



**CFR 47 FCC PART 22 H
CFR 47 FCC PART 24 E
CFR 47 FCC PART 27
RSS-132, RSS-133, RSS-139**

TEST REPORT

For

Shopify POS Go

MODEL NUMBER: S2001

FCC ID: 2AB7X-S2001

IC: 24244-S2001

REPORT NUMBER: 47900096770-14

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Prepared for

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.



Revision History

Rev.	Issue Date	Revisions	Revised By
V0	01/26/2022	Initial Issue	
V1	02/21/2022	Updated TCB comments	Denny Huang

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>< CFR 47 FCC PART 27 >< RSS-132, RSS-133, RSS-139>when <Accuracy Method> decision rule is applied.



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1. ATTESTATION OF TEST RESULTS

**Applicant
Information(FCC)**

Company Name: BBPOS International Limited
Address: Suite 1903-04, Tower 2, Nina Tower, 8 Yeung Uk Road, Tsuen Wan, NT, Hong Kong

**Manufacturer
Information(FCC)**

Company Name: BBPOS International Limited
Address: Suite 1903-04, Tower 2, Nina Tower, 8 Yeung Uk Road, Tsuen Wan, NT, Hong Kong

**Applicant
Information(ISED)**

Company Name: Shopify Inc
Address: 150 Elgin Street Ottawa ON K2P1L4 Canada

**Manufacturer
Information(ISED)**

Company Name: BBPOS International Limited
Address: Suite 1903-04, Tower 2, Nina Tower, 8 Yeung Uk Road, Tsuen Wan, NT, Hong Kong
Brand: Shopify
Sample Status: Normal
Sample ID: 4378334
Date of Tested: Aug 23, 2021 ~ Jan 21, 2022

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 22 H	PASS
CFR 47 FCC PART 24 E	PASS
CFR 47 FCC PART 27	PASS
CFR 47 FCC PART 90S	PASS
RSS-132, RSS-133, RSS-139	PASS

Prepared By:

Checked By:

Denny Huang
Project Engineer

Shawn Wen
Laboratory Leader



Approved By:

A handwritten signature in black ink that reads "Stephen Guo".

Stephen Guo
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, Part 27, Part 90, RSS-132, RSS-133, RSS-139

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	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. 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 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. 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
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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	POS Equipment
EUT Description	The Equipment Under Test (EUT) is a POS device which supports BT/WLAN and Cellular function.
Model	S2001
Series Model	N/A
Model Difference	N/A
Ratings	DC 5 V, 1.5 A & DC 9 V, 1.5 A
Battery	3960 mAh, 3.85 V

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 4	HSDPA/HSUPA	1312	1413	1513
		1712.4 MHz	1732.6 MHz	1752.6 MHz
WCDMA Band 2	HSDPA/HSUPA	9262	9400	9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
WCDMA Band 5	HSDPA/HSUPA	4132	4183	4233
		826.4 MHz	836.6 MHz	846.6 MHz

5.3. MAXIMUM AVERAGE OUTPUT POWER

GSM 850

Part 22H						
ERP Limit(W)	7.00					
Antenna Gain (dBi)	-0.64					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	ERP (W)	99% OBW (MHz)	Emission Designator
GRPS(GMSK)	190	836.6	32.76	0.99	0.247	247KGXW
EGPRS(8PSK)	128	824.2	26.04	0.21	0.234	234KG7W



RSS-132						
EIRP Limit(W)	11.5					
Antenna Gain (dBi)	-0.64					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
GRPS(GMSK)	190	836.6	32.76	1.63	0.247	247KGXW
EGPRS(8PSK)	128	824.2	26.04	0.35	0.234	234KG7W

GSM 1900

Part 24/RSS-133						
EIRP Limit(W)	2					
Antenna Gain (dBi)	-0.03					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (kHz)	Emission Designator
GRPS(GMSK)	661	1880.0	29.25	0.84	0.245	245KGXW
EGPRS(8PSK)	512	1850.2	25.05	0.32	0.234	234KG7W

WCDMA Band2

Part 24/RSS-133						
EIRP Limit(W)	2					
Antenna Gain (dBi)	-0.03					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	9400	1880.0	21.75	0.15	4.140	4M14F9W
HSDPA	9262	1852.4	20.76	0.12	4.184	4M18F9W
HSUPA	9400	1880.0	20.72	0.12	4.170	4M17F9W

WCDMA Band4

Part 27/RSS-139						
EIRP Limit(W)	1					
Antenna Gain (dBi)	-0.18					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	1413	1732.6	22.99	0.19	4.127	4M13F9W



HSDPA	1413	1732.6	21.97	0.15	4.128	4M13F9W
HSUPA	1513	1752.6	22.04	0.15	4.154	4M15F9W

WCDMA Band5

Part 22						
ERP Limit(W)	7.0					
Antenna Gain (dBi)	-0.64					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	ERP (W)	99% OBW (MHz)	Emission Designator
Rel99	4233	846.6	24.01	0.13	4.136	4M14F9W
HSDPA	4233	846.6	22.99	0.10	4.134	4M13F9W
HSUPA	4233	846.6	23.09	0.11	4.165	4M17F9W

RSS-132						
EIRP Limit(W)	11.5					
Antenna Gain (dBi)	-0.64					
Mode	Ch	Freq(MHz)	Conducted Average power (dBm)	EIRP (W)	99% OBW (MHz)	Emission Designator
Rel99	4233	846.6	24.01	0.22	4.136	4M14F9W
HSDPA	4233	846.6	22.99	0.17	4.134	4M13F9W
HSUPA	4233	846.6	23.09	0.18	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

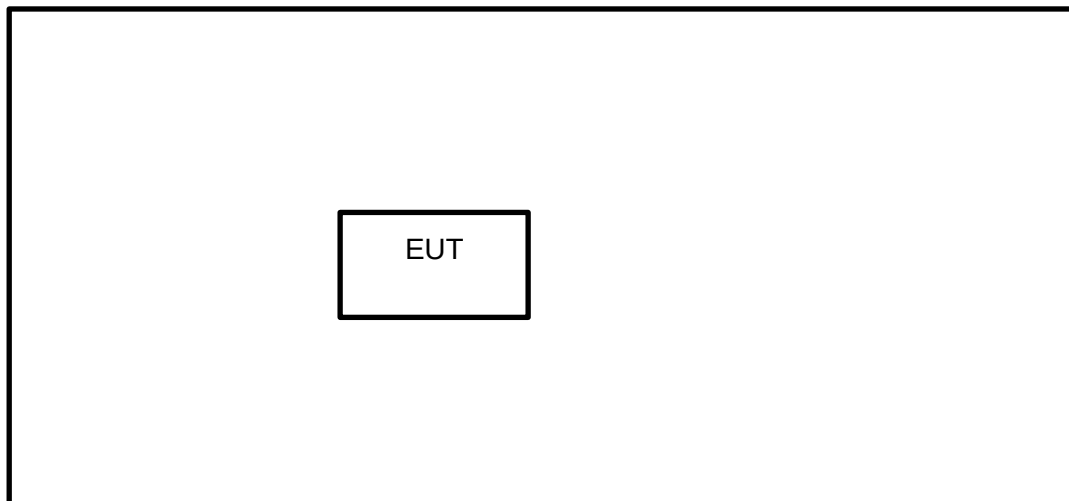
Antenna	Band	Antenna Type	MAX Antenna Gain (dBi)
1	GSM850	PIFA	-0.64
1	GSM1900	PIFA	-0.03
1	WCDMA Band 2	PIFA	-0.03
1	WCDMA Band 4	PIFA	-0.18
1	WCDMA Band 5	PIFA	-0.64

Band	Transmit and Receive Mode	Description
GSM850	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
GSM1900	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 2	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 4	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
WCDMA Band 5	☒ 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

SETUP DIAGRAM FOR TESTS





6. MEASURING INSTRUMENT AND SOFTWARE USED

Antenna Terminal Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☒	Spectrum Analyzer	R&S	FSW40	S421035420	Oct.30, 2021	Oct.29, 2022
☒	Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.30, 2021	Oct.29, 2022
☒	DC Power Supply	Array	3662A	A1512015	Oct.30, 2021	Oct.29, 2022
Software						
Used	Description		Manufacturer	Name		Version
☒	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.
☒	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.30, 2021	Oct.29, 2022
☒	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug.02, 2021	Aug.01, 2024
☒	Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022
☒	EMI Measurement Receiver	R&S	ESR26	101377	Oct.30, 2021	Oct.29, 2022
☒	Horn Antenna	TDK	HRN-0118	130939	July 20, 2021	July 19, 2024
☒	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	July 20, 2021	July 19, 2024
☒	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Oct.31, 2021	Oct.30, 2022
☒	Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.31, 2021	Oct.30, 2022
☒	Loop antenna	Schwarzbeck	1519B	00008	Jan.17,2022	Jan.17,2025
☒	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.31, 2021	Oct.30, 2022
Software						
Used	Description		Manufacturer	Name		Version
☒	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, §27.50
RSS-132, RSS-133, RSS-139

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.

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.

RSS-139

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt.

