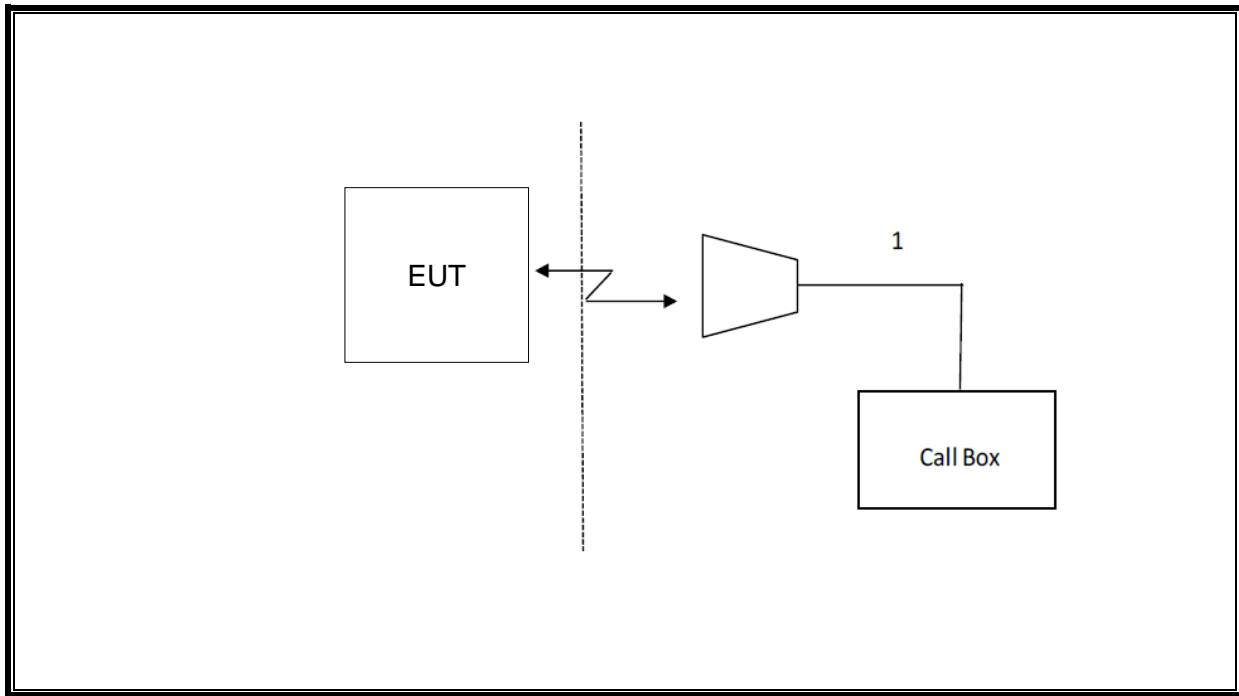
Note: The value of the antenna gain was declared by customer.

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	FSW40	S421035420	Oct.30, 2021	Oct.29, 2022
<input checked="" type="checkbox"/>	Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.30, 2021	Oct.29, 2022
<input checked="" type="checkbox"/>	DC Power Supply	Array	3662A	A1512015	Oct.30, 2021	Oct.29, 2022
Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Tonsend Cellular Test System		Tonsend	JS1120 RF Auto Test System		2.6.9.0826
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.30, 2021	Oct.29, 2022
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug.02, 2021	Aug.01, 2024
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Oct.30, 2021	Oct.29, 2022
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	July 20, 2021	July 19, 2024
<input checked="" type="checkbox"/>	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	July 20, 2021	July 19, 2024
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Oct.31, 2021	Oct.30, 2022
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.31, 2021	Oct.30, 2022
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Jan.17,2022	Jan.17,2025
<input checked="" type="checkbox"/>	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.31, 2021	Oct.30, 2022
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.

RSS-132

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-133

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits 2W.

In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

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);

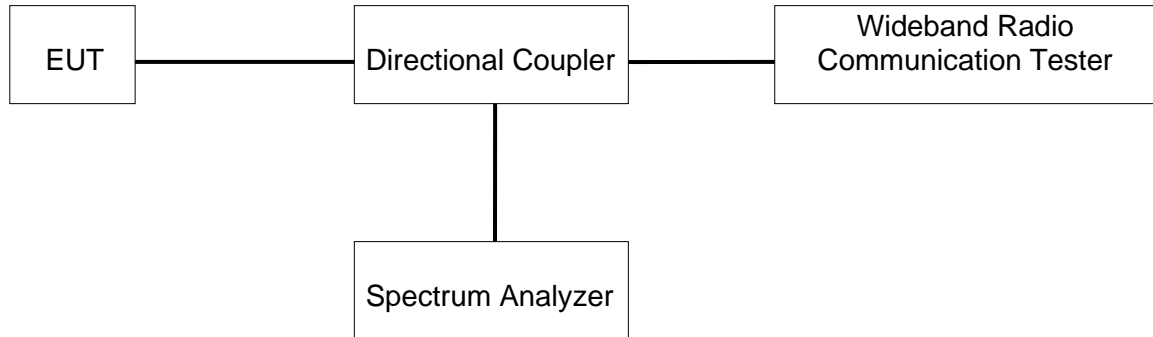
P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

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 radiated ERP / EIRP output powers as follows:

TEST SETUP



TEST ENVIRONMENT

Temperature	22.7°C	Relative Humidity	65.6%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

RESULTS

GSM 850				
Part 22H				
ERP Limit(W)	7			
Antenna Gain (dBi)	-0.3			
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	ERP (W)
GRPS(GMSK)	128	824.2	31.4	0.79
GSM 1900				
Part 24				
EIRP Limit(W)	2			
Antenna Gain (dBi)	-1.2			
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)
GRPS(GMSK)	810	1909.8	25.99	0.30



WCDMA Band2				
Part 24				
EIRP Limit(W)		2		
Antenna Gain (dBi)		-1.2		
Mode	Ch	Freq(MHz)	Conducted Average	EIRP
			power (dBm)	(W)
Rel99	9538	1907.6	19.42	0.07

WCDMA Band5				
Part 22				
ERP Limit(W)		7		
Antenna Gain (dBi)		-0.3		
Mode	Ch	Freq(MHz)	Conducted Average	ERP
			power (dBm)	(W)
Rel99	4132	826.4	22.83	0.11

GSM 850

Band		Conducted Average Power (dBm)		
		Channel	Channel	Channel
		128	190	251
GPRS850	TestSlot 1	31.38	31.38	31.28
	TestSlot 2	31.39	31.40	31.30
	TestSlot 3	30.56	30.58	30.47
	TestSlot 4	29.38	29.43	29.34
EGPRS850	TestSlot 1	26.12	26.17	26.19
	TestSlot 2	26.11	26.12	26.18
	TestSlot 3	25.29	25.32	25.37
	TestSlot 4	24.13	24.13	24.16

GSM 1900

Band		Conducted Average Power (dBm)		
		Channel	Channel	Channel
		512	661	810
GPRS1900	TestSlot 1	25.26	25.99	25.82
	TestSlot 2	25.31	25.76	25.83
	TestSlot 3	24.47	24.72	24.68
	TestSlot 4	23.31	23.79	23.61
EGPRS1900	TestSlot 1	22.19	22.57	22.64
	TestSlot 2	22.49	22.59	22.68
	TestSlot 3	21.79	21.86	22.12



	TestSlot 4	20.88	20.93	21.46
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WCDMA Band2

UMTS 1900MHz (Band II)		Average Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	19.26	19.38	19.42
	64kbps RMC	18.71	18.86	19.01
	144kbps RMC	18.51	18.63	18.84
	384kbps RMC	18.42	18.66	18.78
HSDPA	Subtest 1	18.41	18.8	18.89
	Subtest 2	18.86	18.86	18.78
	Subtest 3	18.74	18.77	18.76
	Subtest 4	18.71	18.91	18.74
HSUPA	Subtest 1	17.79	17.9	18.11
	Subtest 2	17.76	18.88	18.03
	Subtest 3	17.94	17.91	18.01
	Subtest 4	18.02	17.94	18
	Subtest 5	18.15	18.86	18.41

WCDMA Band5

UMTS 850MHz (Band V)		Average Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	22.78	22.83	22.54
	64kbps RMC	22.18	22.38	22.04
	144kbps RMC	21.56	21.55	21.52
	384kbps RMC	21.19	21.67	21.47
HSDPA	Subtest 1	22.81	22.61	22.45
	Subtest 2	22.07	21.89	21.72
	Subtest 3	21.73	21.88	21.68
	Subtest 4	21.68	21.91	21.72
HSUPA	Subtest 1	21.5	21.36	21.16
	Subtest 2	21.5	21.35	21.17
	Subtest 3	21.16	21.36	21.17
	Subtest 4	21.14	21.31	21.12
	Subtest 5	21.91	21.67	21.44

7.2. PEAK TO AVERAGE RADIO

LIMITS

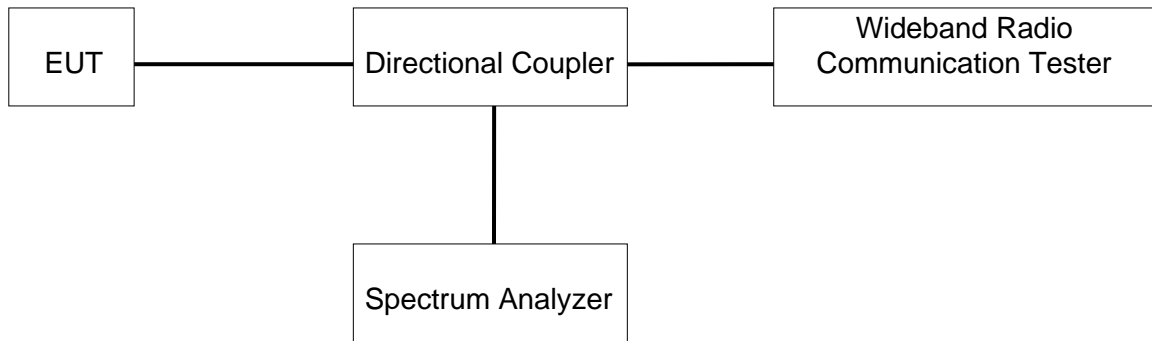
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

