



# TESTREPORT

Applicant Name : Shenzhen Youmi Intelligent Technology Co., Ltd.  
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Report Number: SZNS220913-41417E-RF-00C  
FCC ID: 2ATZ4-A13PMF3P

## Test Standard (s)

FCC PART 27; FCC PART 22H; FCC PART 24E

## Sample Description

Product Type: Smart phone  
Model No.: A13 Pro Max  
Multiple Model(s) No.: F3 Pro (Please refer to DOS for Model difference)  
Trade Mark: UMIDIGI  
Date Received: 2022/09/13  
Report Date: 2022/09/30

Test Result:	Pass*
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\* In the configuration tested, the EUT complied with the standards above.

## Prepared and Checked By:

## Approved By:

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Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 13: 777-787MHz(TX); 746-756MHz(RX) LTE Band 41: 2535-2655MHz(TX/RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band5/ LTE Band 5: -0.56dBi PCS1900/WCDMA Band 2/ LTE Band 2: -0.37dBi LTE Band 12: -0.62dBi LTE Band 13: -0.63dBi LTE Band 41: -0.32dBi (provided by the applicant)
Voltage Range	DC 3.87V from battery or DC 5/7/9/12V from adapter
Sample serial number	SZNS220913-41417E-RF-S1 for Radiated Emissions SZNS220913-41417E-RF-S2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Normal/Extreme Condition	N.V.: Nominal Voltage: 3.87V <sub>DC</sub> L.V.: Low Voltage 3.45V <sub>DC</sub> H.V.: High Voltage 4.45V <sub>DC</sub>
Adapter information	Model: HJ-FC017K7-US Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 2.0A OR DC 7.0V, 2.0A OR DC 9.0V, 2.0A OR DC 12.0V, 1.5A, 18.0W

Note: Pre-scan all models, the worst case model A13 Pro Max was selected to test.

### Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, and Subpart 27 of the Federal Communication Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2-Subpart J as well as the following parts:

Part 22 Subpart H - Public Mobile Services  
 Part 24 Subpart E - Personal Communication Services  
 Part 27 - Miscellaneous Wireless Communications Services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

## Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082 \times 10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz -26.5GHz	5.06dB
	26.5GHz -40GHz	4.72dB
Temperature		1°C
Humidity		6%
Supply voltages		0.4%

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The final qualification test was performed with the EUT operating at normal mode.

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
PCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B5	4.2	826.4	836.6	846.6
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711
LTE B13	5	779.5	782	784.5
	10	/	782	/
LTE B41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645

### Equipment Modifications

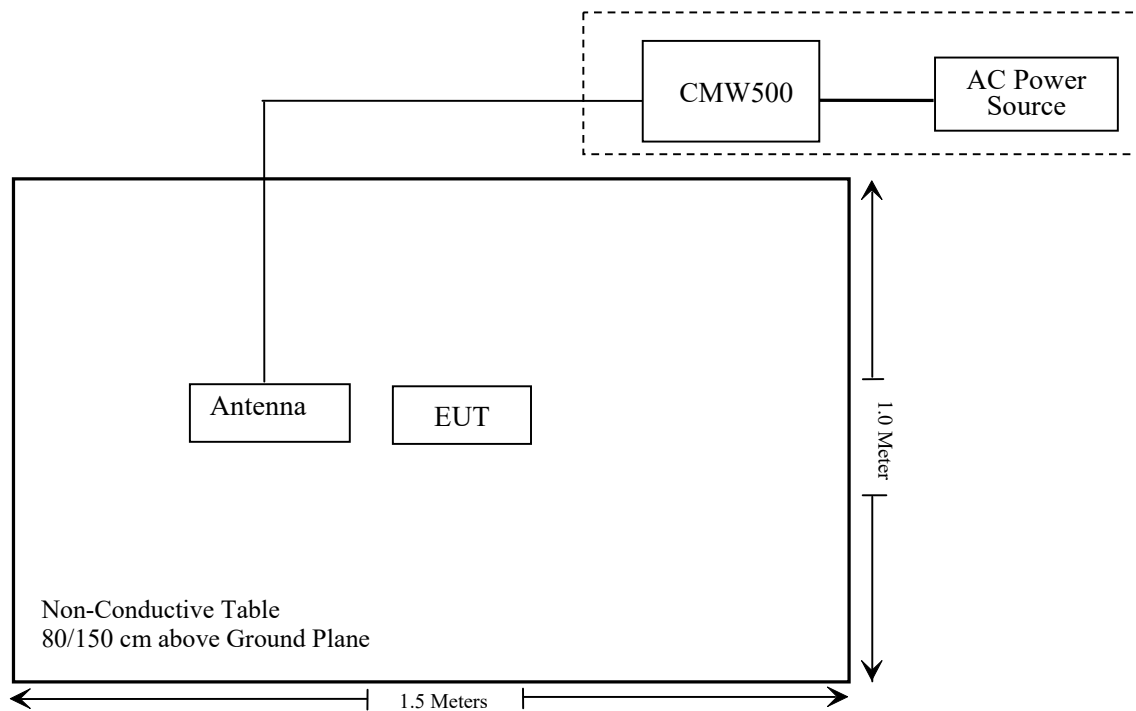
No modification was made to the EUT.

**Support Equipment List and Details**

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606

**Support Cable Description**

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW50

**Block Diagram of Test Setup**

**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Result
§ 1.1307 ,§2.1093	RF Exposure (SAR)	Compliant
§2.1046; § 22.913 (a) (d); § 24.232 (c) (d); §27.50 (b) (c) (h);	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; §22.917 (a); § 24.238 (a); §27.53;	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (c) (h) (m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2021/11/09	2022/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2021/11/11	2022/11/10
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF824-862MS-1147	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF1850-1910MS-1148	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF2495-2570MS-1152	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF700-800MS-1153	201706003	2021/12/14	2022/12/13
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
PASTERNAK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-024-1)	2020/01/05	2023/01/04
PASTERNAK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-025-1)	2020/01/05	2023/01/04
Agilent	Signal Generator	N5183A	MY51040755	2021/12/13	2022/12/12



Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
SPECTRUM ANALYZER	Rohde & Schwarz	FSU26	200982	2022/07/06	2023/07/05
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2021/12/13	2022/12/12
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2021/12/14	2022/12/13
Gongwen	Temp. & Humid. Chamber	HSD-500	109	2021/10/14	2022/10/13
Fluke	Multi Meter	45	7664009	2021/12/14	2022/12/13
Manson	DC Power Source	KPS-6604	ATCS-205	NCR	NCR
Unknown	RF Cable	Unknown	1	Each time	
HP	6dB Attenuator	8493B	06151	2021/12/14	2022/12/13

\* Statement of Traceability: Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## **FCC §1.1307(b)&§2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: SZNS220913-41417E-20

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## **FCC§2.1047 - MODULATION CHARACTERISTIC**

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According to FCC § 2.1047(d), Part 22H,24E&27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

## FCC § 2.1046, §22.913 (a) (d)& §24.232 (c) (d); §27.50(b)(c)(h)- RF OUTPUT POWER

### Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

According to §27.50(b), Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

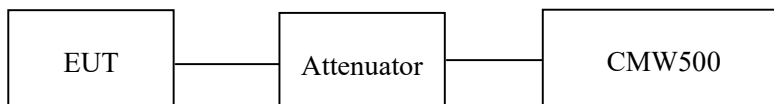
According to §27.50(c), Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP. And Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2496-2690MHz.