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds 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);

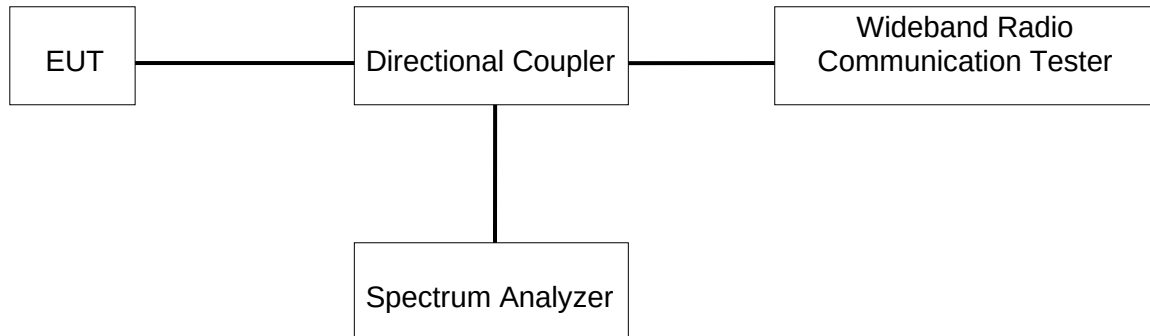
P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

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	22.1°C	Relative Humidity	54.6%
Atmosphere Pressure	101kPa	Test Voltage	

RESULTS

GSM 850

Band		Conducted Average Power (dBm)		
		Channel	Channel	Channel
		128	190	251
GPRS850	TestSlot 1	32.45	32.76	32.73
	TestSlot 2	31.17	31.42	31.49
	TestSlot 3	30.03	30.3	30.45
	TestSlot 4	27.78	27.98	28.22
EGPRS850	TestSlot 1	26.02	25.81	26.04
	TestSlot 2	25.8	25.71	25.97
	TestSlot 3	24.61	24.49	24.79
	TestSlot 4	23.36	23.23	23.51

GSM 1900

Band		Conducted Average Power (dBm)		
		Channel	Channel	Channel
		512	661	810
GPRS1900	TestSlot 1	29.19	29.25	29.19



	TestSlot 2	27.96	28.04	26.29
	TestSlot 3	26.09	26.23	28.05
	TestSlot 4	24.78	25.08	25.16
EGPRS1900	TestSlot 1	25.05	24.93	25.03
	TestSlot 2	23.74	23.83	23.93
	TestSlot 3	22.51	22.69	22.83
	TestSlot 4	21.3	21.47	21.55

WCDMA Band2

UMTS 1900MHz (Band II)		Average Power (dBm)		
		9262CH	9400CH	9538CH
WCDMA	12.2kbps RMC	21.62	21.75	21.65
	64kbps RMC	21.7	21.74	21.64
	144kbps RMC	20.81	20.79	20.71
	384kbps RMC	21.54	21.52	21.43
HSDPA	Subtest 1	20.68	20.76	20.62
	Subtest 2	20.31	20.3	20.19
	Subtest 3	20.19	20.25	20.13
	Subtest 4	20.22	20.27	20.13
HSUPA	Subtest 1	20.43	20.72	20.5
	Subtest 2	19.19	19.21	19.02
	Subtest 3	19.64	19.72	19.62
	Subtest 4	18.56	18.66	18.56
	Subtest 5	20.72	20.74	20.61

WCDMA Band4

UMTS 1700MHz (Band IV)		Average Power (dBm)		
		1312CH	1413CH	1513CH
WCDMA	12.2kbps RMC	22.62	22.99	22.98
	64kbps RMC	22.61	22.95	22.97
	144kbps RMC	22.57	22.91	22.91
	384kbps RMC	22.54	22.90	22.88
HSDPA	Subtest 1	21.59	21.97	21.97
	Subtest 2	21.12	21.47	21.48
	Subtest 3	21.11	21.47	21.46
	Subtest 4	21.09	21.47	21.46
HSUPA	Subtest 1	21.42	21.79	21.79
	Subtest 2	20.18	20.51	20.49
	Subtest 3	20.70	20.95	20.91
	Subtest 4	19.59	19.91	20.00
	Subtest 5	21.68	22.00	22.04

WCDMA Band5



UMTS 850MHz (Band V)		Average Power (dBm)		
		4132CH	4182CH	4233CH
WCDMA	12.2kbps RMC	23.58	23.89	24.01
	64kbps RMC	23.57	23.87	24.00
	144kbps RMC	23.51	23.82	23.98
	384kbps RMC	23.49	23.78	23.97
HSDPA	Subtest 1	22.54	22.84	22.99
	Subtest 2	22.05	22.35	22.52
	Subtest 3	22.05	22.36	22.52
	Subtest 4	22.05	22.35	22.53
HSUPA	Subtest 1	22.32	22.63	22.73
	Subtest 2	20.96	21.43	21.54
	Subtest 3	21.62	21.85	22.05
	Subtest 4	20.38	20.83	20.92
	Subtest 5	22.47	22.78	23.09

7.2. PEAK TO AVERAGE RADIO

LIMITS

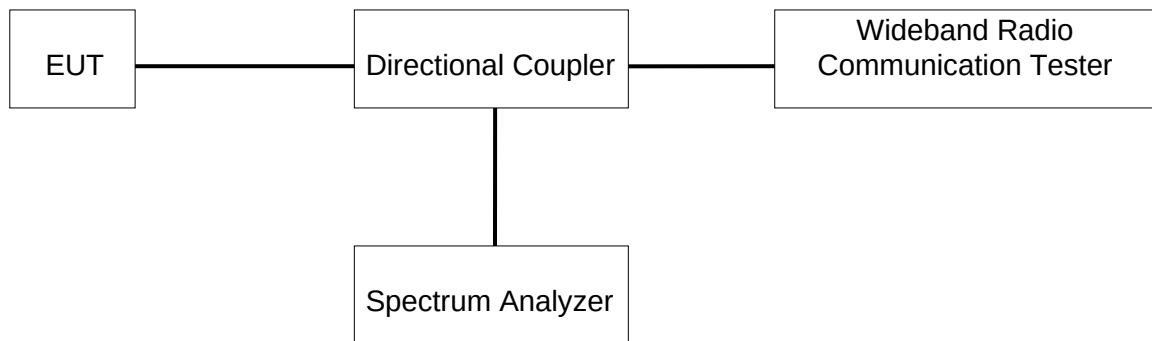
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

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

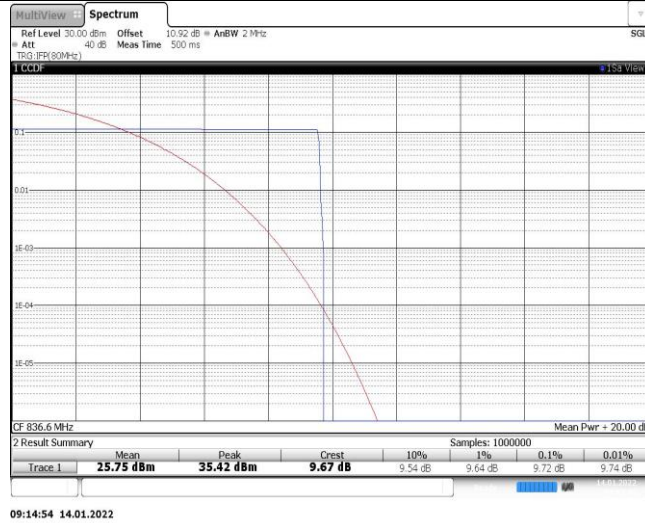
Temperature	22.2°C	Relative Humidity	55.3%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

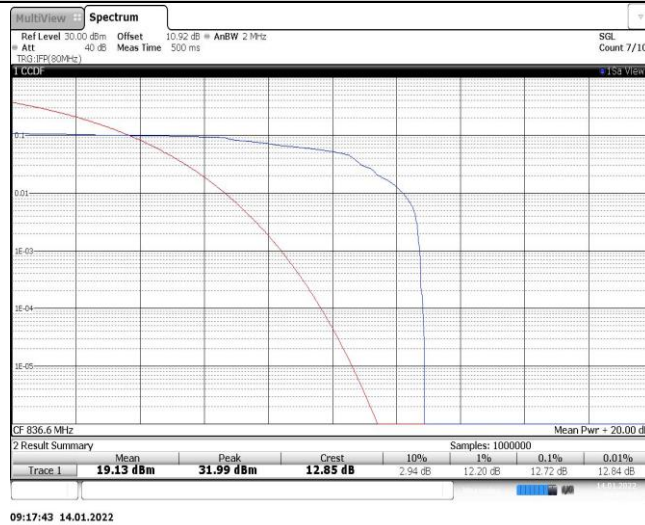
Band	Channel	Result(dB)	Limit(dB)	Verdict
GPRS850	190	8.44	13	PASS
EGPRS850	190	12.72	13	PASS
GPRS1900	661	9.8	13	PASS
EGPRS1900	661	12.72	13	PASS