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	22.7°C	Relative Humidity	65.6%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

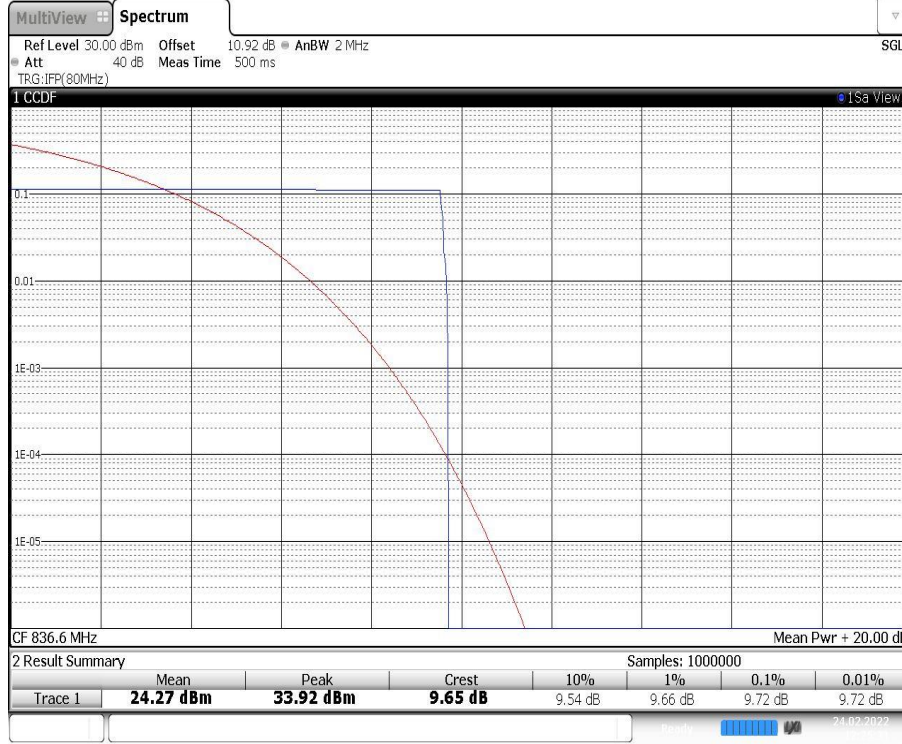
Note: All the modes subtest 1/2/3/4 and channels had been tested, but only the worst data was recorded in the report.

RESULTS

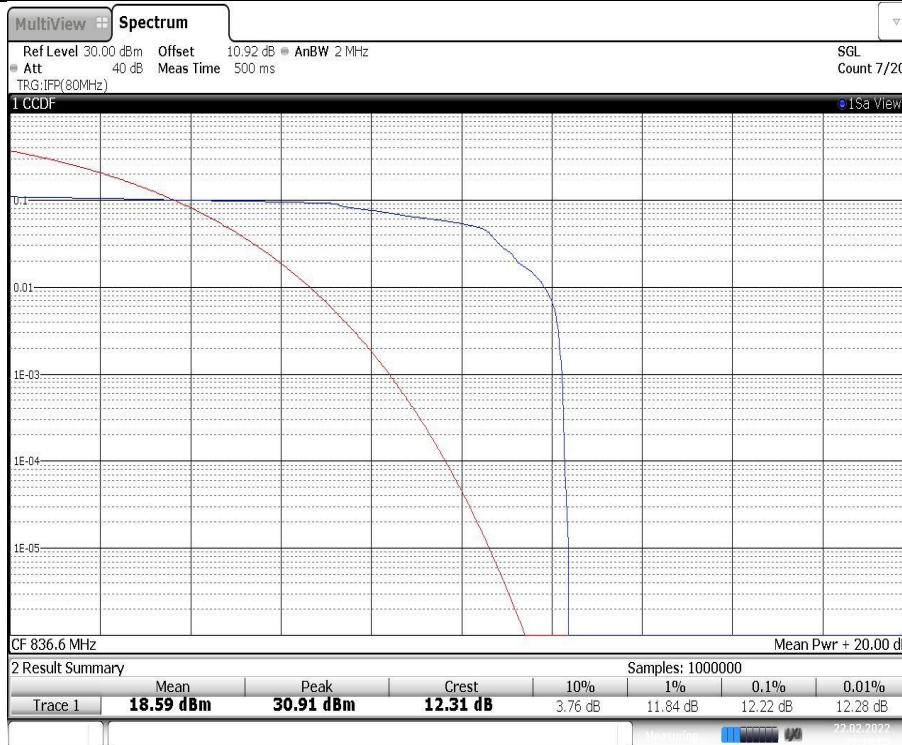
Band	Channel	Result(dB)	Limit(dB)	Verdict
GPRS850	190	9.72	13	PASS
EGPRS850	190	12.22	13	PASS
GPRS1900	661	9.70	13	PASS
EGPRS1900	512	12.56	13	PASS



GPRS850-190

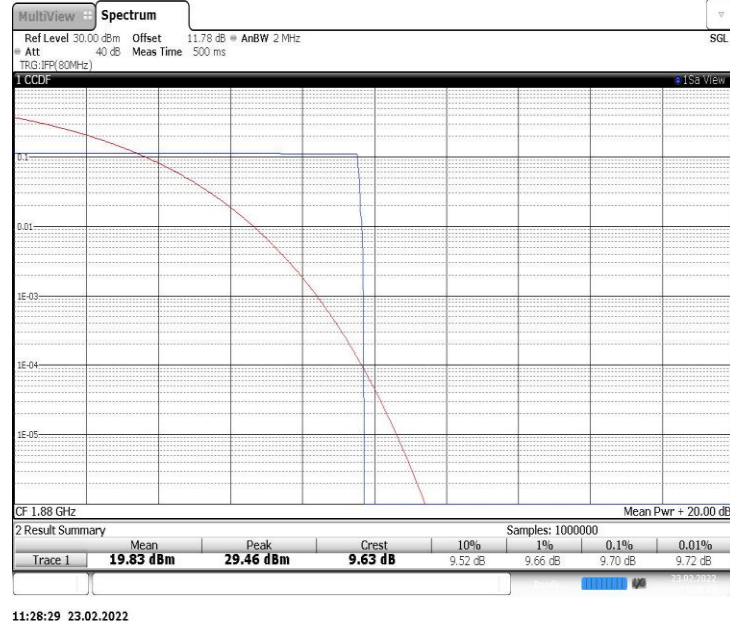


EGPRS850-190

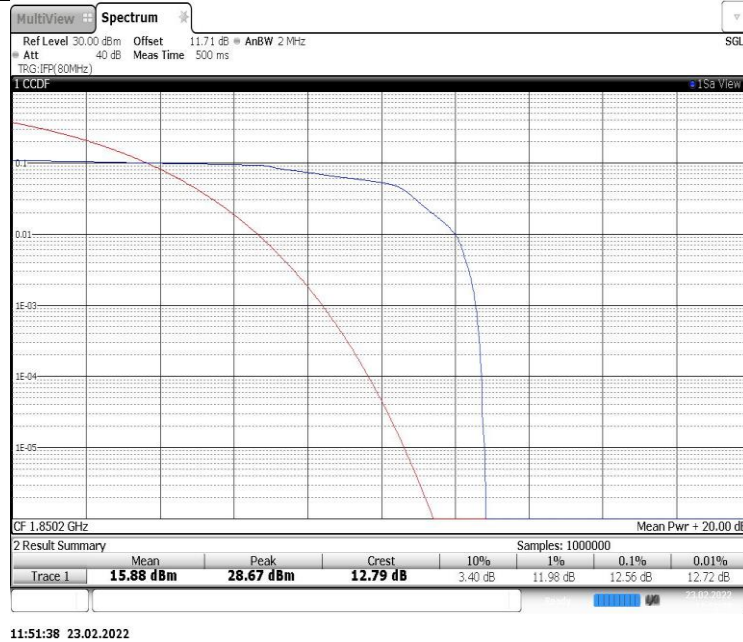




GPRS1900-661



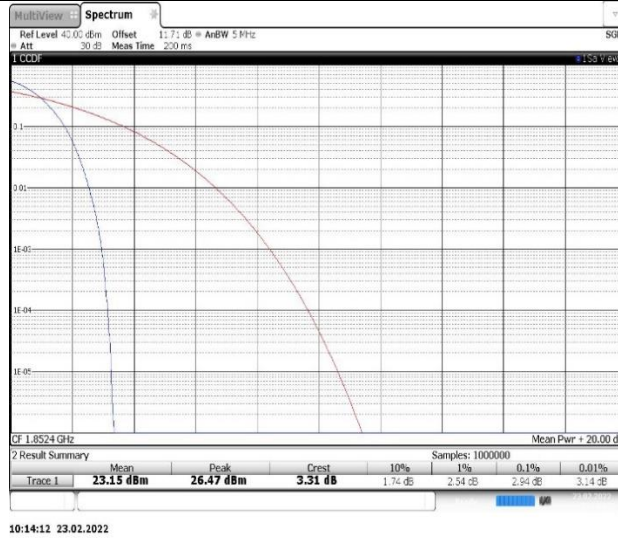
EGPRS1900-512



WCDMA

Band	Channel	SubTest	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
Band2	9262	Rel99	2.94	13	PASS
	9400	HSDPA	3.32	13	PASS
	9400	HSUPA	4.70	13	PASS
Band5	4182	Rel99	3.70	13	PASS
	4132	HSDPA	3.70	13	PASS
	4182	HSUPA	4.74	13	PASS