### Test Procedure

*Conducted method:*

The RF output of the transmitter was connected to the CMW500 through sufficient attenuation.



ANSI C63.26-2015 Section 5.5.

### Test Data

#### Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

*The testing was performed by Cat Kang from 2022-09-20 to 2022-09-28.*

**Conducted Power****Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	31.60	28.39	38.45
	190	836.6	31.60	28.39	38.45
	251	848.8	31.50	28.29	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.10	31.62	30.24	29.18	<b>28.89</b>	28.41	27.03	25.97	38.45
	190	836.6	32.05	31.55	30.24	29.04	28.84	28.34	27.03	25.83	38.45
	251	848.8	31.90	31.40	30.10	28.90	28.69	28.19	26.89	25.69	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EDGE	128	824.2	27.74	26.36	24.12	22.95	24.53	23.15	20.91	19.74	38.45
	190	836.6	27.85	26.43	24.19	23.00	24.64	23.22	20.98	19.79	38.45
	251	848.8	27.88	26.45	24.16	22.99	<b>24.67</b>	23.24	20.95	19.78	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		22.85	22.75	22.89	19.64	19.54	19.68
	HSDPA	1	21.91	21.88	21.90	18.70	18.67	18.69
		2	21.89	21.78	21.88	18.68	18.57	18.67
		3	21.86	21.84	21.67	18.65	18.63	18.46
		4	21.84	21.72	21.81	18.63	18.51	18.60
	HSUPA	1	21.55	21.51	21.41	18.34	18.30	18.20
		2	21.42	21.44	21.35	18.21	18.23	18.14
		3	21.41	21.32	21.28	18.20	18.11	18.07
		4	21.35	21.25	21.25	18.14	18.04	18.04
		5	21.29	21.26	21.41	18.08	18.05	18.20
	HSPA+	1	21.33	21.27	21.26	18.12	18.06	18.05

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - L<sub>C</sub> (dB)

For GSM850 / WCDMA Band5: Antenna Gain = -0.56dBi = -2.71dBd (0dBd=2.15dBi)

L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna in 0.5dB

Limit: ERP ≤ 38.45dBm

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	29.40	29.03	33
	661	1880.0	28.90	28.53	33
	810	1909.8	28.40	28.03	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.80	29.27	27.85	26.68	<b>29.43</b>	28.90	27.48	26.31	33
	661	1880.0	29.38	28.78	27.40	26.19	29.01	28.41	27.03	25.82	33
	810	1909.8	28.93	28.31	26.89	25.77	28.56	27.94	26.52	25.40	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EDGE	512	1850.2	27.54	25.90	23.38	21.99	<b>27.17</b>	25.53	23.01	21.62	33
	661	1880.0	27.41	25.89	23.43	21.99	27.04	25.52	23.06	21.62	33
	810	1909.8	27.16	25.66	23.27	21.89	26.79	25.29	22.90	21.52	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		23.10	23.09	23.01	<b>22.73</b>	22.72	22.64
	HSDPA	1	22.02	22.00	21.93	21.65	21.63	21.56
		2	22.12	22.01	21.86	21.75	21.64	21.49
		3	22.04	22.03	21.84	21.67	21.66	21.47
		4	22.06	22.06	21.68	21.69	21.69	21.31
	HSUPA	1	21.63	21.63	21.50	21.26	21.26	21.13
		2	21.58	21.52	21.45	21.21	21.15	21.08
		3	21.64	21.36	21.63	21.27	20.99	21.26
		4	21.42	21.52	21.42	21.05	21.15	21.05
		5	21.54	21.41	21.31	21.17	21.04	20.94
	HSPA+	1	21.39	21.47	21.28	21.02	21.10	20.91

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For PCS1900 / WCDMA Band2: Antenna Gain = -0.37 dBi

Limit: EIRP ≤ 33dBm

**LTE Band 2**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.03	23.02	23.01	22.66	22.65	22.64
		RB1#3	23.28	23.33	23.17	22.91	<b>22.96</b>	22.80
		RB1#5	23.07	23.06	23.02	22.70	22.69	22.65
		RB3#0	23.25	23.15	23.13	22.88	22.78	22.76
		RB3#3	23.16	23.14	23.11	22.79	22.77	22.74
		RB6#0	22.15	22.14	22.11	21.78	21.77	21.74
	16QAM	RB1#0	22.19	22.08	22.05	21.82	21.71	21.68
		RB1#3	22.39	22.25	22.19	<b>22.02</b>	21.88	21.82
		RB1#5	22.18	22.08	22.02	21.81	21.71	21.65
		RB3#0	22.13	22.22	22.28	21.76	21.85	21.91
		RB3#3	22.14	22.23	22.28	21.77	21.86	21.91
		RB6#0	21.15	21.09	21.13	20.78	20.72	20.76
3.0	QPSK	RB1#0	23.06	23.09	23.07	22.69	22.72	22.70
		RB1#8	23.07	23.10	23.08	22.70	22.73	22.71
		RB1#14	23.04	23.10	23.03	22.67	22.73	22.66
		RB6#0	22.07	22.05	21.97	21.70	21.68	21.60
		RB6#9	22.06	22.04	21.99	21.69	21.67	21.62
		RB15#0	22.10	22.08	22.03	21.73	21.71	21.66
	16QAM	RB1#0	22.63	22.21	22.10	22.26	21.84	21.73
		RB1#8	22.61	22.25	22.10	22.24	21.88	21.73
		RB1#14	22.61	22.23	22.02	22.24	21.86	21.65
		RB6#0	21.13	21.09	20.99	20.76	20.72	20.62
		RB6#9	21.12	21.09	20.97	20.75	20.72	20.60
		RB15#0	21.19	21.06	21.11	20.82	20.69	20.74

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.95	23.03	22.93	22.58	22.66	22.56
		RB1#13	23.11	23.14	23.14	22.74	22.77	22.77
		RB1#24	22.97	23.00	22.96	22.60	22.63	22.59
		RB15#0	22.08	22.13	22.10	21.71	21.76	21.73
		RB15#10	22.1	22.09	22.04	21.73	21.72	21.67
		RB25#0	22.08	22.06	22.01	21.71	21.69	21.64
	16QAM	RB1#0	21.86	22.32	22.02	21.49	21.95	21.65
		RB1#13	22.01	22.42	22.21	21.64	22.05	21.84
		RB1#24	21.88	22.29	22.05	21.51	21.92	21.68
		RB15#0	21.15	21.10	21.17	20.78	20.73	20.80
		RB15#10	21.16	21.07	21.09	20.79	20.70	20.72
		RB25#0	21.13	21.09	21.06	20.76	20.72	20.69
10.0	QPSK	RB1#0	23.05	22.97	23.01	22.68	22.60	22.64
		RB1#25	23.20	23.18	23.18	<b>22.83</b>	22.81	22.81
		RB1#49	23.00	22.93	23.02	22.63	22.56	22.65
		RB25#0	22.09	22.12	22.08	21.72	21.75	21.71
		RB25#25	22.16	22.06	22.03	21.79	21.69	21.66
		RB50#0	22.13	22.09	22.09	21.76	21.72	21.72
	16QAM	RB1#0	22.02	22.58	22.21	21.65	22.21	21.84
		RB1#25	22.25	22.76	22.35	21.88	<b>22.39</b>	21.98
		RB1#49	22.02	22.54	22.13	21.65	22.17	21.76
		RB25#0	21.18	21.21	21.15	20.81	20.84	20.78
		RB25#25	21.25	21.11	21.09	20.88	20.74	20.72
		RB50#0	21.16	21.1	21.09	20.79	20.73	20.72



Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.97	23.00	23.01	22.60	22.63	22.64
		RB1#38	23.07	23.07	23.14	22.70	22.70	22.77
		RB1#74	22.91	22.94	22.98	22.54	22.57	22.61
		RB36#0	22.08	22.07	22.12	21.71	21.70	21.75
		RB36#39	22.16	22.05	22.10	21.79	21.68	21.73
		RB75#0	22.15	22.06	22.10	21.78	21.69	21.73
	16QAM	RB1#0	22.60	22.10	22.42	22.23	21.73	22.05
		RB1#38	22.66	22.25	22.55	22.29	21.88	22.18
		RB1#74	22.53	22.15	22.42	22.16	21.78	22.05
		RB36#0	21.08	21.12	21.07	20.71	20.75	20.70
		RB36#39	21.16	21.05	21.04	20.79	20.68	20.67
		RB75#0	21.05	21.08	21.07	20.68	20.71	20.70
20.0	QPSK	RB1#0	22.93	22.94	22.99	22.56	22.57	22.62
		RB1#50	23.21	23.25	23.29	22.84	22.88	<b>22.92</b>
		RB1#99	22.88	22.94	22.99	22.51	22.57	22.62
		RB50#0	21.93	22.11	22.15	21.56	21.74	21.78
		RB50#50	22.11	22.03	22.03	21.74	21.66	21.66
		RB100#0	22.03	22.10	22.10	21.66	21.73	21.73
	16QAM	RB1#0	22.44	22.25	22.18	22.07	21.88	21.81
		RB1#50	22.75	22.55	22.50	<b>22.38</b>	22.18	22.13
		RB1#99	22.42	22.27	22.16	22.05	21.90	21.79
		RB50#0	20.96	21.15	21.20	20.59	20.78	20.83
		RB50#50	21.06	21.01	21.06	20.69	20.64	20.69
		RB100#0	21.09	21.14	21.16	20.72	20.77	20.79

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band2: Antenna Gain = -0.37dBi

Limit: EIRP ≤ 33dBm

## LTE Band 5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.92	22.79	22.70	19.71	19.58	19.49
		RB1#3	23.05	23.00	22.94	19.84	19.79	19.73
		RB1#5	22.93	22.77	22.67	19.72	19.56	19.46
		RB3#0	23.04	22.88	22.83	19.83	19.67	19.62
		RB3#3	23.03	22.87	22.84	19.82	19.66	19.63
		RB6#0	21.99	21.82	21.80	18.78	18.61	18.59
	16QAM	RB1#0	21.96	21.84	21.74	18.75	18.63	18.53
		RB1#3	22.19	22.02	21.91	18.98	18.81	18.70
		RB1#5	21.98	21.86	21.77	18.77	18.65	18.56
		RB3#0	22.26	22.01	22.05	19.05	18.80	18.84
		RB3#3	22.25	22.04	22.06	19.04	18.83	18.85
		RB6#0	21.05	20.83	20.81	17.84	17.62	17.60
3.0	QPSK	RB1#0	22.94	22.91	22.79	<b>19.73</b>	19.70	19.58
		RB1#8	22.90	22.91	22.75	19.69	19.70	19.54
		RB1#14	22.89	22.87	22.80	19.68	19.66	19.59
		RB6#0	21.97	21.87	21.82	18.76	18.66	18.61
		RB6#9	21.91	21.85	21.79	18.70	18.64	18.58
		RB15#0	22.03	21.91	21.83	18.82	18.70	18.62
	16QAM	RB1#0	22.64	22.10	21.93	<b>19.43</b>	18.89	18.72
		RB1#8	22.57	22.11	21.86	19.36	18.90	18.65
		RB1#14	22.59	22.06	21.86	19.38	18.85	18.65
		RB6#0	21.05	20.9	20.84	17.84	17.69	17.63
		RB6#9	21.02	20.96	20.70	17.81	17.75	17.49
		RB15#0	21.06	20.91	20.93	17.85	17.70	17.72

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.91	22.84	22.67	19.70	19.63	19.46
		RB1#13	22.99	22.91	22.81	19.78	19.70	19.60
		RB1#24	22.87	22.81	22.69	19.66	19.60	19.48
		RB15#0	22.03	21.84	22.09	18.82	18.63	18.88
		RB15#10	21.99	21.99	21.69	18.78	18.78	18.48
		RB25#0	21.98	21.92	21.84	18.77	18.71	18.63
	16QAM	RB1#0	21.86	22.16	21.87	18.65	18.95	18.66
		RB1#13	21.90	22.20	21.92	18.69	18.99	18.71
		RB1#24	21.81	22.08	21.82	18.60	18.87	18.61
		RB15#0	21.12	20.88	21.17	17.91	17.67	17.96
		RB15#10	21.06	20.99	20.76	17.85	17.78	17.55
		RB25#0	21.06	20.93	20.93	17.85	17.72	17.72
10.0	QPSK	RB1#0	22.97	22.92	22.86	19.76	19.71	19.65
		RB1#25	23.08	22.97	22.90	<b>19.87</b>	19.76	19.69
		RB1#49	22.89	22.81	22.77	19.68	19.60	19.56
		RB25#0	22.05	21.84	21.84	18.84	18.63	18.63
		RB25#25	22.13	22.11	21.54	18.92	18.90	18.33
		RB50#0	22.07	22.01	21.72	18.86	18.80	18.51
	16QAM	RB1#0	22.07	22.55	22.06	18.86	19.34	18.85
		RB1#25	22.08	22.61	22.12	18.87	<b>19.40</b>	18.91
		RB1#49	21.99	22.46	21.98	18.78	19.25	18.77
		RB25#0	21.16	20.94	20.90	17.95	17.73	17.69
		RB25#25	21.20	21.16	20.57	17.99	17.95	17.36
		RB50#0	21.09	21.04	20.77	17.88	17.83	17.56

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - L<sub>C</sub> (dB)

For Band5: Antenna Gain = -0.56dBi = -2.71dBd (0dBd=2.15dBi)