GPRS850-190



EGPRS850-190



GPRS1900-661





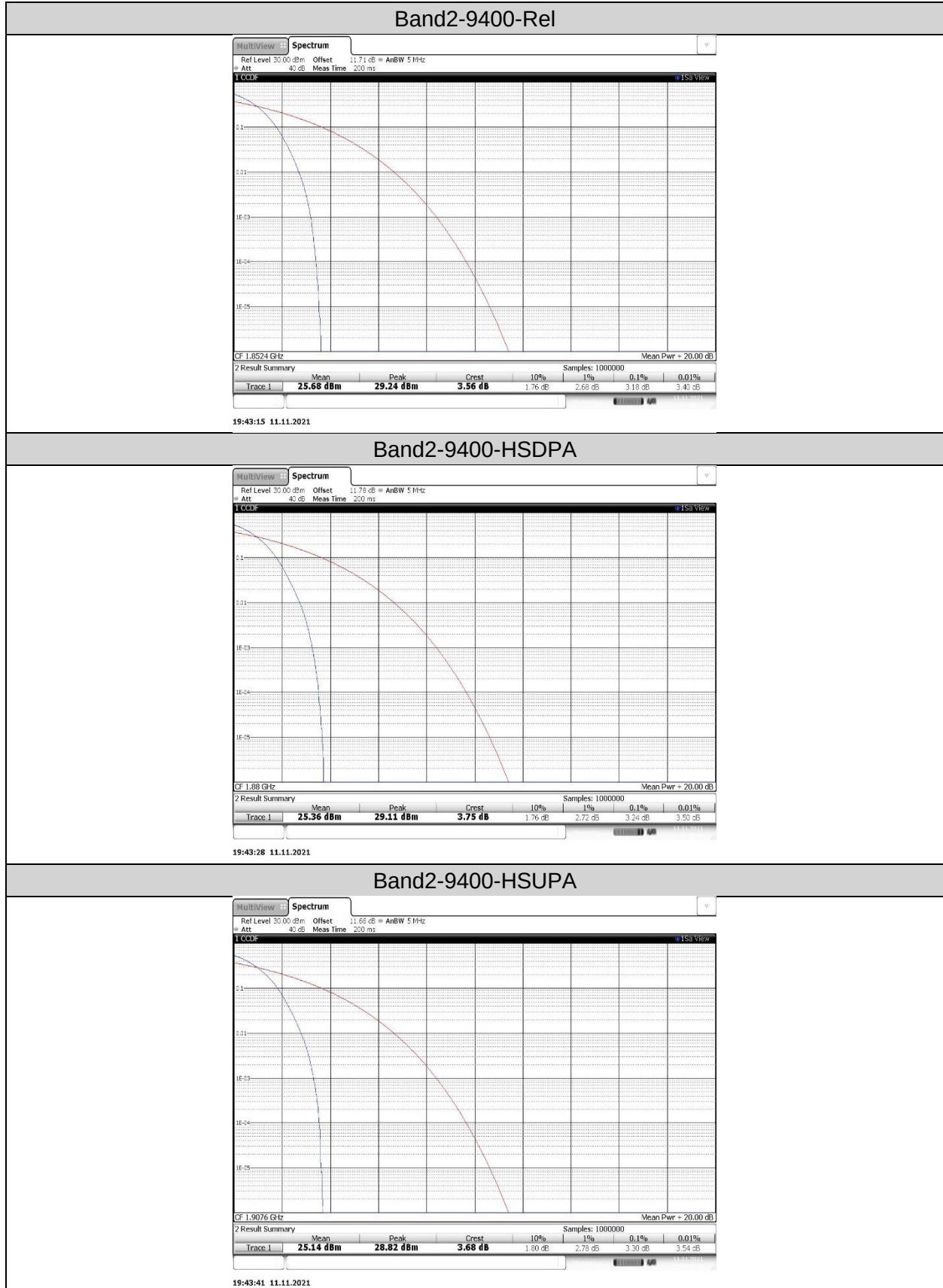
EGPRS1900-661



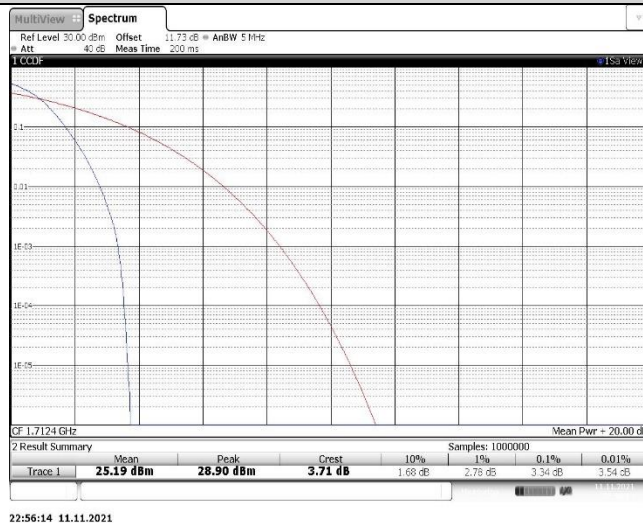
WCDMA

Band	Channel	SubTest	Peak-to-Average Ratio(dB)	Limit(dB)	Verdict
Band2	9400	Rel	3.56	13	PASS
		HSDPA	3.75	13	PASS
		HSUPA	3.68	13	PASS
Band4	1413	Rel	3.71	13	PASS
		HSDPA	3.53	13	PASS
		HSUPA	3.55	13	PASS
Band5	4183	Rel	3.57	13	PASS
		HSDPA	3.54	13	PASS
		HSUPA	3.52	13	PASS

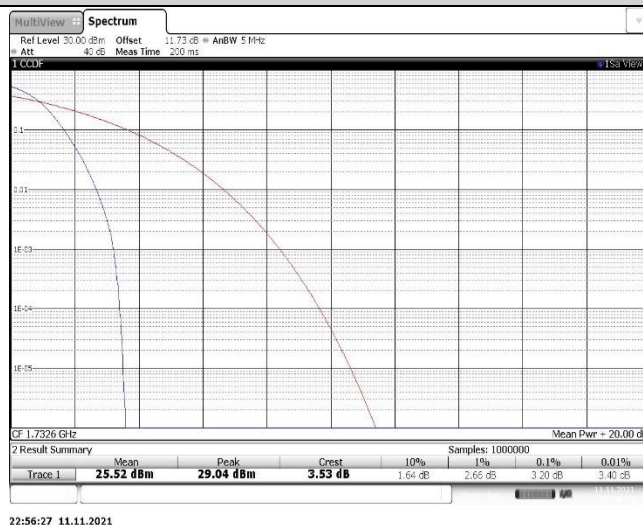
HSDPA



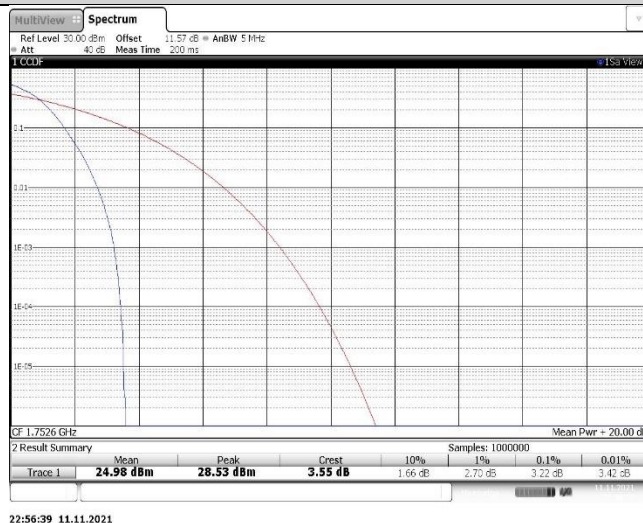
Band4-1413-Rel99



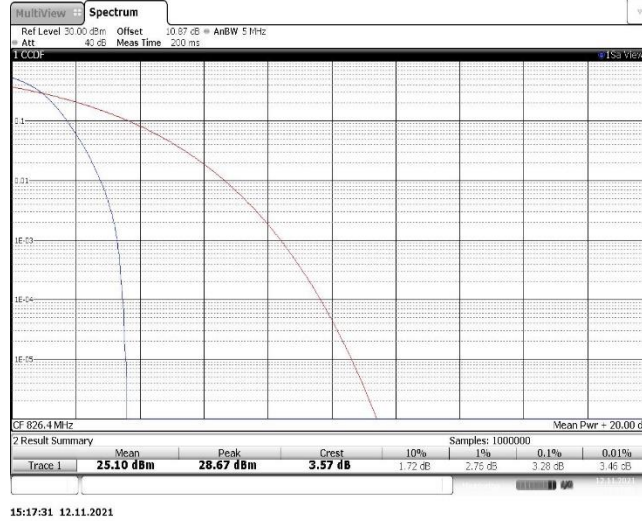
Band4-1413-HSDPA



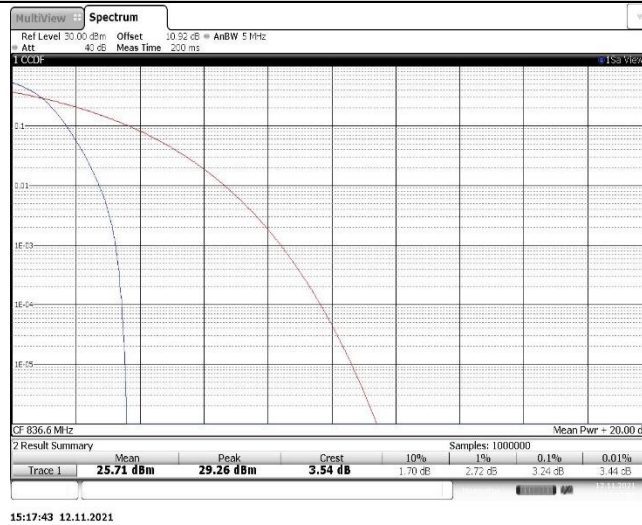
Band4-1413-HSUPA



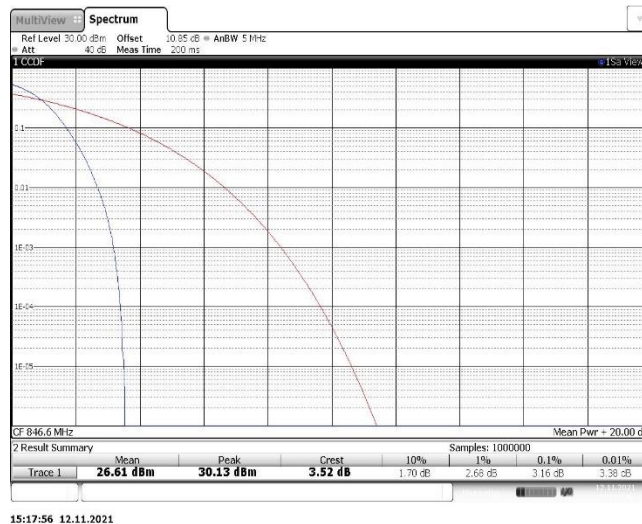
Band5-4183-Rel99



Band5-4183-HSDPA



Band5-4183-HSUPA





7.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049, RSS-132, RSS-133, RSS-139

LIMITS

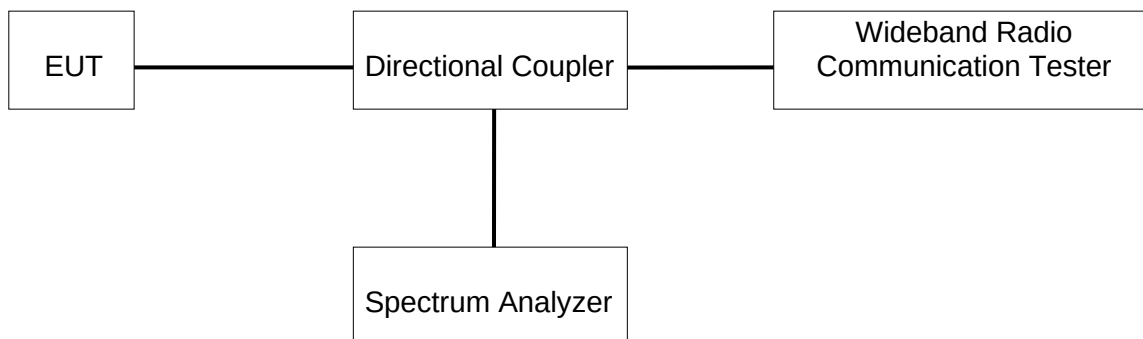
For reporting purposes only.