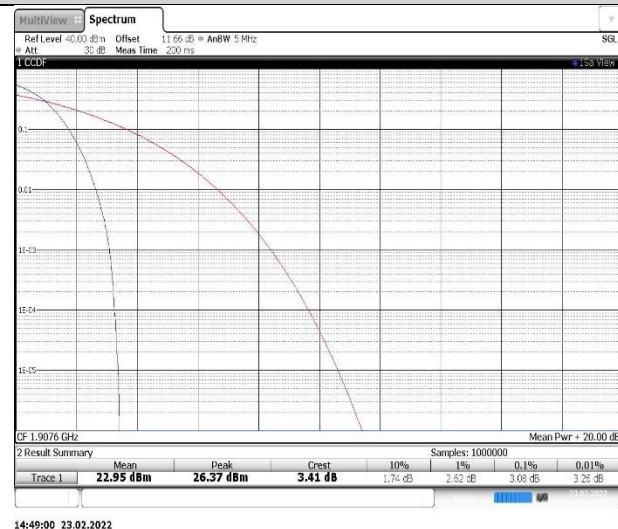
Band2-9262-Rel



Band2-9400-HSDPA

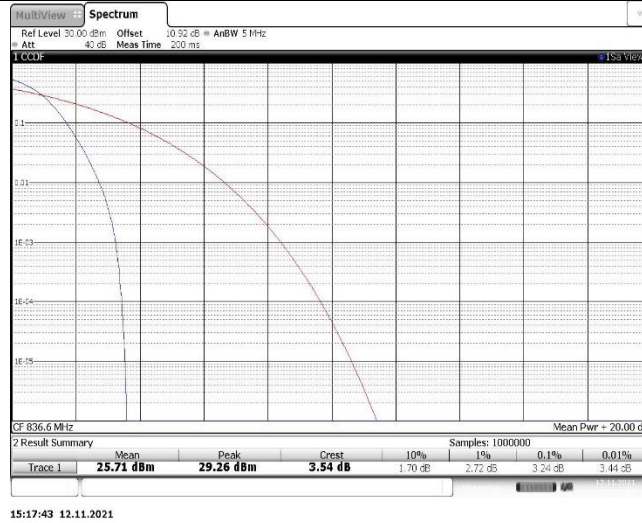


Band2-9400-HSUPA

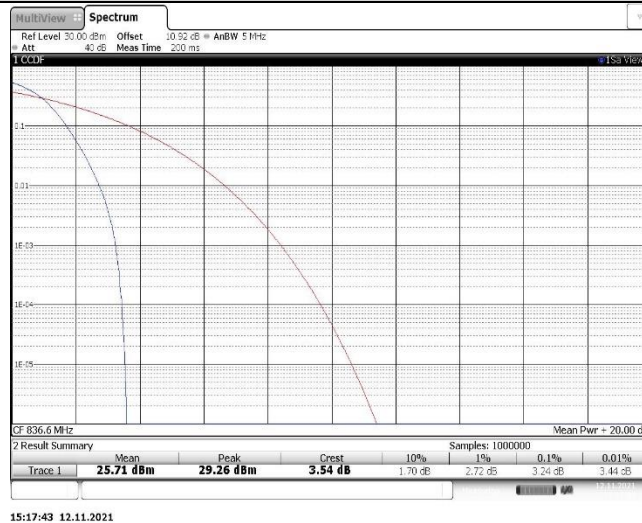




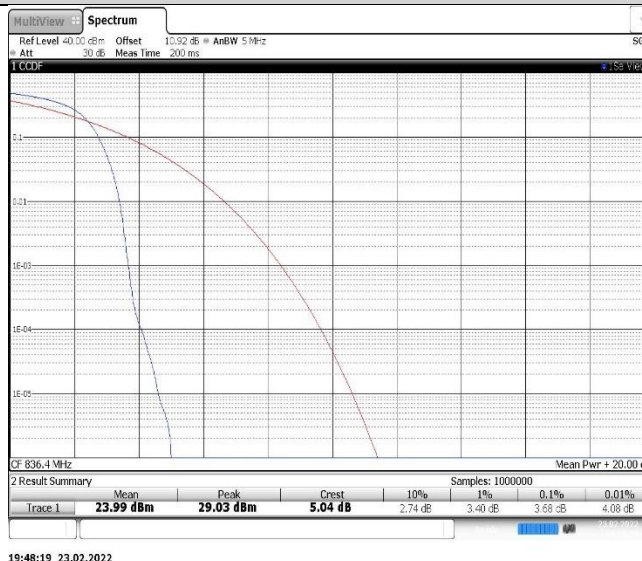
Band5-4182-Rel99



Band5-4132-HSDPA



Band5-4182-HSUPA



7.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049.

LIMITS

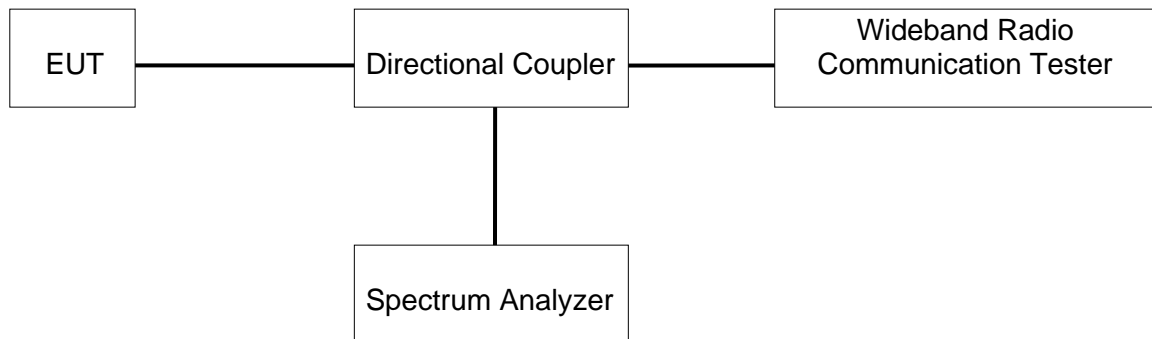
For reporting purposes only.

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

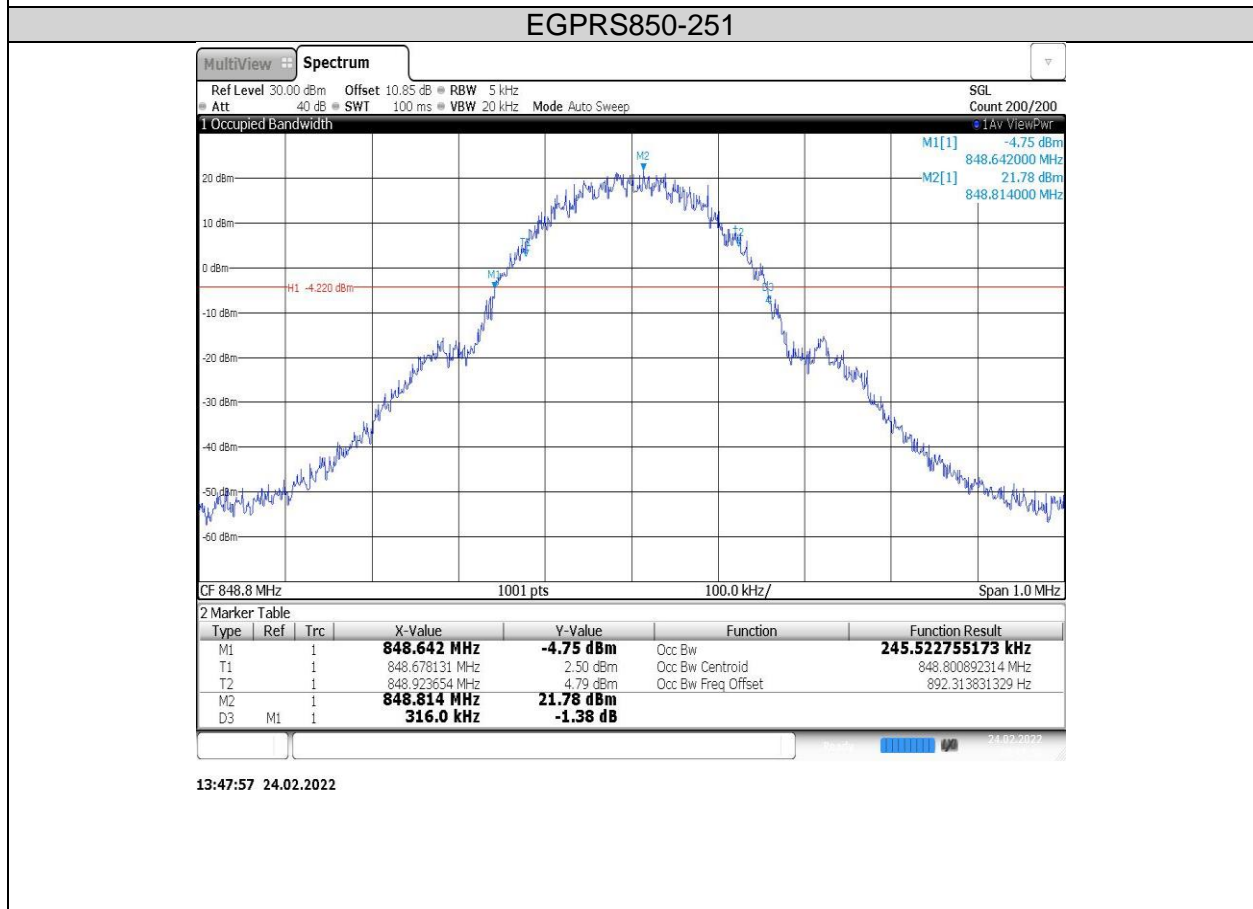
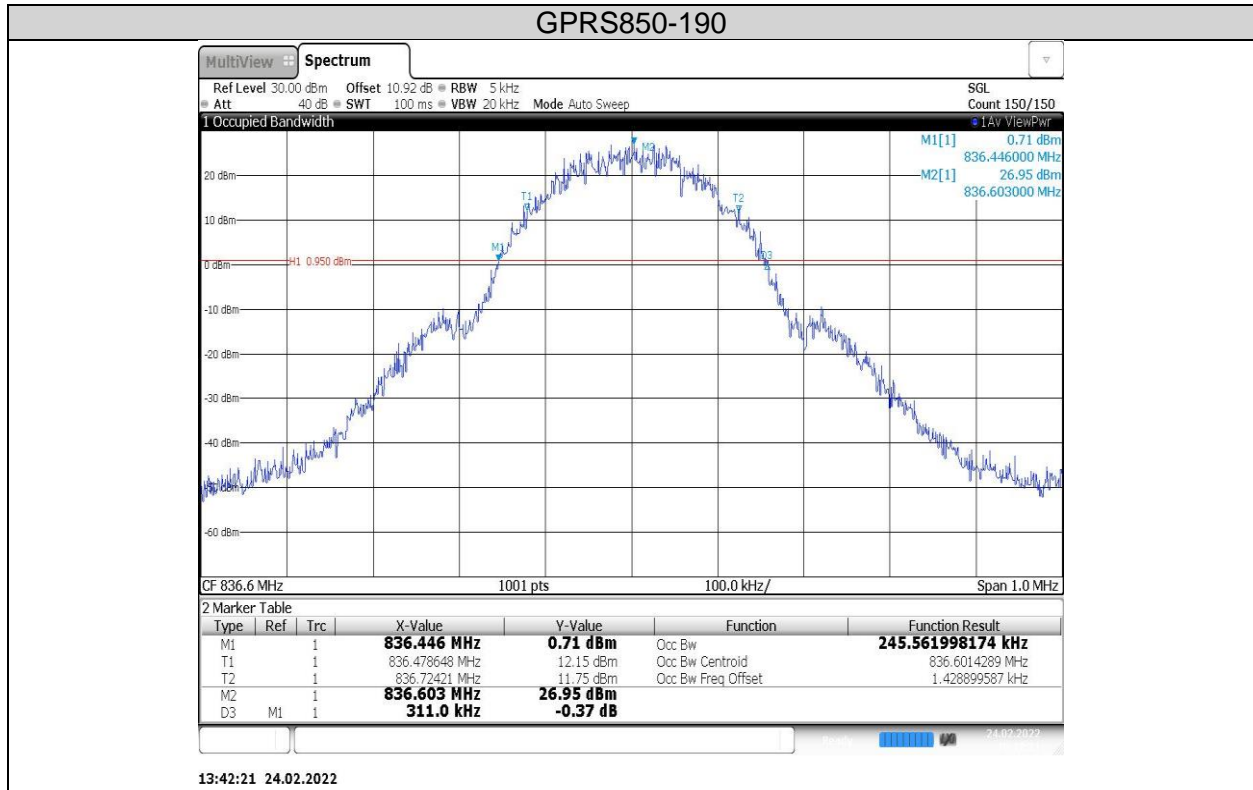