L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna in 0.5dB

Limit: ERP ≤ 38.45dBm

**LTE Band 12**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.27	22.22	22.21	19.00	18.95	18.94
		RB1#3	22.45	22.37	22.35	<b>19.18</b>	19.10	19.08
		RB1#5	22.25	22.22	22.18	18.98	18.95	18.91
		RB3#0	22.32	22.31	22.36	19.05	19.04	19.09
		RB3#3	22.35	22.36	22.31	19.08	19.09	19.04
		RB6#0	21.30	21.30	21.28	18.03	18.03	18.01
	16QAM	RB1#0	21.33	21.26	21.20	18.06	17.99	17.93
		RB1#3	21.51	21.43	21.37	18.24	18.16	18.10
		RB1#5	21.35	21.27	21.22	18.08	18.00	17.95
		RB3#0	21.26	21.40	21.52	17.99	18.13	<b>18.25</b>
		RB3#3	21.29	21.39	21.46	18.02	18.12	18.19
		RB6#0	20.37	20.33	20.37	17.10	17.06	17.10
3.0	QPSK	RB1#0	22.32	22.34	22.30	19.05	19.07	19.03
		RB1#8	22.25	22.30	22.32	18.98	19.03	19.05
		RB1#14	22.23	22.30	22.30	18.96	19.03	19.03
		RB6#0	21.25	21.30	21.26	17.98	18.03	17.99
		RB6#9	21.30	21.25	21.25	18.03	17.98	17.98
		RB15#0	21.33	21.34	21.28	18.06	18.07	18.01
	16QAM	RB1#0	21.88	21.48	21.36	18.61	18.21	18.09
		RB1#8	21.84	21.45	21.28	18.57	18.18	18.01
		RB1#14	21.81	21.45	21.31	18.54	18.18	18.04
		RB6#0	20.42	20.39	20.26	17.15	17.12	16.99
		RB6#9	20.46	20.39	20.28	17.19	17.12	17.01
		RB15#0	20.46	20.39	20.41	17.19	17.12	17.14

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.27	22.21	22.17	19.00	18.94	18.90
		RB1#13	22.33	22.35	22.28	19.06	19.08	19.01
		RB1#24	22.24	22.27	22.21	18.97	19.00	18.94
		RB15#0	21.23	21.46	21.32	17.96	18.19	18.05
		RB15#10	21.33	21.25	21.35	18.06	17.98	18.08
		RB25#0	21.22	21.39	21.30	17.95	18.12	18.03
	16QAM	RB1#0	21.13	21.56	21.30	17.86	18.29	18.03
		RB1#13	21.27	21.70	21.38	18.00	18.43	18.11
		RB1#24	21.12	21.56	21.27	17.85	18.29	18.00
		RB15#0	20.32	20.52	20.43	17.05	17.25	17.16
		RB15#10	20.39	20.31	20.39	17.12	17.04	17.12
		RB25#0	20.37	20.44	20.40	17.10	17.17	17.13
10.0	QPSK	RB1#0	22.29	22.27	22.33	19.02	19.00	19.06
		RB1#25	22.36	22.43	22.41	19.09	<b>19.16</b>	19.14
		RB1#49	22.27	22.29	22.24	19.00	19.02	18.97
		RB25#0	21.20	21.64	21.42	17.93	18.37	18.15
		RB25#25	21.10	21.32	21.34	17.83	18.05	18.07
		RB50#0	21.19	21.49	21.40	17.92	18.22	18.13
	16QAM	RB1#0	21.80	21.40	21.32	18.53	18.13	18.05
		RB1#25	21.90	21.52	21.44	<b>18.63</b>	18.25	18.17
		RB1#49	21.84	21.40	21.23	18.57	18.13	17.96
		RB25#0	20.36	20.69	20.57	17.09	17.42	17.30
		RB25#25	20.27	20.41	20.51	17.00	17.14	17.24
		RB50#0	20.28	20.54	20.48	17.01	17.27	17.21

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - L<sub>C</sub> (dB)

For Band12: Antenna Gain = -0.62dBi = -2.77dBd (0dBd=2.15dBi)

L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna in 0.5dB

Limit: ERP ≤ 34.77dBm

**LTE Band 13**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.21	22.22	22.31	18.93	18.94	19.03
		RB1#13	22.38	22.44	22.43	19.10	<b>19.16</b>	19.15
		RB1#24	22.31	22.33	22.39	19.03	19.05	19.11
		RB15#0	21.43	21.61	21.50	18.15	18.33	18.22
		RB15#10	21.18	21.35	21.50	17.90	18.07	18.22
		RB25#0	21.31	21.44	21.44	18.03	18.16	18.16
	16QAM	RB1#0	21.52	21.32	21.25	18.24	18.04	17.97
		RB1#13	21.66	21.57	21.35	18.38	18.29	18.07
		RB1#24	21.67	21.37	21.27	<b>18.39</b>	18.09	17.99
		RB15#0	20.44	20.64	20.56	17.16	17.36	17.28
		RB15#10	20.19	20.4	20.51	16.91	17.12	17.23
		RB25#0	20.36	20.49	20.53	17.08	17.21	17.25
10.0	QPSK	RB1#0	/	22.35	/	/	19.07	/
		RB1#25	/	22.59	/	/	<b>19.31</b>	/
		RB1#49	/	22.47	/	/	19.19	/
		RB25#0	/	21.72	/	/	18.44	/
		RB25#25	/	21.44	/	/	18.16	/
		RB50#0	/	21.63	/	/	18.35	/
	16QAM	RB1#0	/	21.32	/	/	18.04	/
		RB1#25	/	21.59	/	/	<b>18.31</b>	/
		RB1#49	/	21.43	/	/	18.15	/
		RB25#0	/	20.84	/	/	17.56	/
		RB25#25	/	20.55	/	/	17.27	/
		RB50#0	/	20.62	/	/	17.34	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - L<sub>C</sub> (dB)

For Band13: Antenna Gain = -0.63dBi = -2.78dBd (0dBd=2.15dBi)

L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna in 0.5dB

Limit: ERP ≤ 34.77dBm

**LTE Band 41:**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	20.60	21.05	21.27	19.48	19.93	20.15
		RB1#13	20.77	21.19	21.36	19.65	20.07	20.24
		RB1#24	20.66	21.07	21.26	19.54	19.95	20.14
		RB15#0	19.70	20.11	20.35	18.58	18.99	19.23
		RB15#10	19.75	20.10	20.33	18.63	18.98	19.21
		RB25#0	19.73	20.14	20.32	18.61	19.02	19.20
	16QAM	RB1#0	19.71	20.32	20.26	18.59	19.20	19.14
		RB1#13	19.85	20.43	20.38	18.73	19.31	19.26
		RB1#24	19.73	20.33	20.27	18.61	19.21	19.15
		RB15#0	18.80	19.24	19.34	17.68	18.12	18.22
		RB15#10	18.86	19.22	19.33	17.74	18.10	18.21
		RB25#0	18.89	19.18	19.42	17.77	18.06	18.30
10.0	QPSK	RB1#0	20.75	21.14	21.28	19.63	20.02	20.16
		RB1#25	21.06	21.46	21.59	19.94	20.34	<b>20.47</b>
		RB1#49	20.78	21.17	21.28	19.66	20.05	20.16
		RB25#0	19.73	20.27	20.36	18.61	19.15	19.24
		RB25#25	19.82	20.14	20.33	18.70	19.02	19.21
		RB50#0	19.78	20.18	20.31	18.66	19.06	19.19
	16QAM	RB1#0	19.65	20.21	20.49	18.53	19.09	19.37
		RB1#25	19.97	20.55	20.75	18.85	19.43	<b>19.63</b>
		RB1#49	19.73	20.26	20.51	18.61	19.14	19.39
		RB25#0	18.87	19.36	19.37	17.75	18.24	18.25
		RB25#25	18.94	19.23	19.38	17.82	18.11	18.26
		RB50#0	18.85	19.28	19.36	17.73	18.16	18.24