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



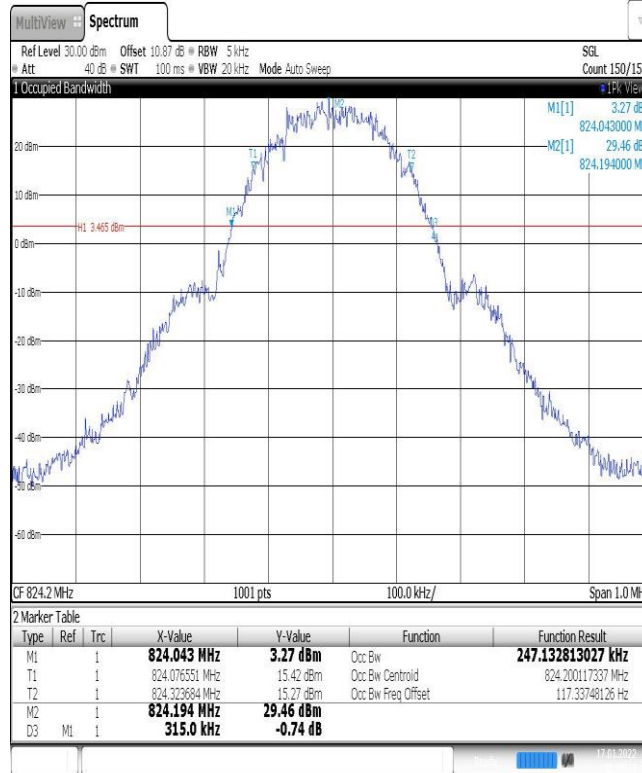
TEST ENVIRONMENT

Temperature	22.9°C	Relative Humidity	56.3%
Atmosphere Pressure	101kPa	Test Voltage	/

RESULTS

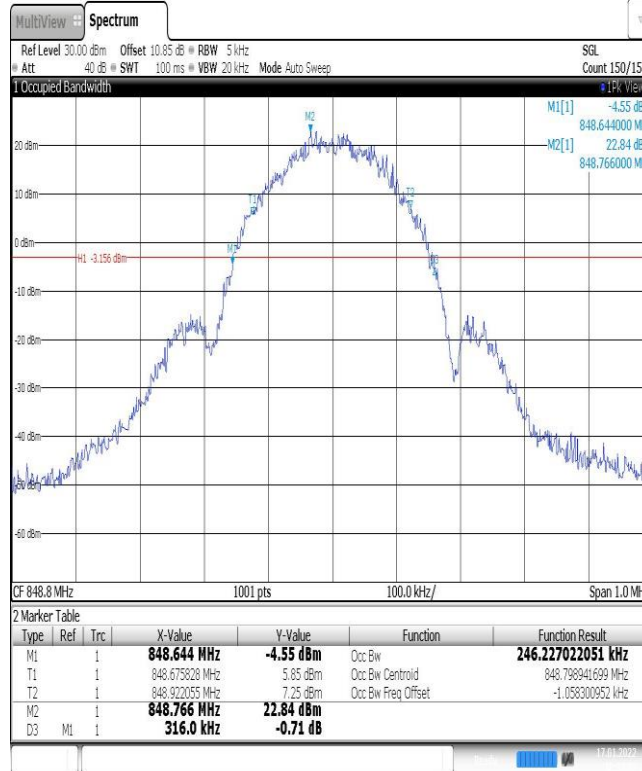
Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Verdict
GPRS850	128	0.247	0.315	---	PASS
EGPRS850	251	0.234	0.285	---	PASS
GPRS1900	661	0.245	0.315	---	PASS
EGPRS1900	512	0.234	0.285	---	PASS