TEST ENVIRONMENT

Temperature	22.7°C	Relative Humidity	65.6%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

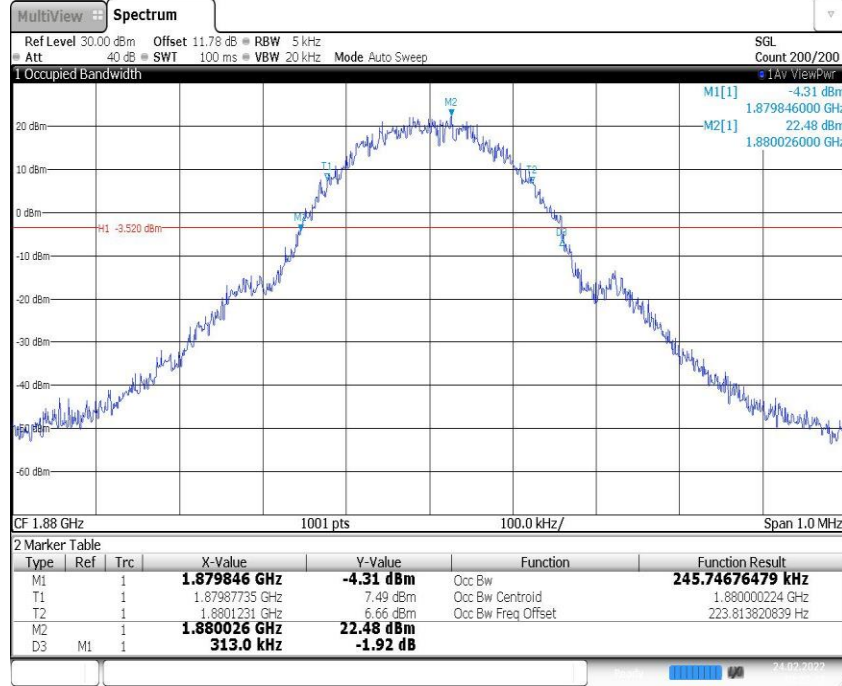
RESULTS

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GPRS850	190	0.246	0.31	---	PASS
EGPRS850	251	0.246	0.32	---	PASS
GPRS1900	661	0.246	0.31	---	PASS
EGPRS1900	512	0.246	0.31	---	PASS



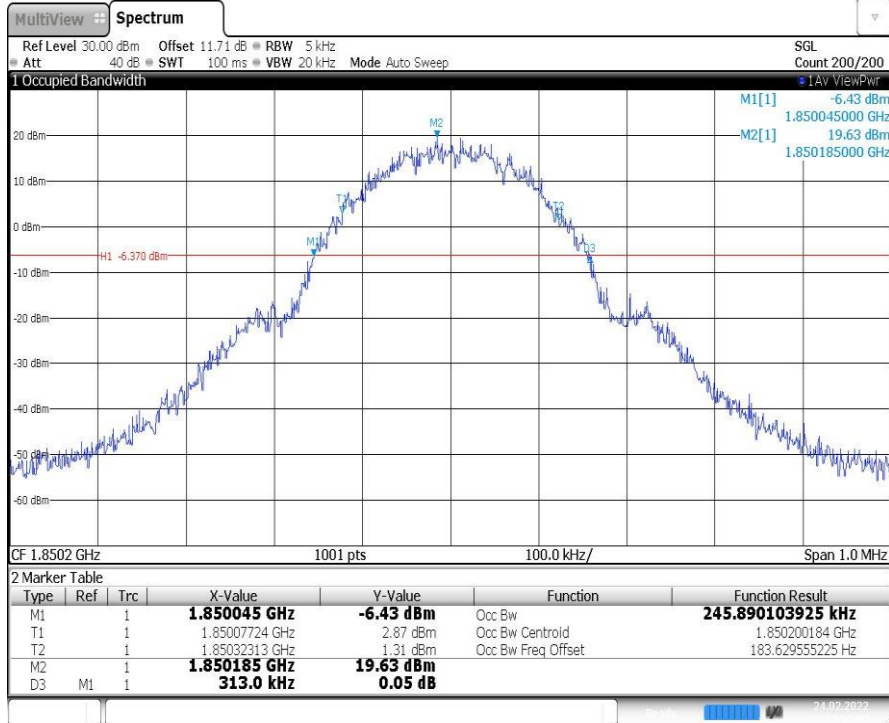


GPRS1900-661



13:23:48 24.02.2022

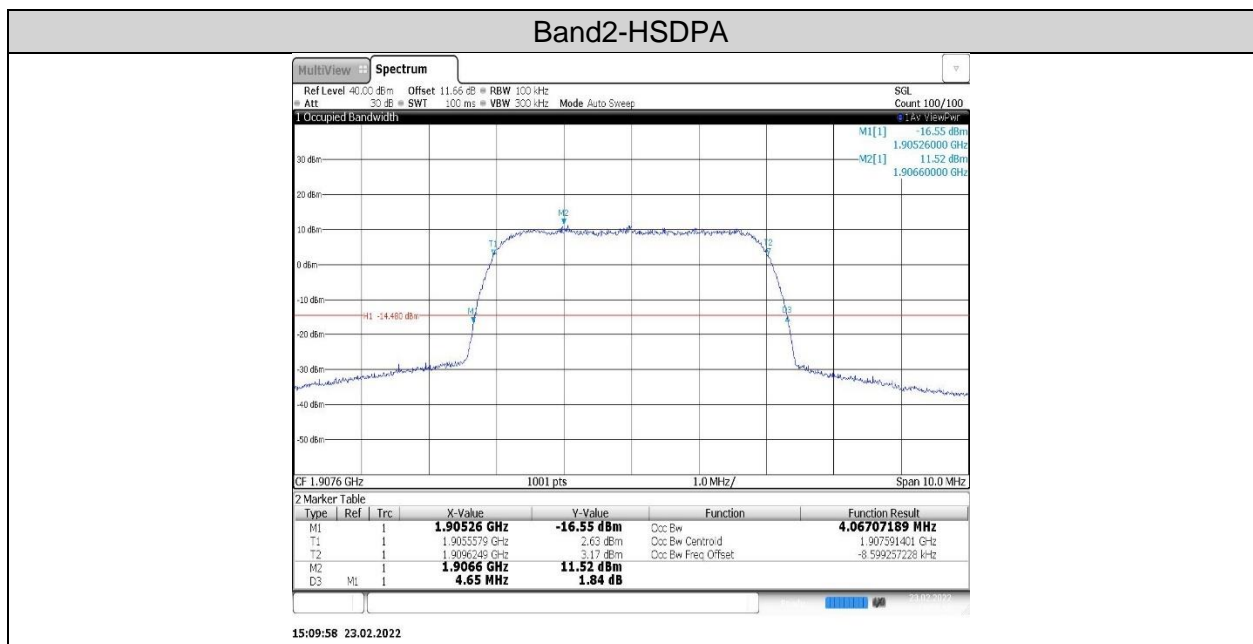
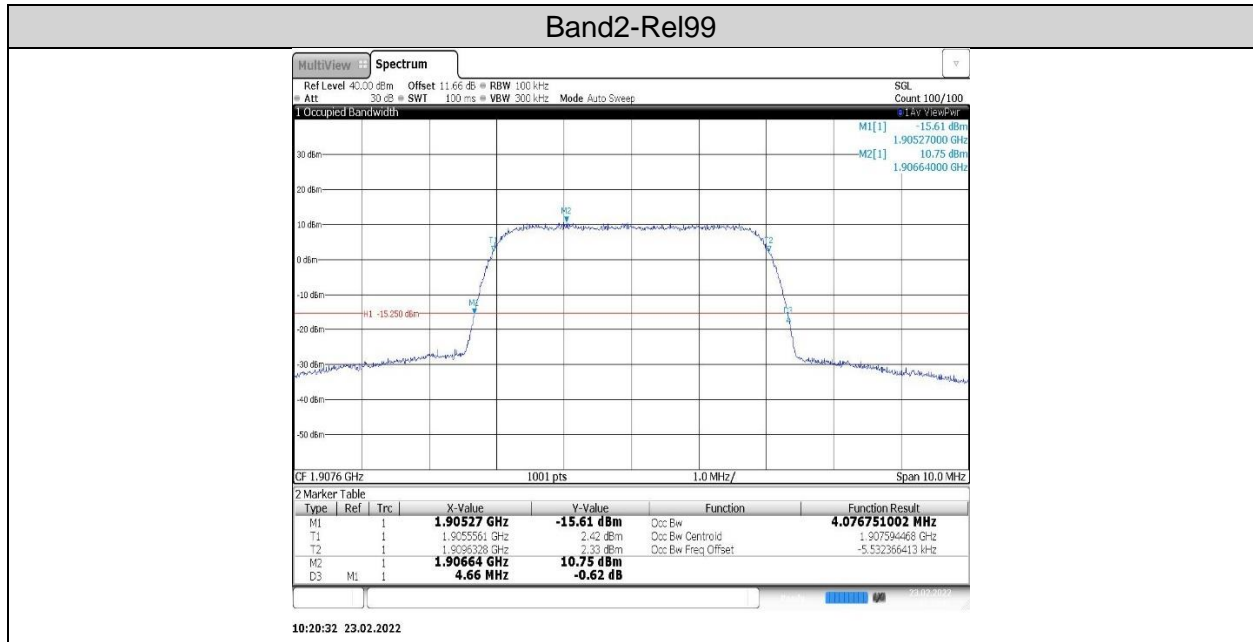
EGPRS1900-512