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	20.69	20.97	21.22	19.57	19.85	20.10
		RB1#38	20.79	21.11	21.30	19.67	19.99	20.18
		RB1#74	20.69	21.07	21.23	19.57	19.95	20.11
		RB36#0	19.71	20.08	20.31	18.59	18.96	19.19
		RB36#39	19.78	20.07	20.37	18.66	18.95	19.25
		RB75#0	19.76	20.11	20.36	18.64	18.99	19.24
	16QAM	RB1#0	19.62	20.23	20.39	18.50	19.11	19.27
		RB1#38	19.72	20.36	20.50	18.60	19.24	19.38
		RB1#74	19.64	20.27	20.42	18.52	19.15	19.30
		RB36#0	18.68	19.18	19.32	17.56	18.06	18.20
		RB36#39	18.75	19.16	19.37	17.63	18.04	18.25
		RB75#0	18.80	19.16	19.30	17.68	18.04	18.18
20.0	QPSK	RB1#0	20.61	21.01	21.10	19.49	19.89	19.98
		RB1#50	20.97	21.44	21.53	19.85	20.32	<b>20.41</b>
		RB1#99	20.66	21.09	21.22	19.54	19.97	20.10
		RB50#0	19.63	20.17	20.23	18.51	19.05	19.11
		RB50#50	19.84	20.02	20.24	18.72	18.90	19.12
		RB100#0	19.75	20.09	20.25	18.63	18.97	19.13
	16QAM	RB1#0	19.62	20.23	20.22	18.50	19.11	19.10
		RB1#50	20.03	20.69	20.59	18.91	<b>19.57</b>	19.47
		RB1#99	19.71	20.31	20.30	18.59	19.19	19.18
		RB50#0	18.75	19.23	19.31	17.63	18.11	18.19
		RB50#50	18.94	19.14	19.33	17.82	18.02	18.21
		RB100#0	18.83	19.17	19.33	17.71	18.05	18.21

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)

For Band 41: Antenna Gain = -0.32dBi

Cable Loss=0.8dB\* (provided by the applicant)

Limit: EIRP≤33dBm



**Peak-to-average ratio (PAR)****Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.26	13
	Middle	3.35	13
	High	3.28	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.27	13
	Middle	3.45	13
	High	3.26	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.15	13
	Middle	3.16	13
	High	3.27	13
HSDPA (16QAM)	Low	4.22	13
	Middle	3.33	13
	High	3.48	13
HSUPA (BPSK)	Low	3.46	13
	Middle	3.62	13
	High	3.51	13
HSPA+	Low	3.35	13
	Middle	3.41	13
	High	3.44	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.78	13
	Middle	3.46	13
	High	3.51	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.27	13
	Middle	3.35	13
	High	3.45	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.41	13
	Middle	3.25	13
	High	3.41	13
HSDPA (16QAM)	Low	4.62	13
	Middle	4.36	13
	High	4.48	13
HSUPA (BPSK)	Low	3.55	13
	Middle	3.63	13
	High	3.25	13
HSPA+	Low	3.31	13
	Middle	3.52	13
	High	3.77	13

**LTE Band 2 20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.26	5.48	5.77	13	Pass
QPSK (100RB Size)	5.77	5.87	5.42	13	Pass
16QAM (1RB Size)	6.19	6.76	6.89	13	Pass
16QAM (100RB Size)	6.63	6.76	6.51	13	Pass

**LTE Band 5 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.26	4.13	5.26	13	Pass
QPSK (50RB Size)	5.45	5.54	5.71	13	Pass
16QAM (1RB Size)	4.97	5.29	6.67	13	Pass
16QAM (50RB Size)	6.35	6.44	6.57	13	Pass

**LTE Band 12 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.26	4.94	5.26	13	Pass
QPSK (50RB Size)	5.45	5.8	5.71	13	Pass
16QAM (1RB Size)	4.97	5.99	6.67	13	Pass
16QAM (50RB Size)	6.35	6.51	6.57	13	Pass

**LTE Band 13 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.13	/	13	Pass
QPSK (50RB Size)	/	5.54	/	13	Pass
16QAM (1RB Size)	/	5.29	/	13	Pass
16QAM (50RB Size)	/	6.44	/	13	Pass

**LTE Band 41 20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.29	4.17	4.03	13	Pass
QPSK (100RB Size)	4.81	4.75	4.58	13	Pass
16QAM (1RB Size)	5.19	5.10	4.49	13	Pass
16QAM (100RB Size)	5.62	5.65	5.59	13	Pass

## FCC §2.1049, §22.917, §22.905 & §24.238&§27.53 - OCCUPIED BANDWIDTH

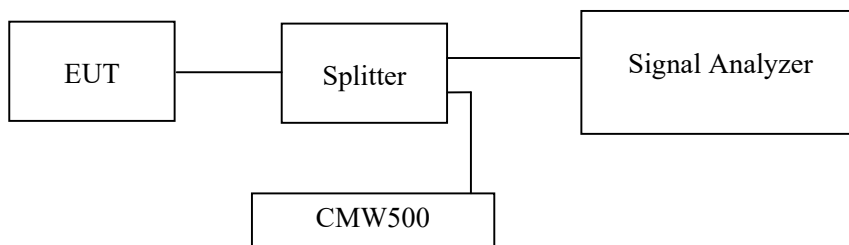
### Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238 and §27.53.

### Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



### Test Data

#### Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

*The testing was performed by Cat Kang from 2022-09-20 to 2022-09-30.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables and plots.*

**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	128	824.2	247.0	321.0
	190	836.6	244.0	320.0
	251	848.8	244.0	318.0

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
EDGE(8PSK)	128	824.2	245.0	310.0
	190	836.6	240.0	315.0
	251	848.8	247.0	316.0

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.17	4.73
	836.6	4.18	4.71
	846.6	4.17	4.71
HSDPA	826.4	4.18	4.71
	836.6	4.18	4.71
	846.6	4.18	4.73
HSUPA	826.4	4.20	4.71
	836.6	4.18	4.71
	846.6	4.18	4.71

**PCS Band (Part 24E)**

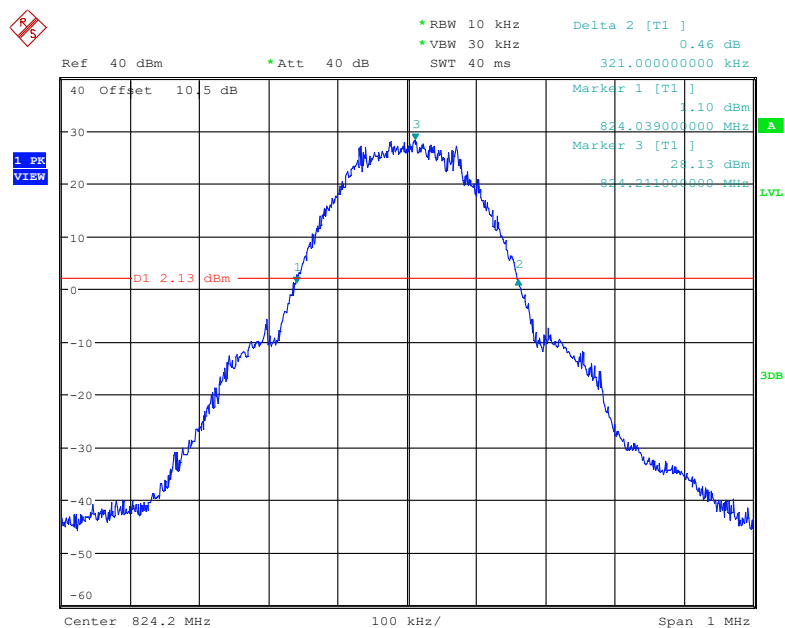
Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	244.0	318.0
	661	1880.0	244.0	320.0
	810	1909.8	245.0	323.0