GPRS850-128-3-0.315



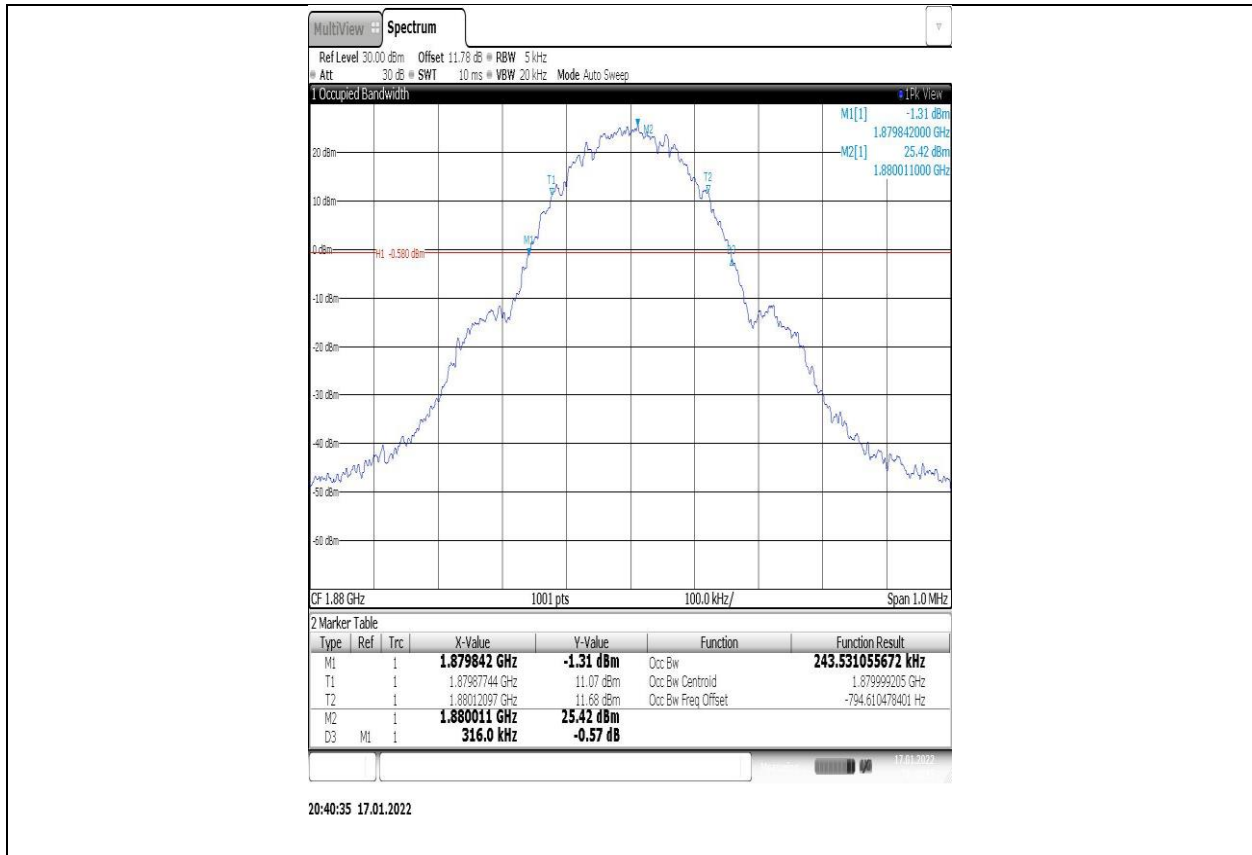
18:26:46 17.01.2022

EGPRS850-251-8-0.316

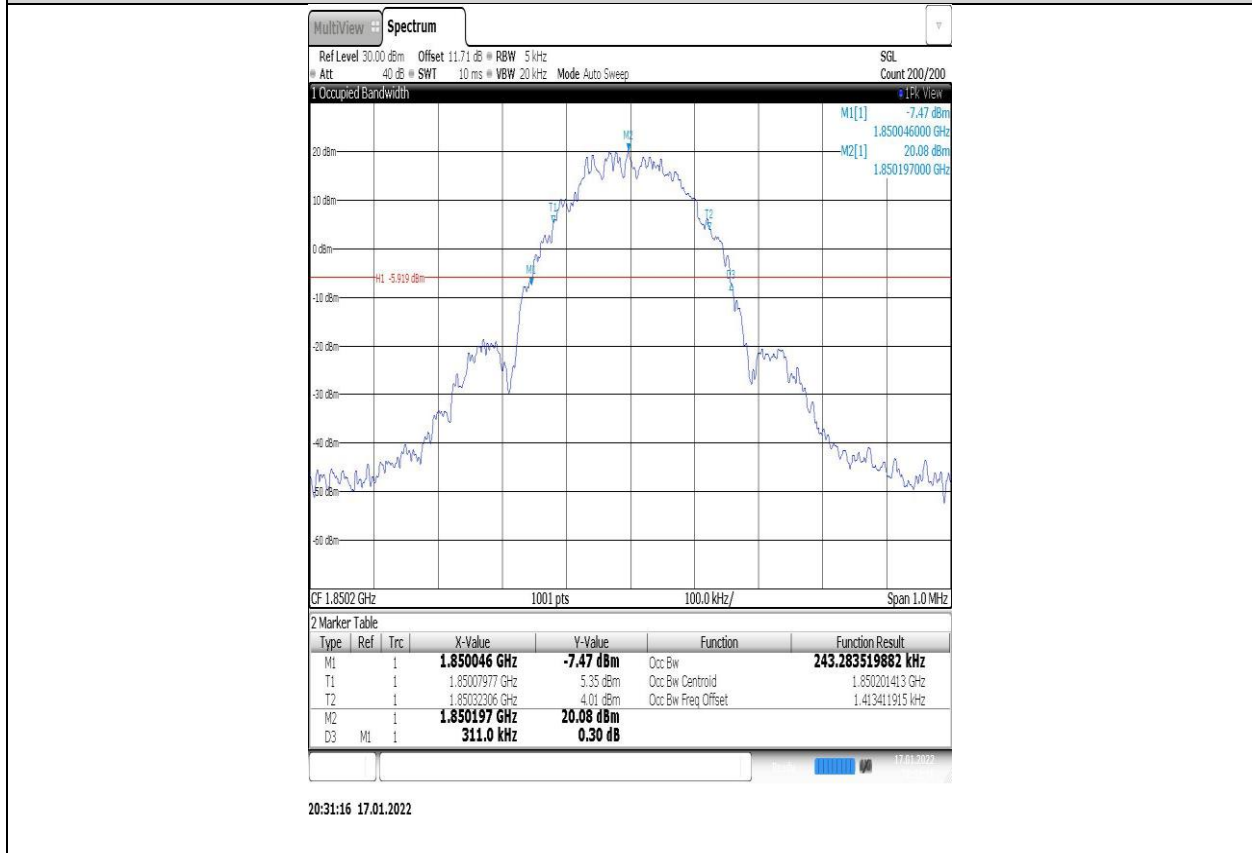


18:33:03 17.01.2022

GPRS1900-661-0-0.316



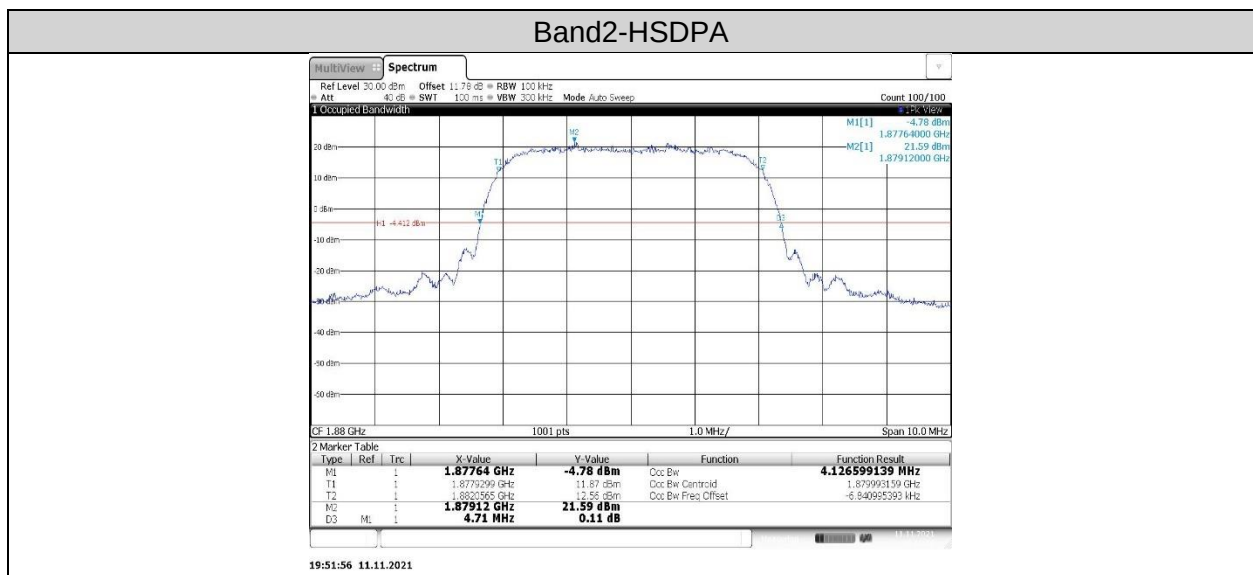
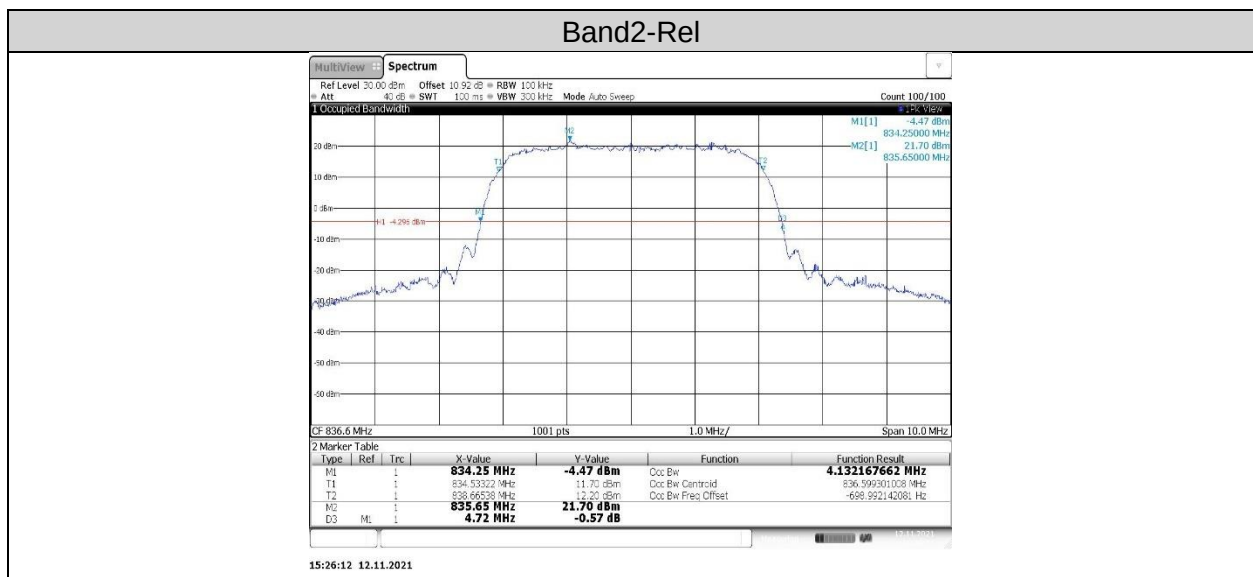
EGPRS1900-512-2-0.311



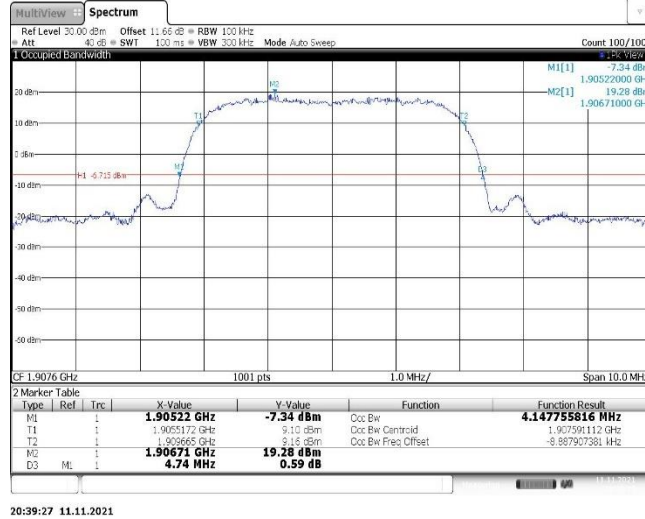


WCDMA

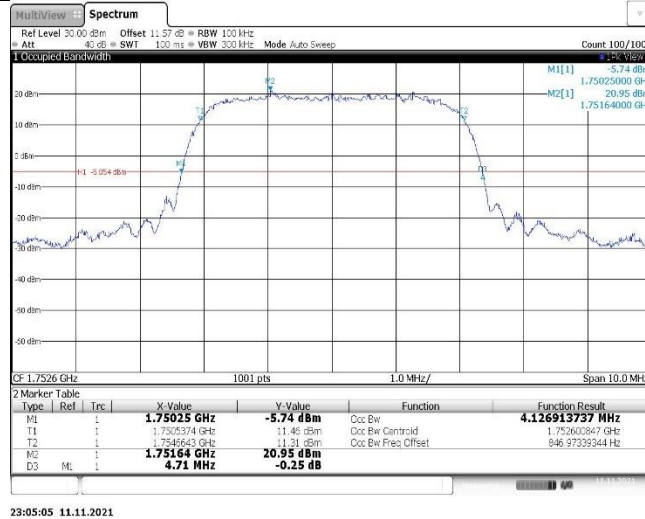
Band	Channel	SubTest	Occupied Bandwidth (kHz)	26dB Bandwidth (kHz)
Band2	Mid	Rel	4.132	4.720
	Low	HSDPA	4.127	4.710
	High	HSUPA	4.148	4.740
Band4	Mid	Rel	4.118	4.710
	Low	HSDPA	4.126	4.710
	Mid	HSUPA	4.128	4.740
Band5	High	Rel	4.134	4.720
	Low	HSDPA	4.132	4.740
	High	HSUPA	4.130	4.730