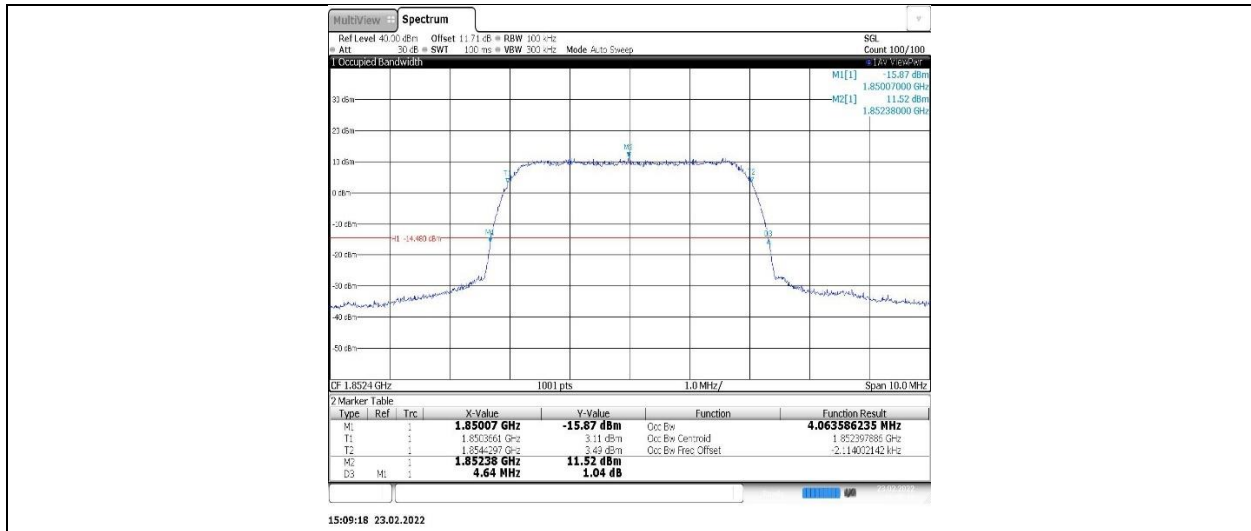
13:20:10 24.02.2022

WCDMA(only worst case recorded)

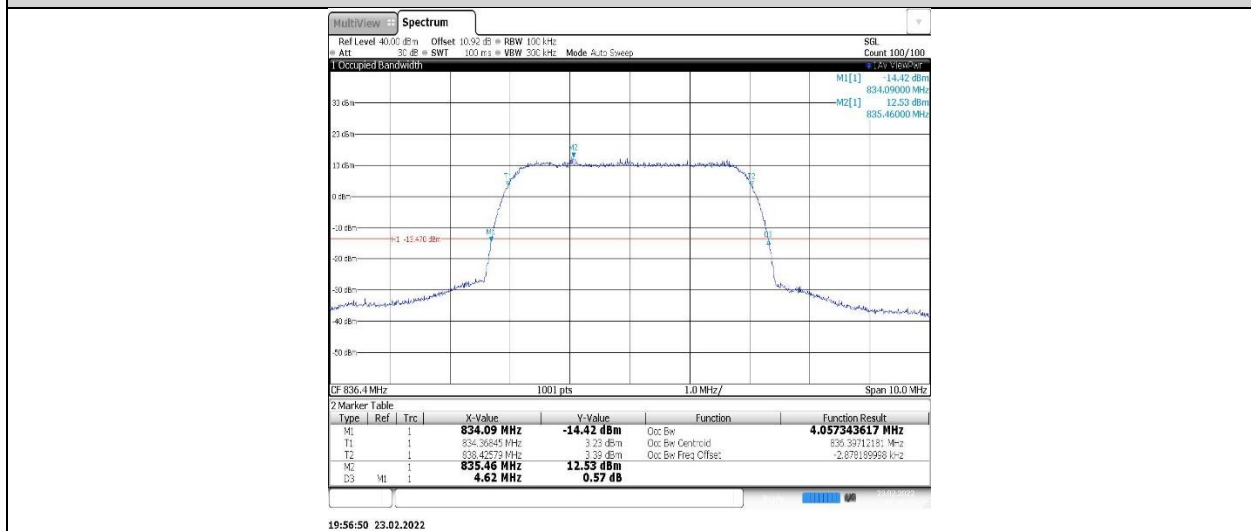
Band	Channel	SubTest	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)
Band2	High	Rel99	4.077	4.66
	Mid	HSDPA	4.067	4.65
	Low	HSUPA	4.064	4.64
Band5	Mid	Rel99	4.057	4.62
	Low	HSDPA	4.061	4.63
	Low	HSUPA	4.075	4.63



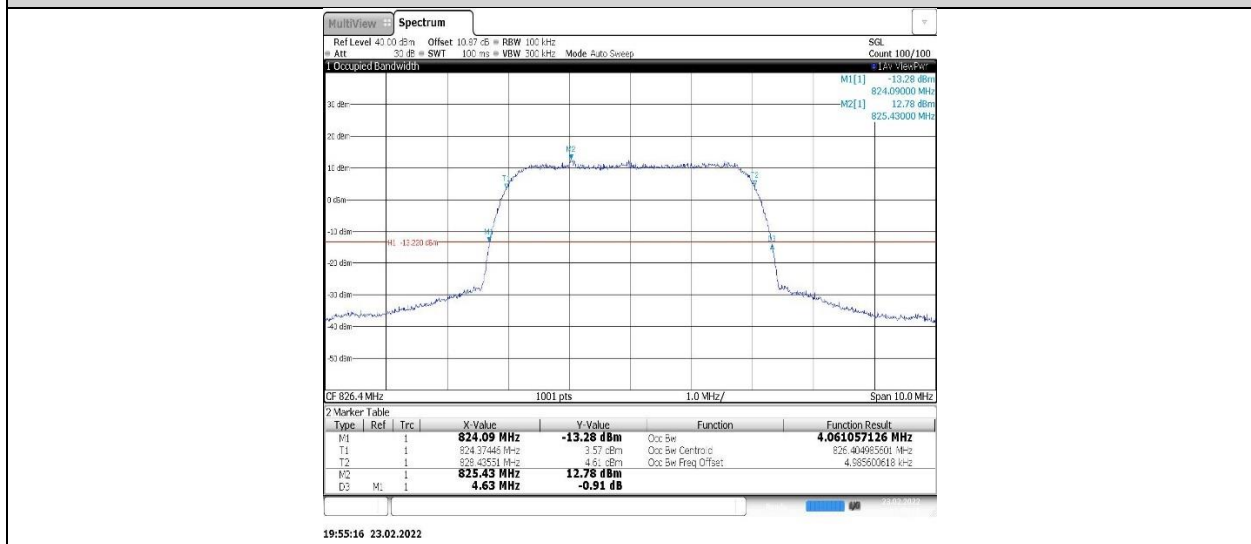
Band2-HSUPA

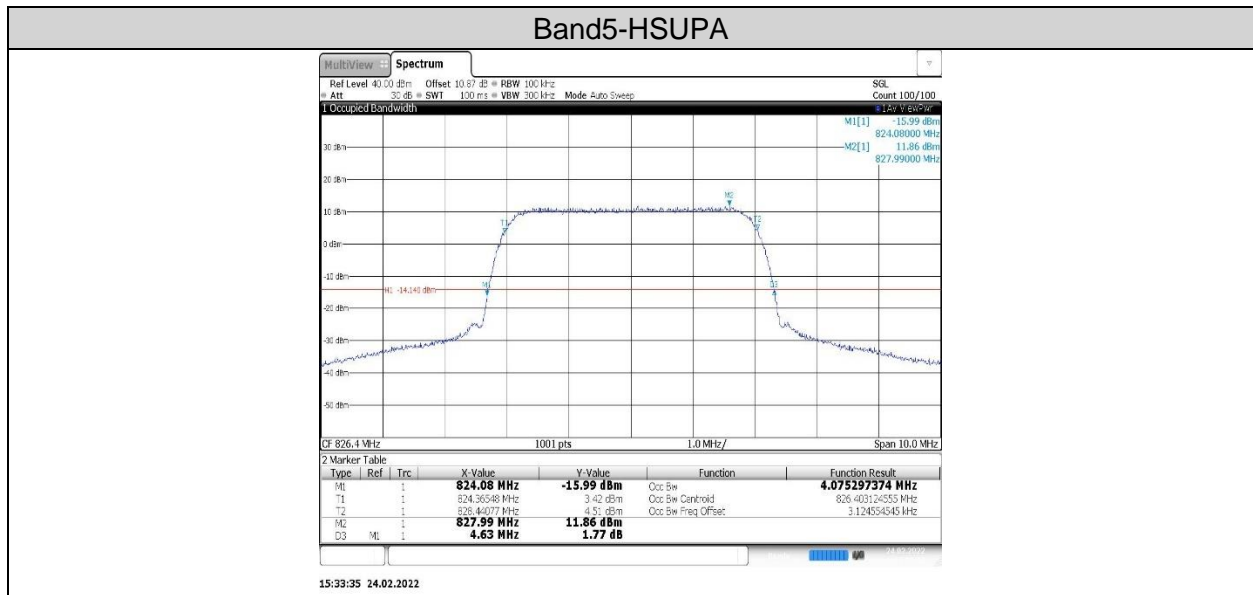


Band5-Rel99



Band5-HSDPA





7.4. BAND EDGE EMISSIONS

RULE PART(S)

FCC §2.1051, §22.917, §24.238, §27.53, §90,

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.