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
EDGE(8PSK)	512	1850.2	245.0	311.0
	661	1880.0	246.0	314.0
	810	1909.8	246.0	314.0

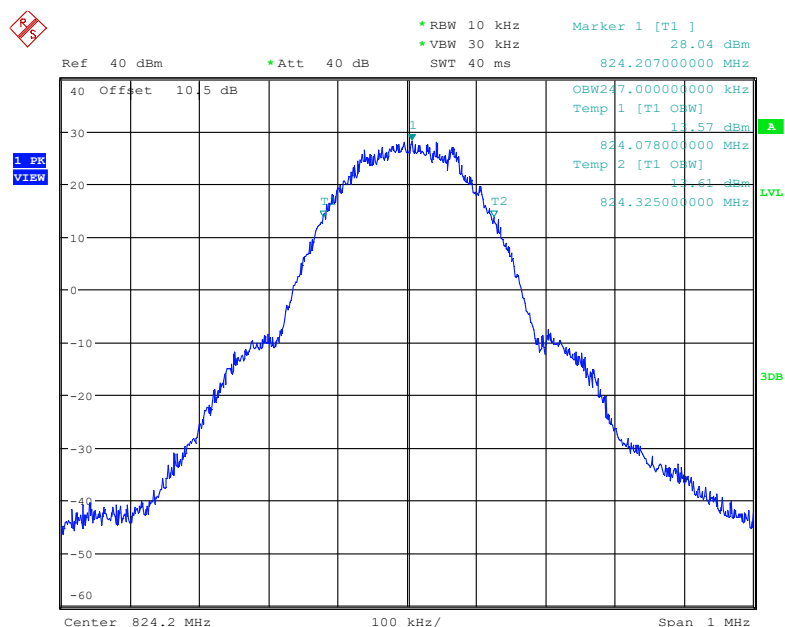
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.17	4.73
	1880.0	4.17	4.73
	1907.6	4.17	4.71
HSDPA	1852.4	4.18	4.73
	1880.0	4.18	4.73
	1907.6	4.18	4.74
HSUPA	1852.4	4.18	4.73
	1880.0	4.20	4.71
	1907.6	4.20	4.73

## Cellular Band (Part 22H)

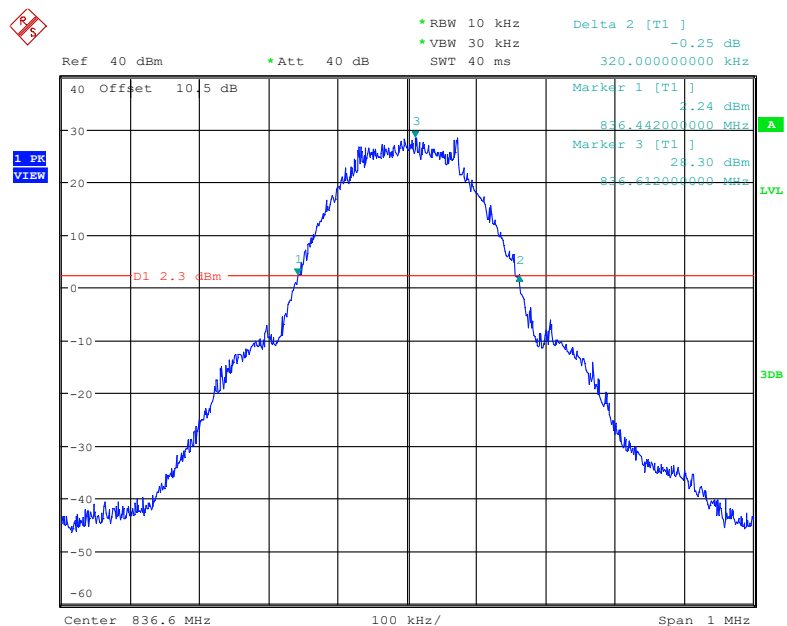
## 26 dB Emissions &amp; 99% Occupied Bandwidth for GSM(GMSK) Mode, Low channel



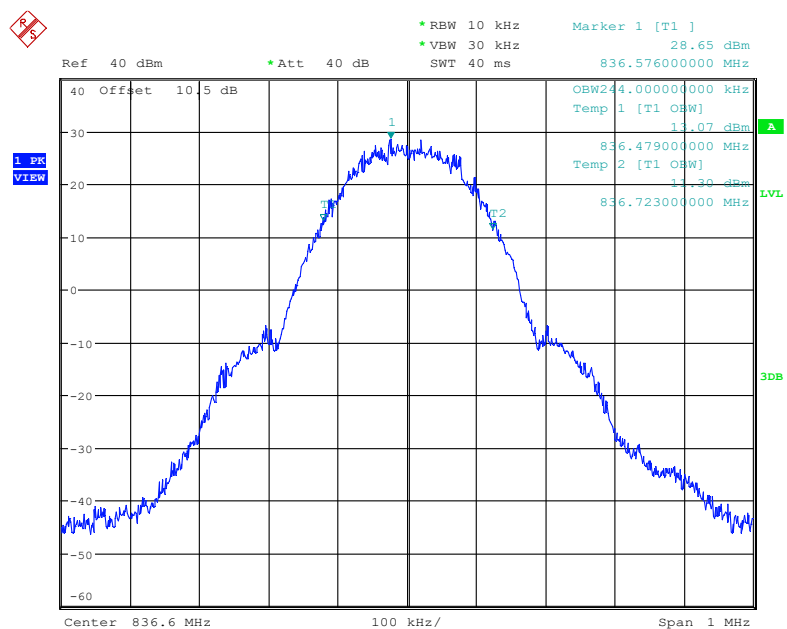
Date: 22.SEP.2022 00:17:32



Date: 22.SEP.2022 00:16:53

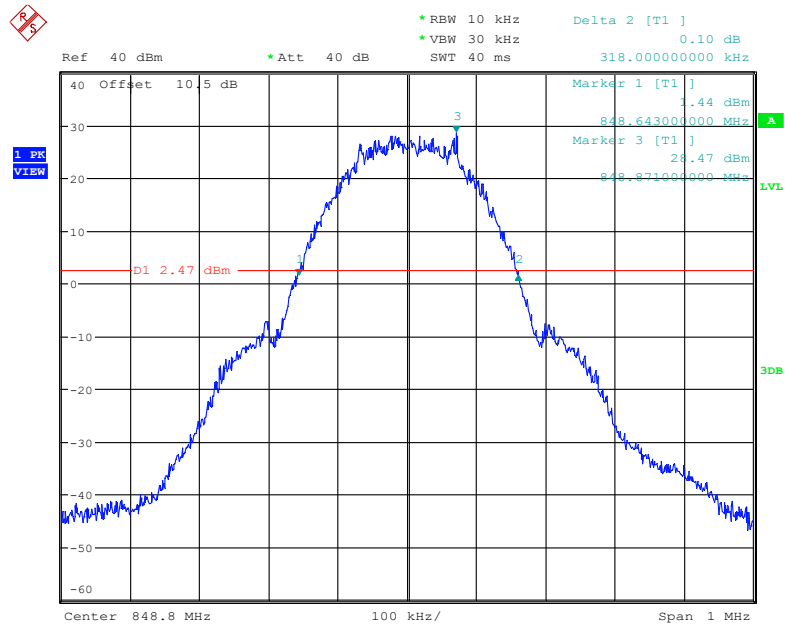
**26 dB Emissions & 99% Occupied Bandwidth for GSM(GMSK) Mode, Middle channel**