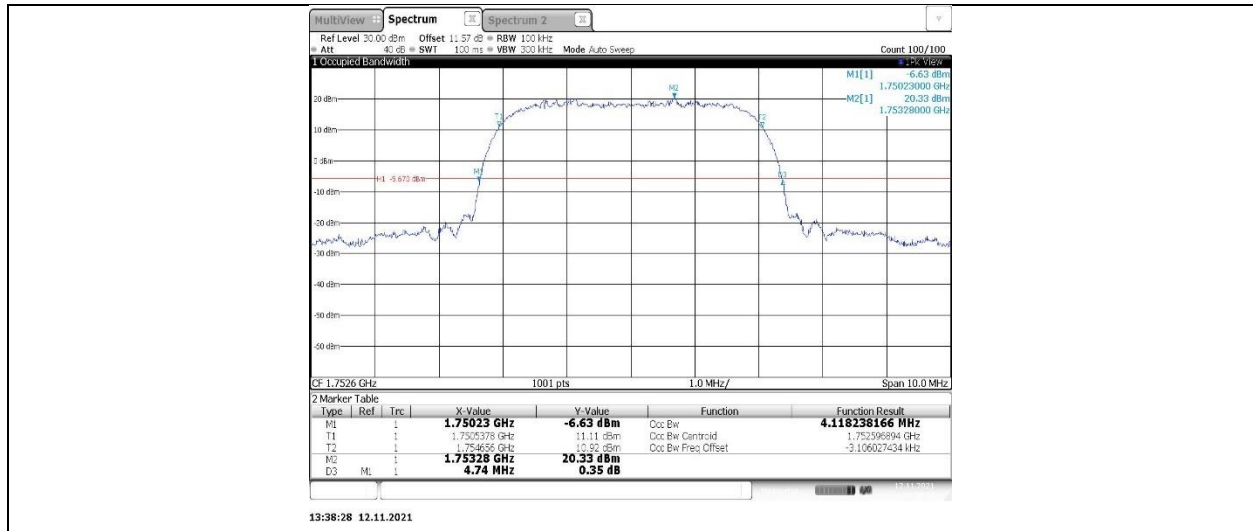
Band2-HSUPA



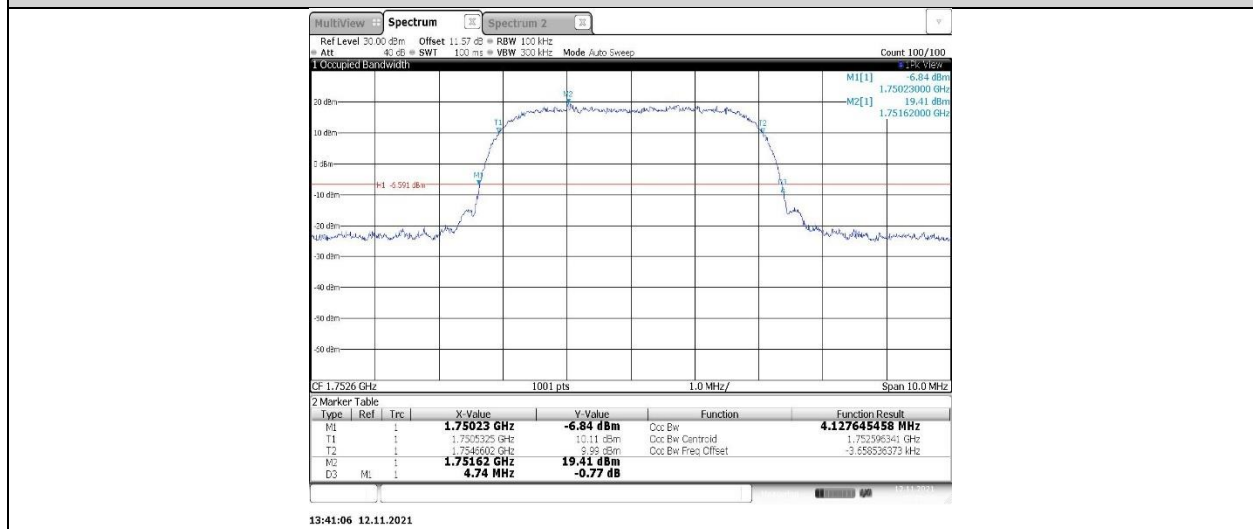
Band4-HSDPA



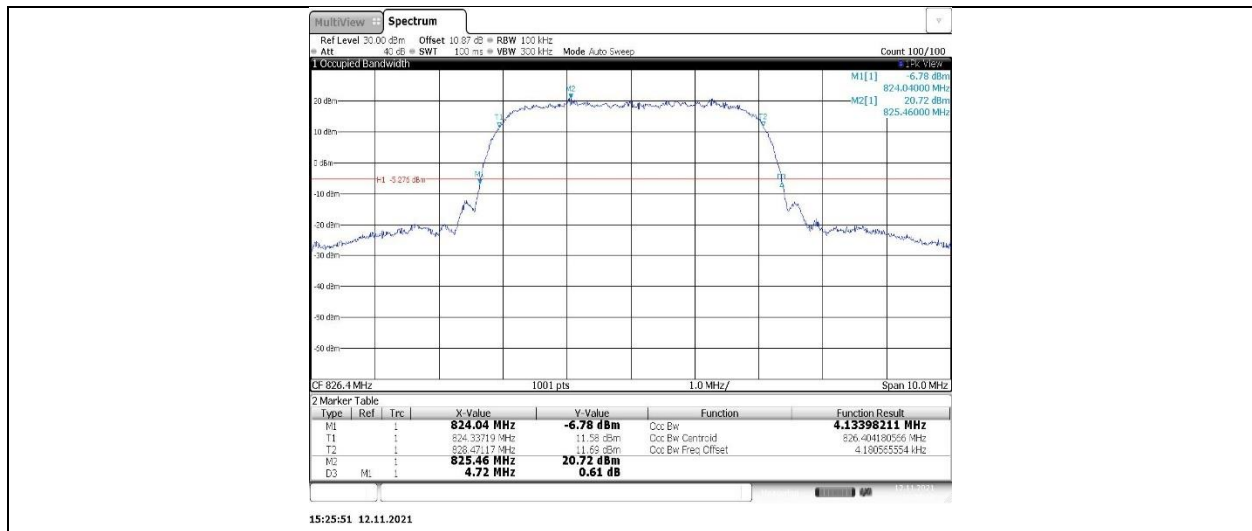
Band4-Rel99



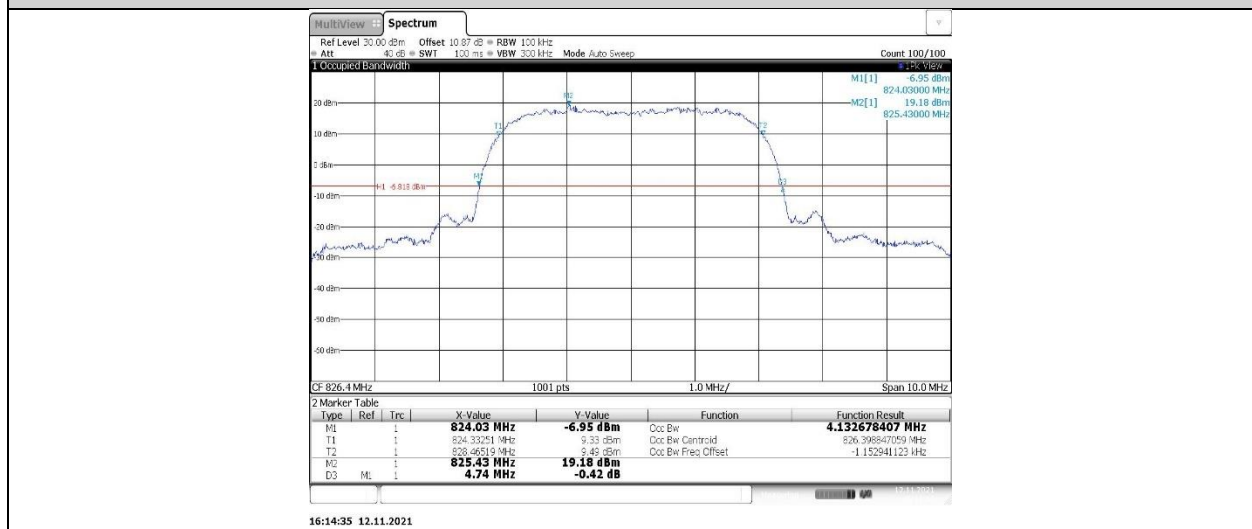
Band4-HSUPA



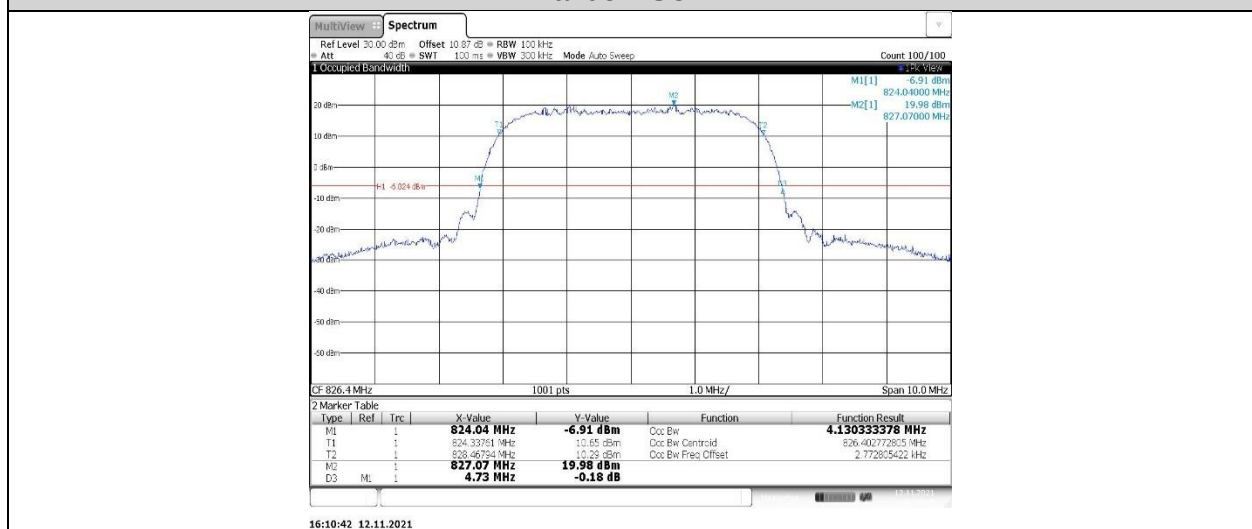
Band5-Rel99



Band5-HSDPA



Band5-HSUPA



7.4. BAND EDGE EMISSIONS

RULE PART(S)

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

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.