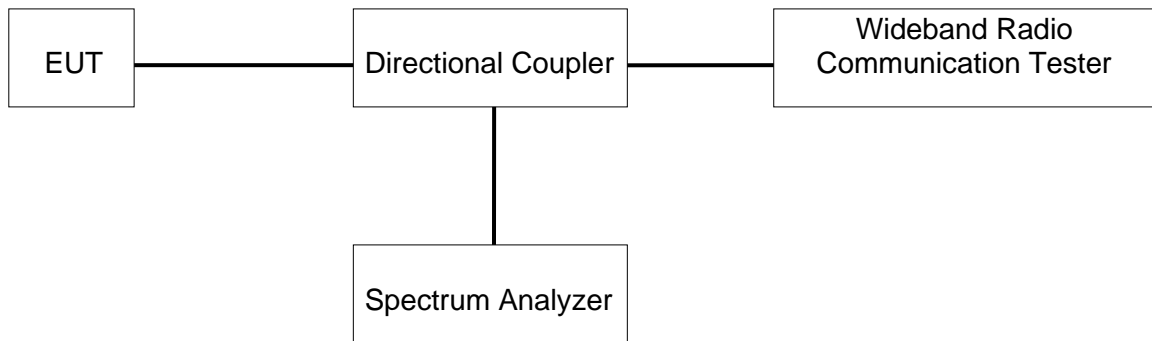
- a) Set the RBW = 1 ~ 1.5 % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points $\geq 2 \times$ Span/RBW;
- g) Trace mode = Average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

Test procedure for LTE Band 41

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth 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 at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.



TEST SETUP



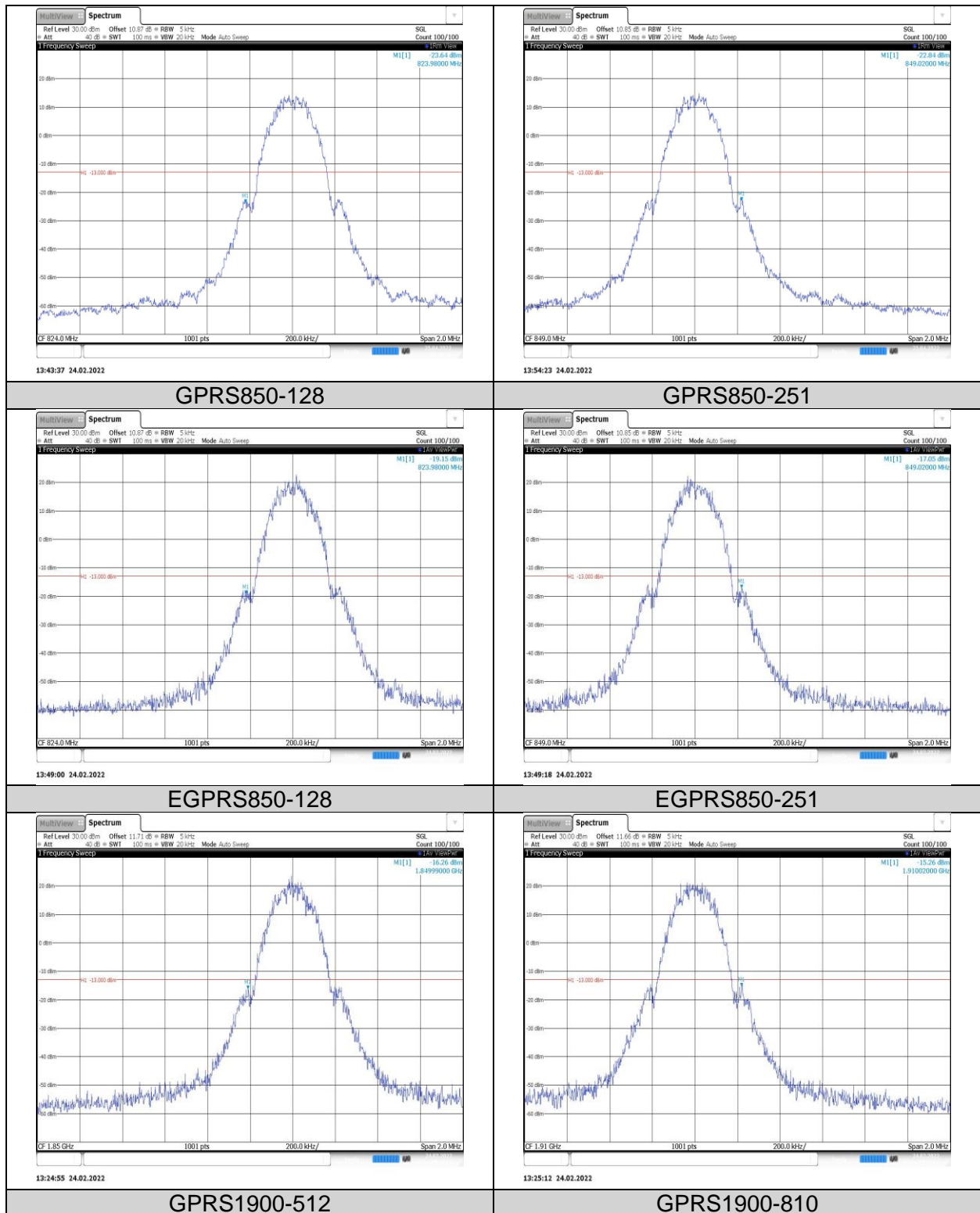
TEST ENVIRONMENT

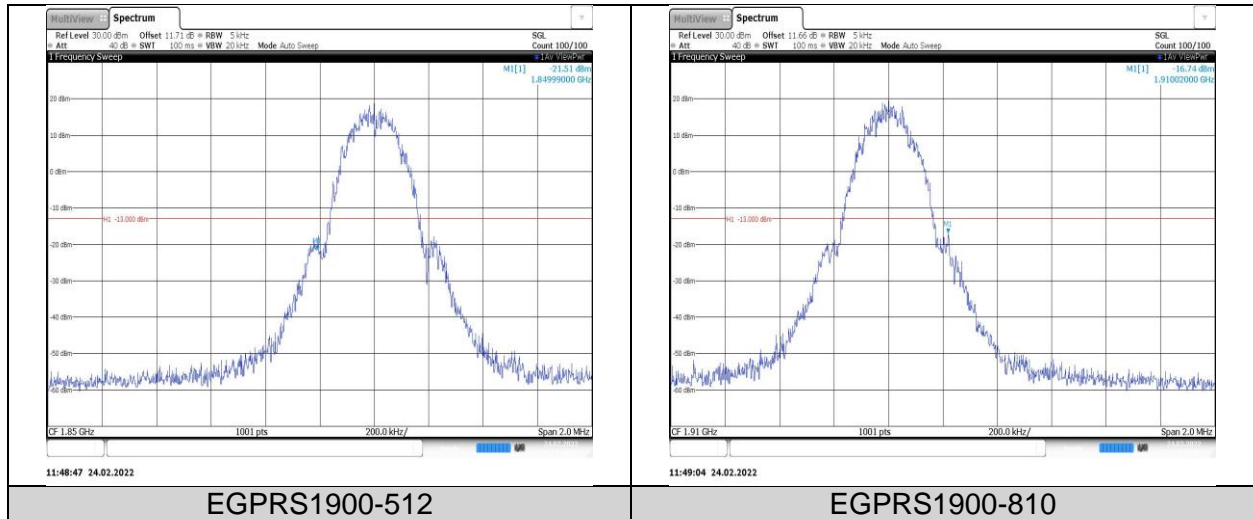
Temperature	22.7°C	Relative Humidity	65.6%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

RESULTS

GSM

Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GPRS850	128	823.98	-23.64	-13	PASS
GPRS850	251	849.02	-22.84	-13	PASS
EGPRS850	128	823.98	-19.15	-13	PASS
EGPRS850	251	849.02	-17.05	-13	PASS
GPRS1900	512	1849.99	-16.26	-13	PASS
GPRS1900	810	1910.02	-15.26	-13	PASS
EGPRS1900	512	1849.99	-21.51	-13	PASS
EGPRS1900	810	1910.02	-16.74	-13	PASS







Rel99

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1850.00	-28.11	-13	PASS
Band2	9538	1910.00	-28.50	-13	PASS
Band5	4132	823.87	-29.87	-13	PASS
Band5	4233	849.10	-31.05	-13	PASS