Date: 22.SEP.2022 00:25:03

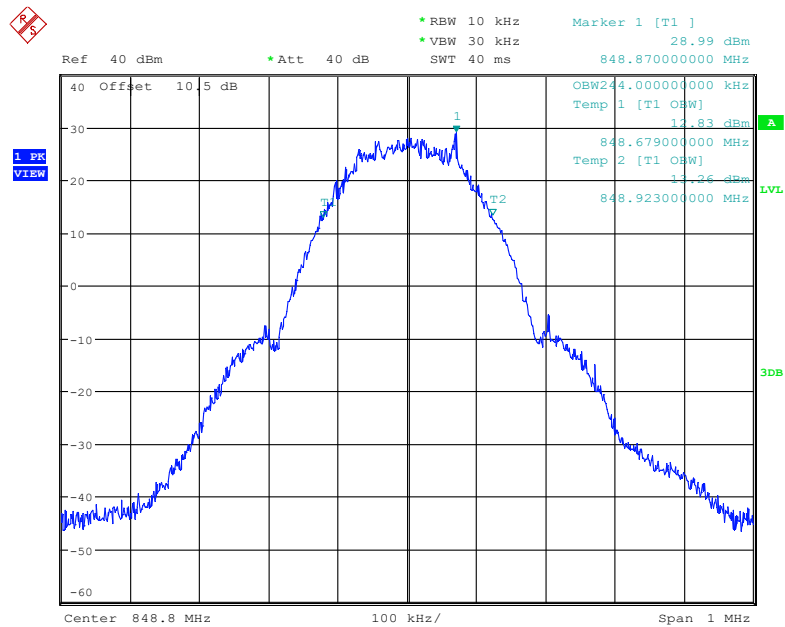


Date: 22.SEP.2022 00:24:24

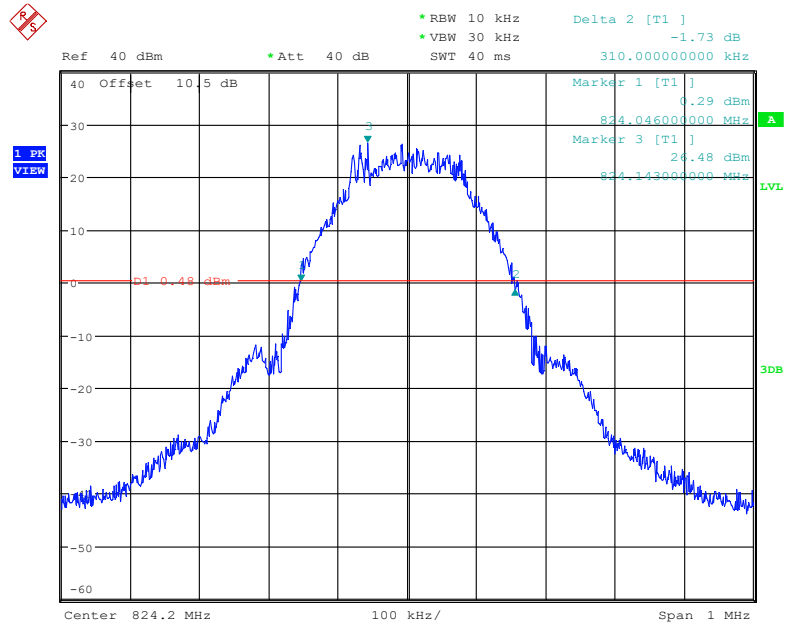


**26 dB Emissions & 99% Occupied Bandwidth for GSM(GMSK) Mode, High channel**

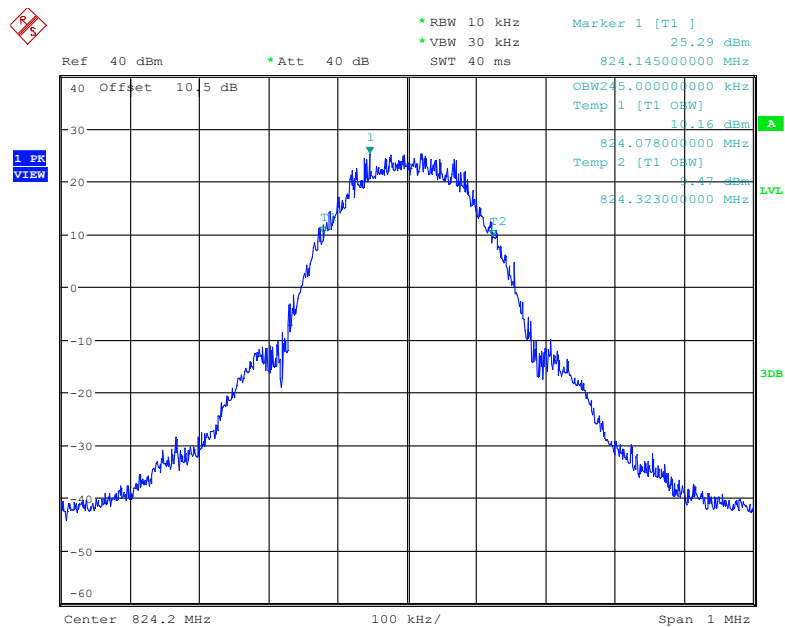
Date: 22.SEP.2022 00:29:13



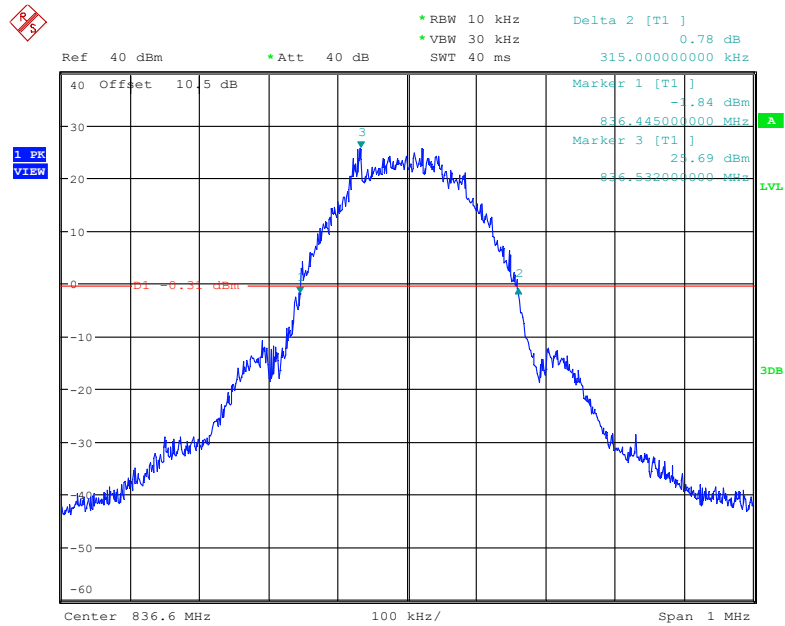
Date: 22.SEP.2022 00:28:34

**26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, Low channel**

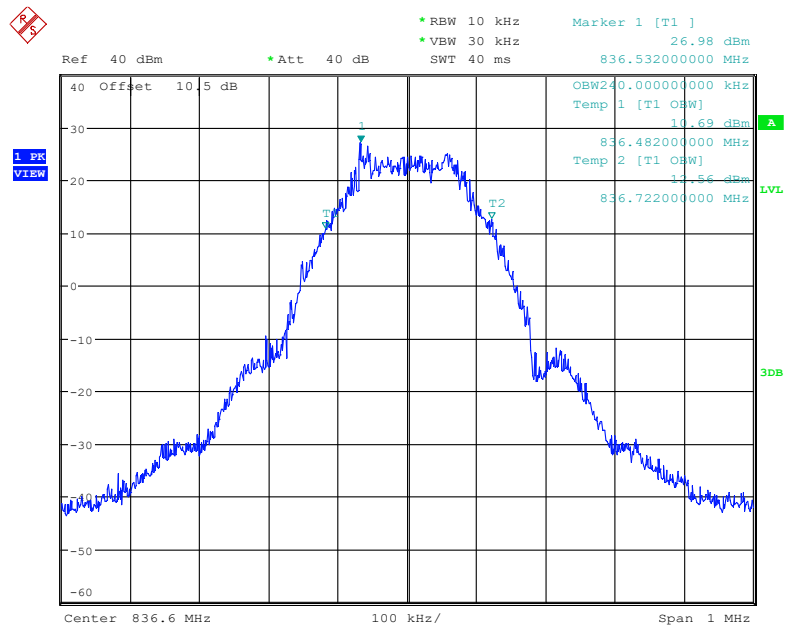