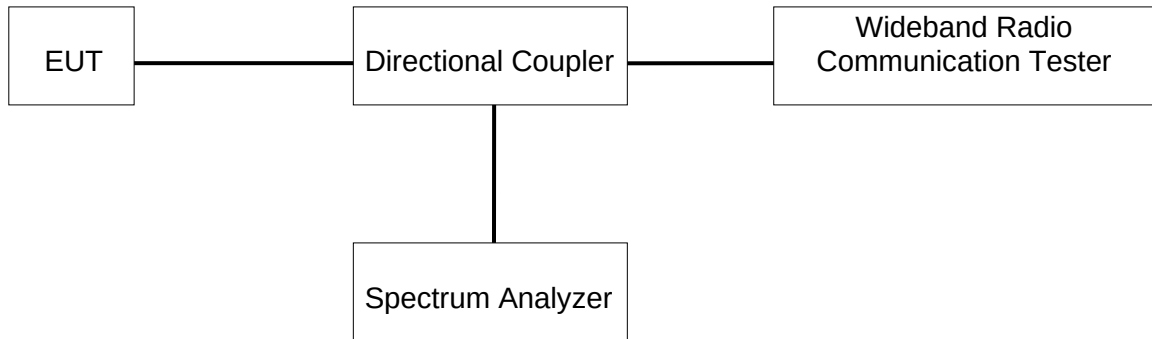
- a) Set the RBW = 1 ~ 1.5 % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points $\geq 2 \times$ Span/RBW;
- g) Trace mode = Average (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	22.4°C	Relative Humidity	58.3%
Atmosphere Pressure	101kPa	Test Voltage	/

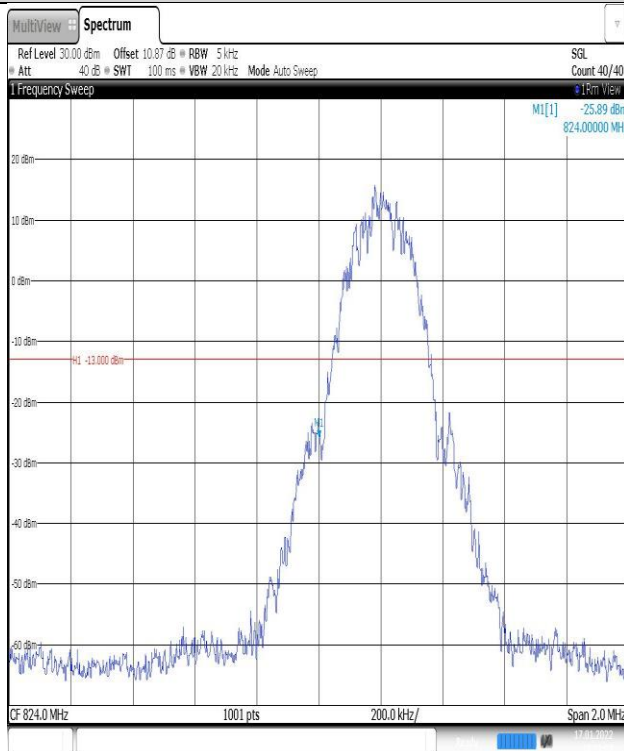
RESULTS

GSM

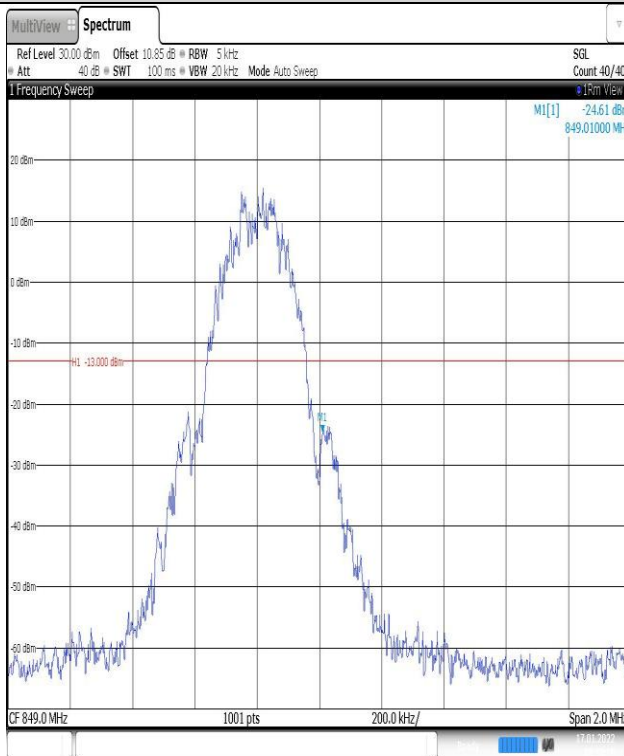
Band	Channel	Freq (MHz)	Result (dBm)	Limit(dBm)	Verdict
GPRS850	128	824.00	-23.14	-13	PASS
	251	849.01	-23.44	-13	PASS
EGPRS850	128	823.98	-31.44	-13	PASS
	251	849.04	-30.13	-13	PASS
GPRS1900	512	1849.98	-25.86	-13	PASS
	810	1910.02	-27.16	-13	PASS
EGPRS1900	512	1849.98	-32.96	-13	PASS
	810	1910.01	-35.73	-13	PASS