HSDPA

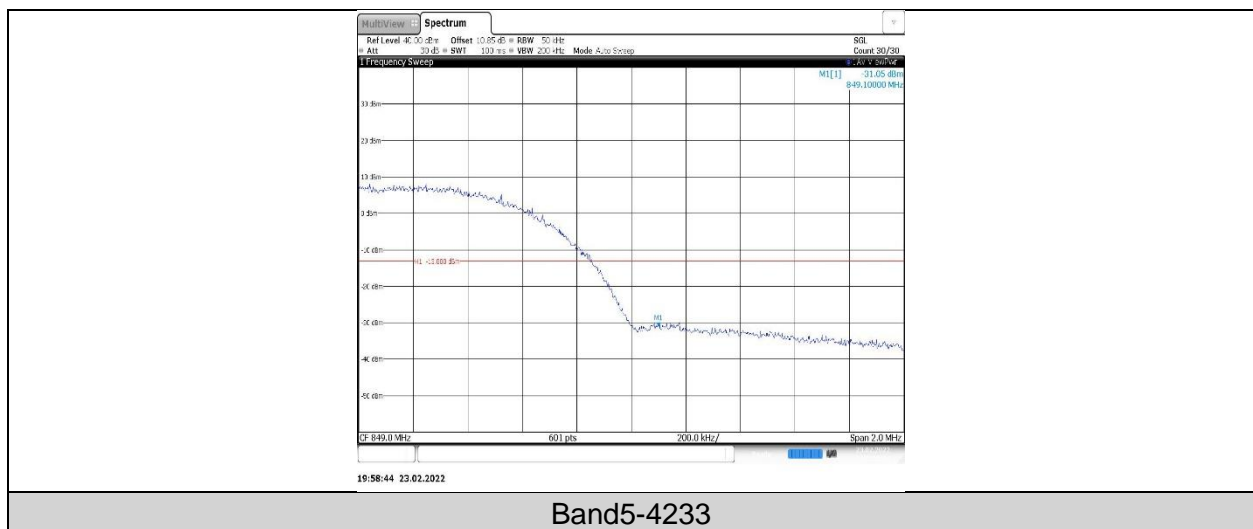
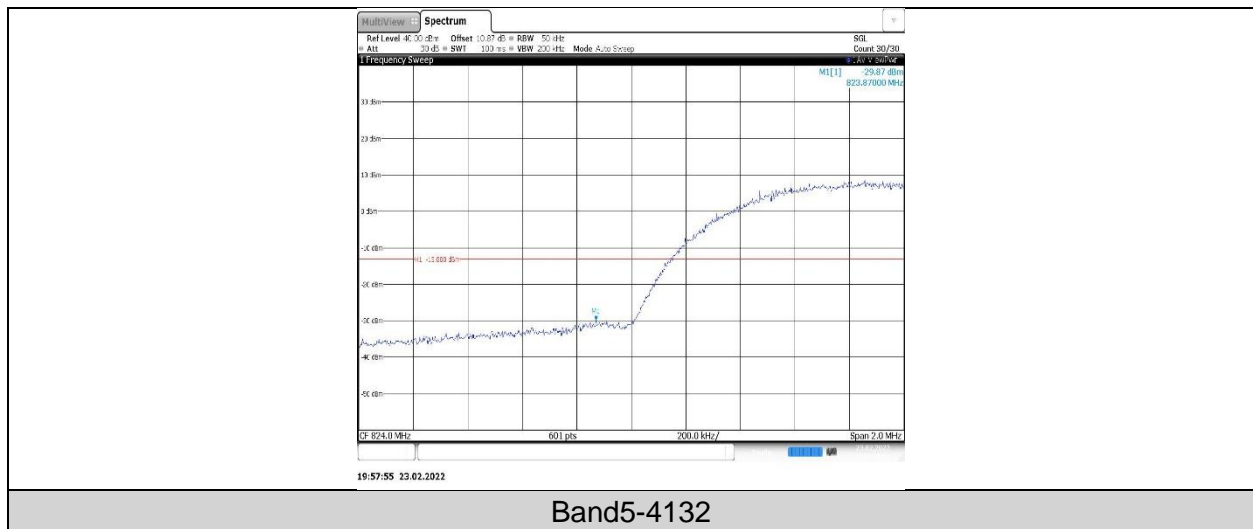
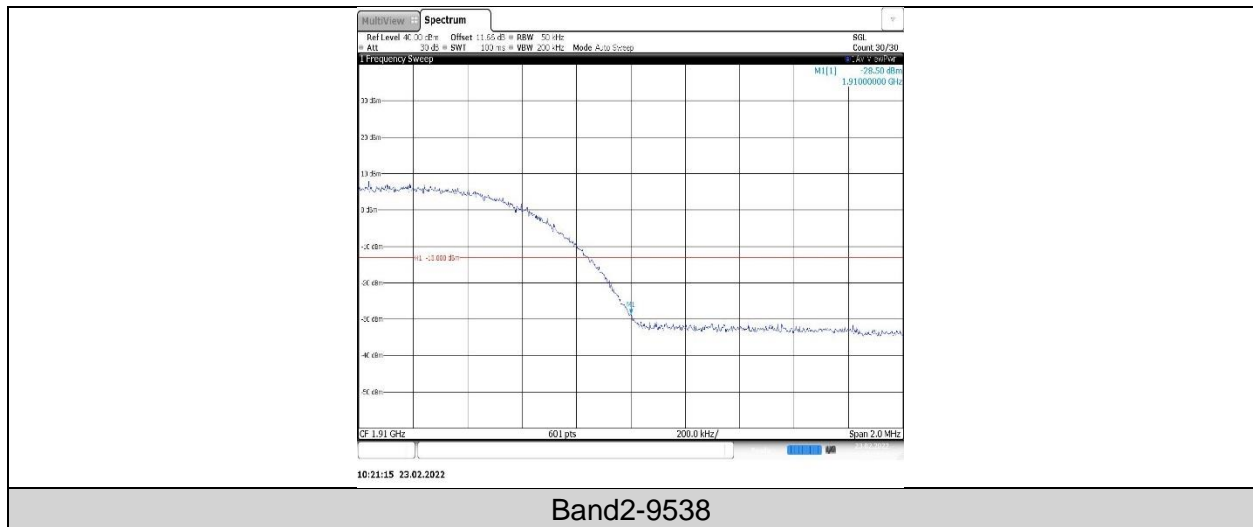
Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849.91	-30.9	-13	PASS
Band2	9538	1910.15	-32.65	-13	PASS
Band5	4132	823.87	-29.87	-13	PASS
Band5	4233	849.11	-29.35	-13	PASS

HSUPA

Band	Channel	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1849.91	-30.93	-13	PASS
Band2	9538	1910.12	-30.44	-13	PASS
Band5	4132	823.93	-28.65	-13	PASS
Band5	4233	849.13	-30.93	-13	PASS