GPRS850-128-3

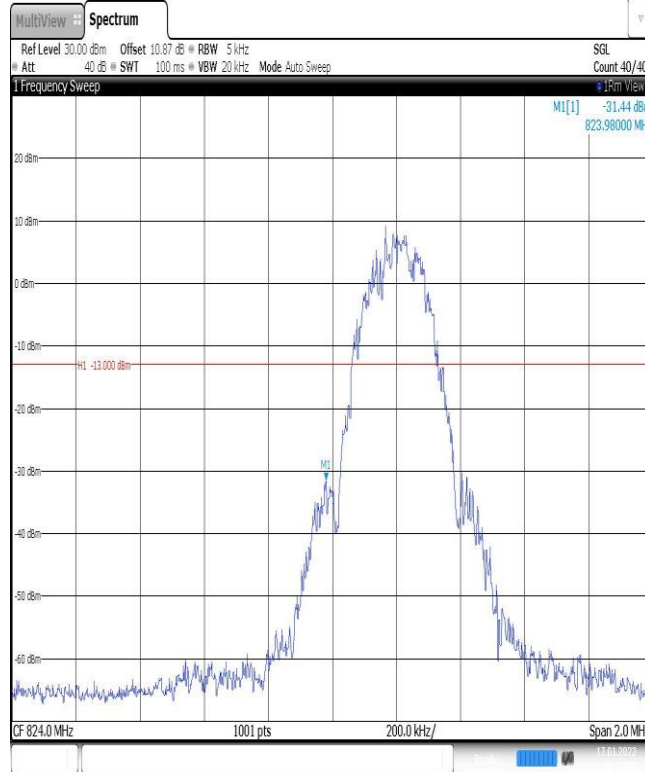


GPRS850-251-3



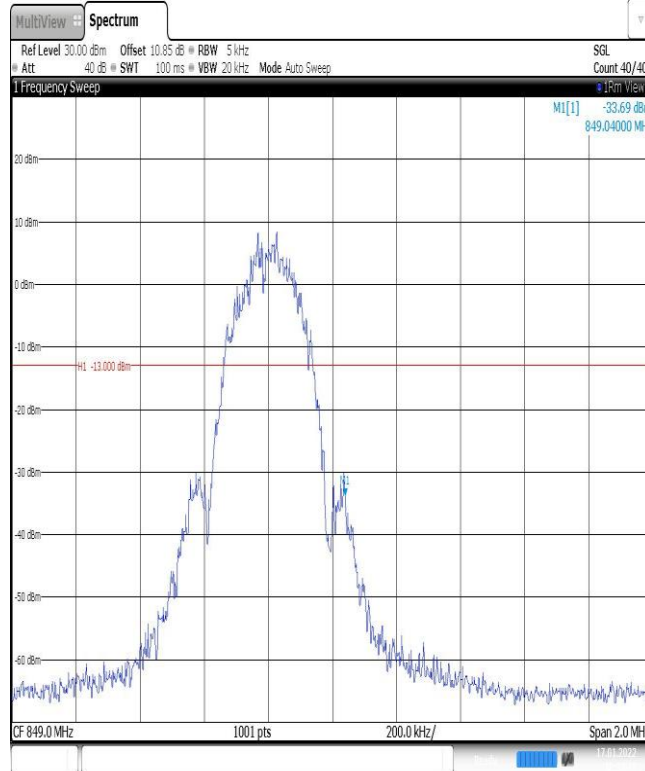


EGPRS850-128-8



18:33:31 17.01.2022

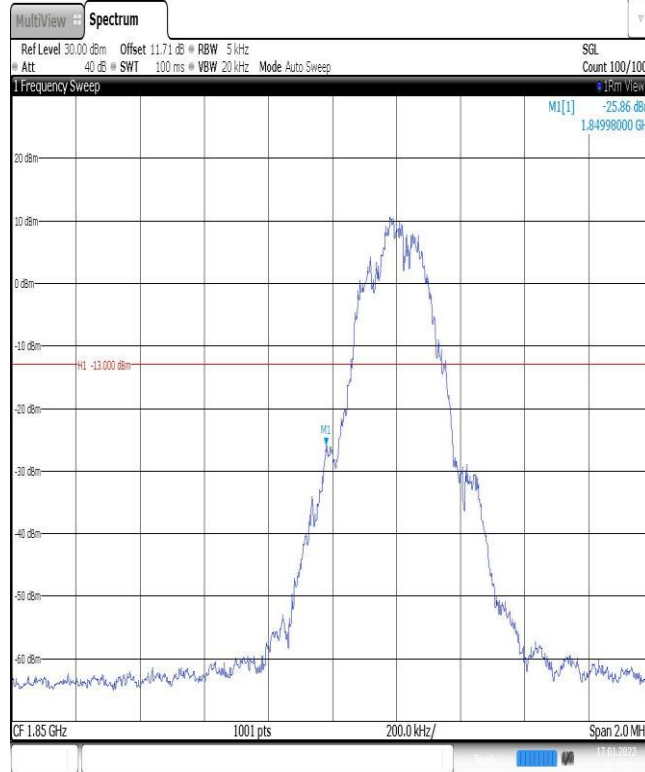
EGPRS850-251-8



18:33:41 17.01.2022

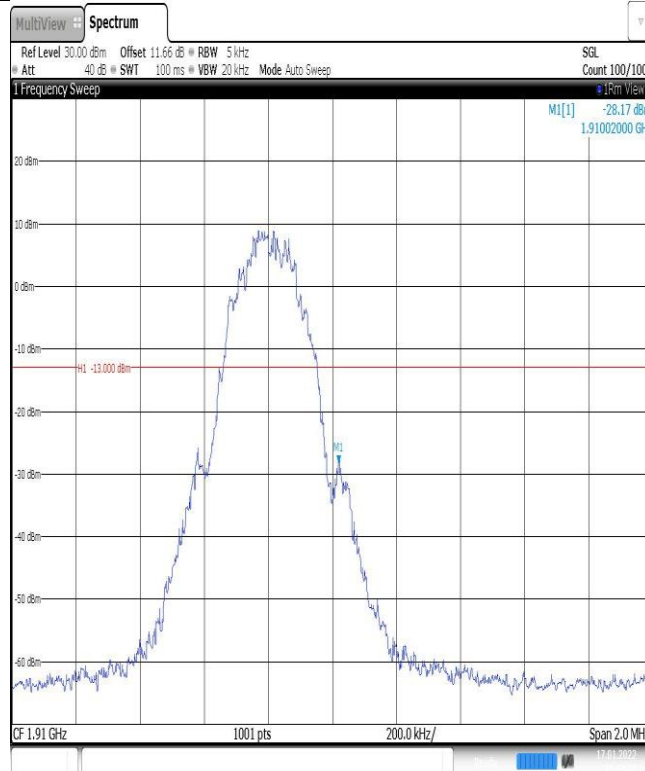


GPRS1900-512-0



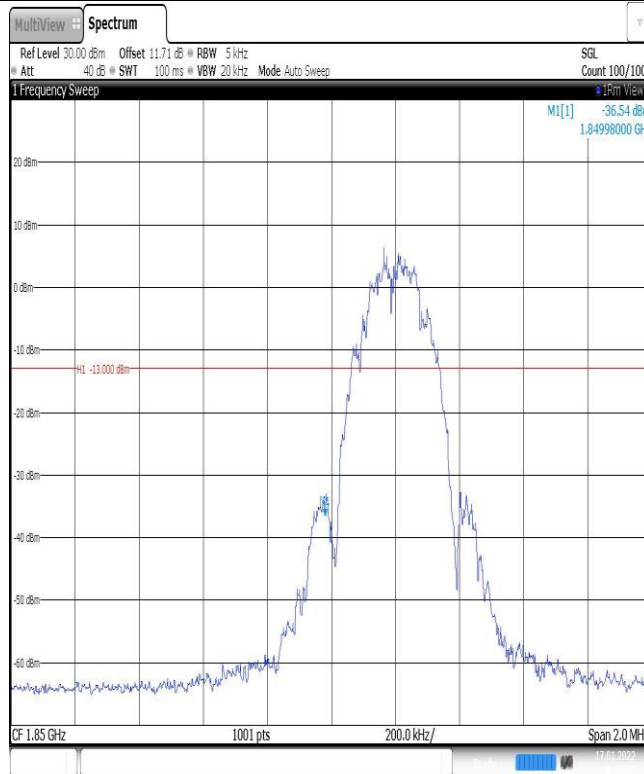
18:53:23 17.01.2022

GPRS1900-810-0



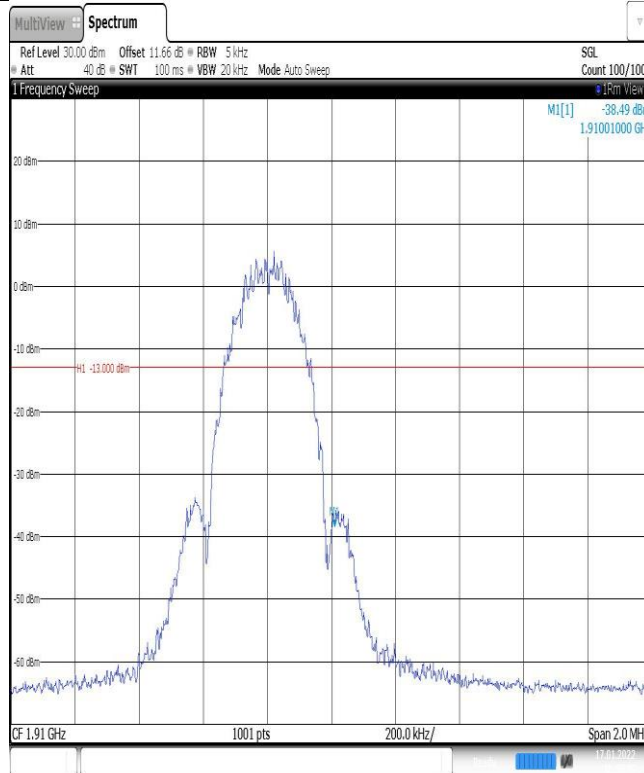
18:53:40 17.01.2022

EGPRS1900-512-2



18:55:23 17.01.2022

EGPRS1900-810-2



18:55:40 17.01.2022

**WCDMA HSDPA**

Band	Channel	SubTest	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1	1850.00	-20.95	-13	PASS
		2	1850.00	-20.45	-13	PASS
		3	1850.00	-20.34	-13	PASS
		4	1850.00	-20.35	-13	PASS
	9538	1	1910.00	-21.35	-13	PASS
		2	1910.00	-19.49	-13	PASS
		3	1910.00	-19.17	-13	PASS
		4	1910.00	-19.11	-13	PASS
Band4	1312	1	1710.00	-19.92	-13	PASS
		2	1710.00	-20.03	-13	PASS
		3	1710.00	-20.27	-13	PASS
		4	1710.00	-20.47	-13	PASS
	1513	1	1755.00	-19.39	-13	PASS
		2	1755.00	-20.12	-13	PASS
		3	1755.00	-20.49	-13	PASS
		4	1755.00	-20.62	-13	PASS
Band5	4132	1	824.00	-20.92	-13	PASS
		2	824.00	-19.96	-13	PASS
		3	824.00	-19.55	-13	PASS
		4	824.00	-19.43	-13	PASS
	4233	1	849.00	-19.15	-13	PASS
		2	849.00	-19.57	-13	PASS
		3	849.00	-19.49	-13	PASS
		4	849.00	-19.66	-13	PASS

WCDMA HSUPA

Band	Channel	SubTest	Frequency (MHz)	Result (dBm)	Limit(dBm)	Verdict
Band2	9262	1	1850.00	-20.74	-13	PASS
		2	1850.00	-21.24	-13	PASS
		3	1850.00	-20.95	-13	PASS
		4	1850.00	-21.99	-13	PASS
		5	1850.00	-19.95	-13	PASS
	9538	1	1910.00	-32.40	-13	PASS
		2	1910.00	-32.78	-13	PASS
		3	1910.00	-32.83	-13	PASS
		4	1910.17	-34.56	-13	PASS
		5	1910.00	-33.33	-13	PASS
Band4	1312	1	1710.00	-20.14	-13	PASS
		2	1710.00	-21.13	-13	PASS
		3	1710.00	-20.75	-13	PASS
		4	1710.00	-21.93	-13	PASS
		5	1710.00	-19.89	-13	PASS
	1513	1	1755.00	-34.43	-13	PASS
		2	1755.00	-34.79	-13	PASS
		3	1755.00	-33.72	-13	PASS



Band5		4	1755.00	-34.61	-13	PASS
		5	1755.00	-34.44	-13	PASS
	4132	1	824.00	-20.68	-13	PASS
		2	824.00	-21.10	-13	PASS
		3	824.00	-20.70	-13	PASS
		4	824.00	-21.59	-13	PASS
		5	824.00	-19.94	-13	PASS
	4233	1	849.00	-31.42	-13	PASS
		2	849.00	-31.83	-13	PASS
		3	849.00	-31.88	-13	PASS
		4	849.00	-33.32	-13	PASS
		5	849.00	-32.03	-13	PASS

Band2-9262-1



Band2-9262-2



Band2-9262-3



Band2-9262-4



Band2-9538-1



Band2-9538-2



Band2-9538-3



Band2-9538-4



Band4-1312-1



Band4-1312-2



Band4-1312-3



Band4-1312-4



Band4-1513-1



Band4-1513-2



Band4-1513-3



Band4-1513-4



Band5-4132-1



Band5-4132-2



Band5-4132-3



Band5-4132-4



Band5-4233-1



Band5-4233-2



Band5-4233-3



Band5-4233-4



Band2-9262-1



Band2-9262-2



Band2-9262-3



Band2-9262-4



Band2-9262-5



Band2-9538-1



Band2-9538-2



Band2-9538-3



Band2-9538-4



Band2-9538-5



Band4-1312-1



Band4-1312-2



Band4-1312-3



Band4-1312-4



Band4-1312-5



Band4-1513-1



Band4-1513-2



Band4-1513-3



Band4-1513-4



Band4-1513-5



Band5-4132-1



Band5-4132-2



Band5-4132-3



Band5-4132-4