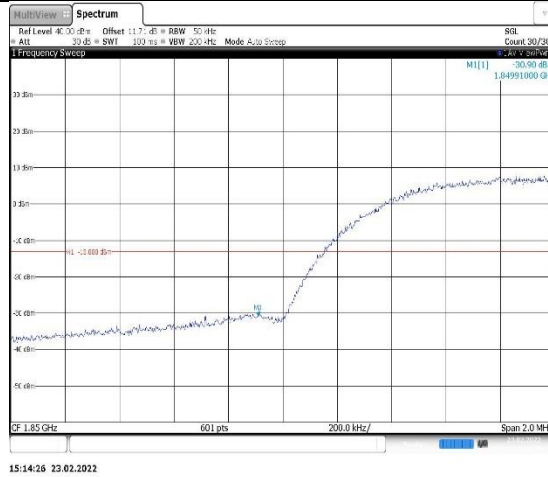
Band2 Rel99



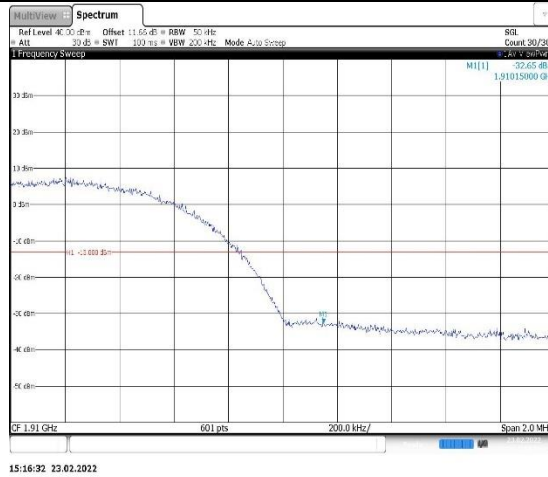




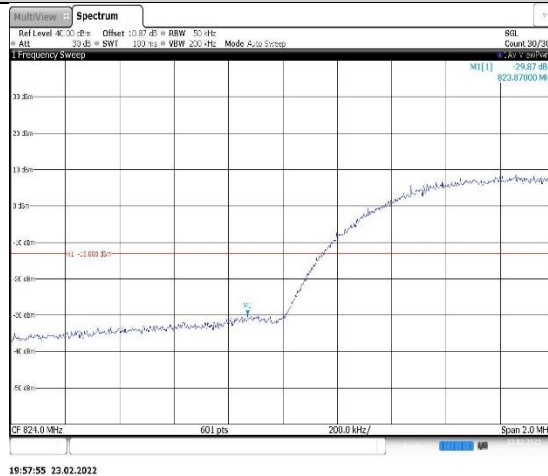
HSDPA



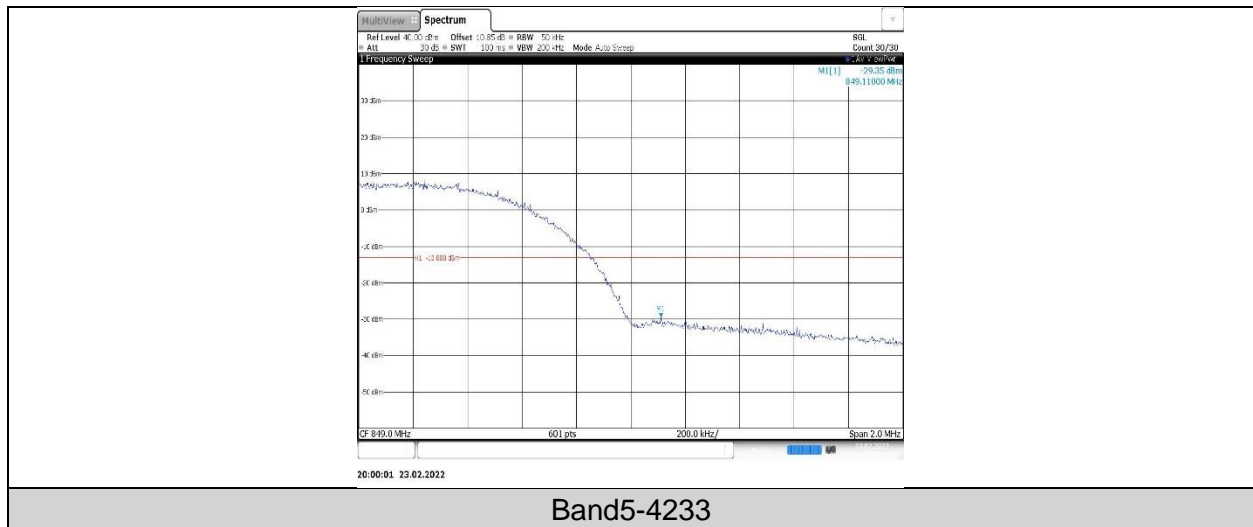
Band2-9262



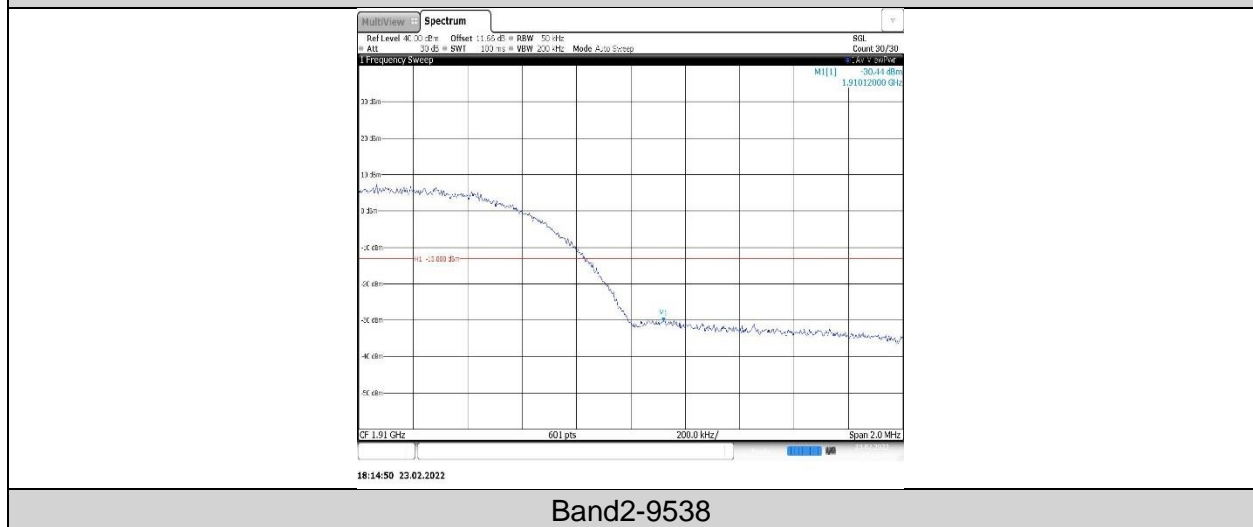
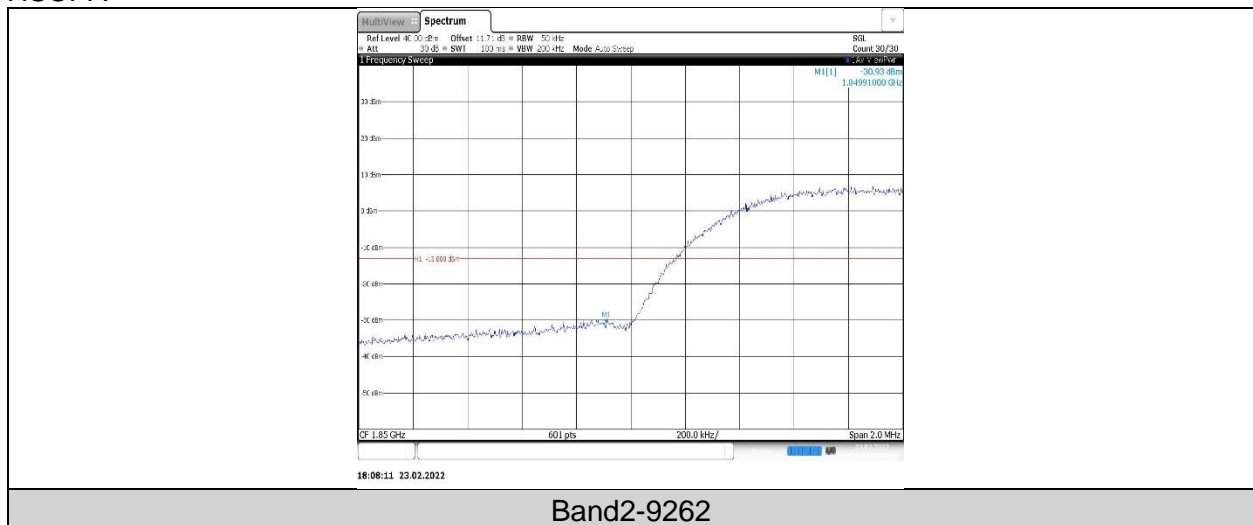
Band2-9538

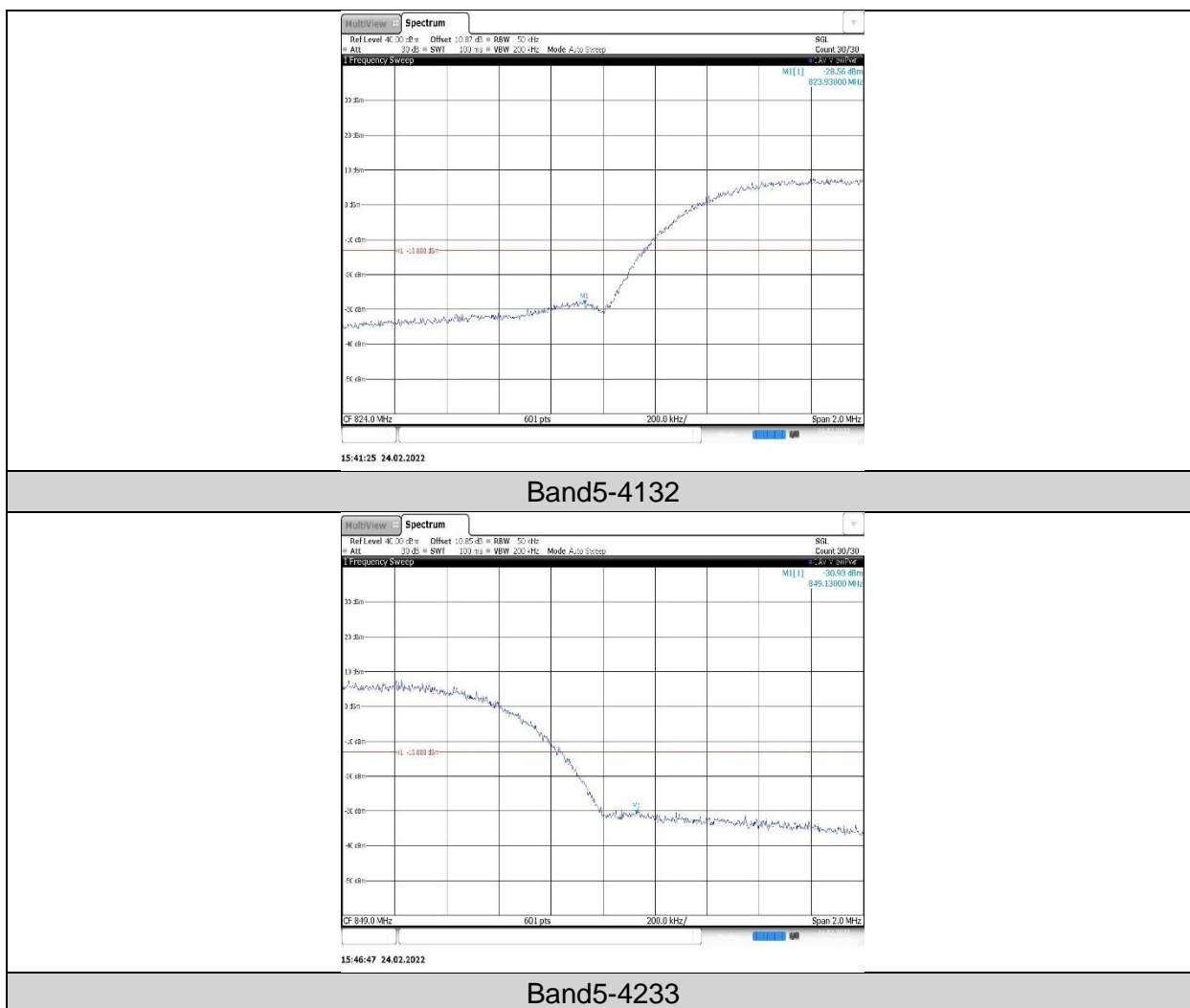


Band5-4132



HSUPA





7.5. SPURIOUS EMISSION AT ANTENNA TERMINAL

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, §90,
RSS-132, RSS-133, RSS-139

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.

FCC: §27.53(m)(Band 41)

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 $55 + 10 \log (P)$ dB.

TEST PROCEDURE

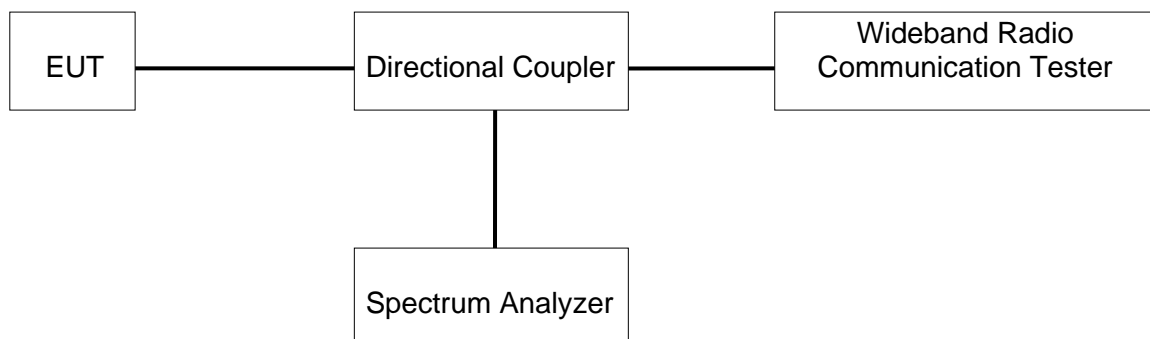
Per KDB 971168 D01 Power Meas License Digital Systems v03r01

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.

- 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)
- Set VBW $\geq 3 \times$ RBW;
- Set span ≥ 1.5 times the OBW;
- Sweep time = auto couple;
- Detector = rms;
- Ensure that the number of measurement points = Max (40001);
- Trace mode = average (LTE 5), Maxhold (LTE Band7);

Note: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

TEST SETUP





TEST ENVIRONMENT

Temperature	22.7°C	Relative Humidity	65.6%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.8 V

Note: For GSM1900&WCDMA Band 2, The low frequency, which started from 18 GHz to 20 GHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

RESULTS

GSM