Date: 22.SEP.2022 00:49:34



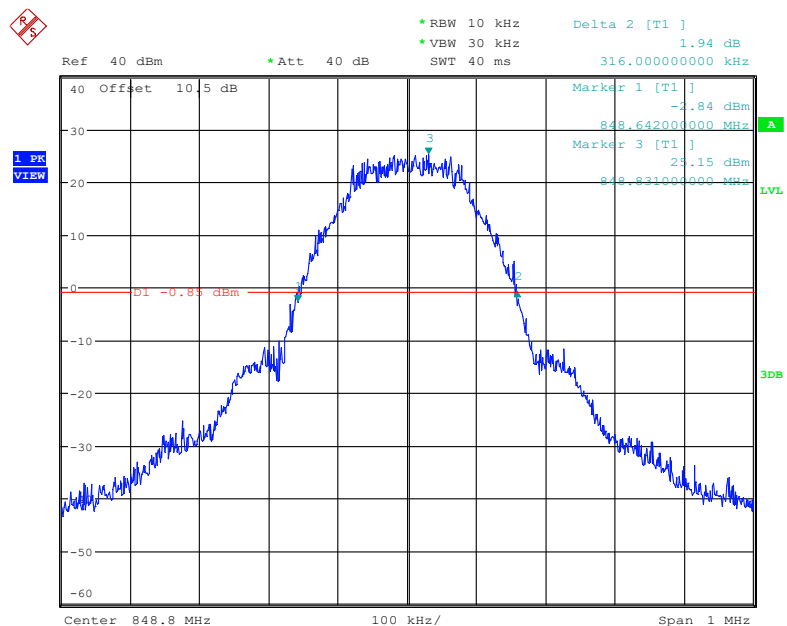
Date: 22.SEP.2022 00:48:55

**26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, Middle channel**

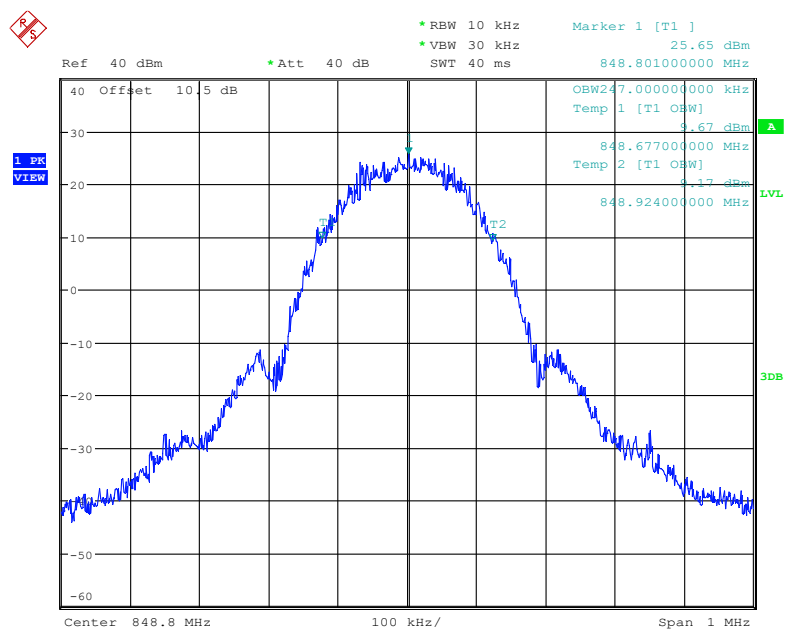
Date: 22.SEP.2022 00:44:51



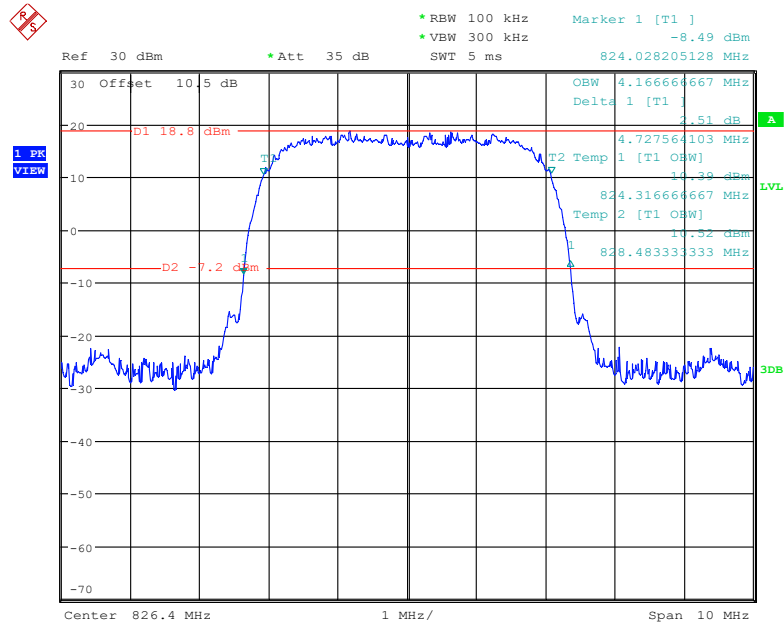
Date: 22.SEP.2022 00:44:12

**26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, High channel**

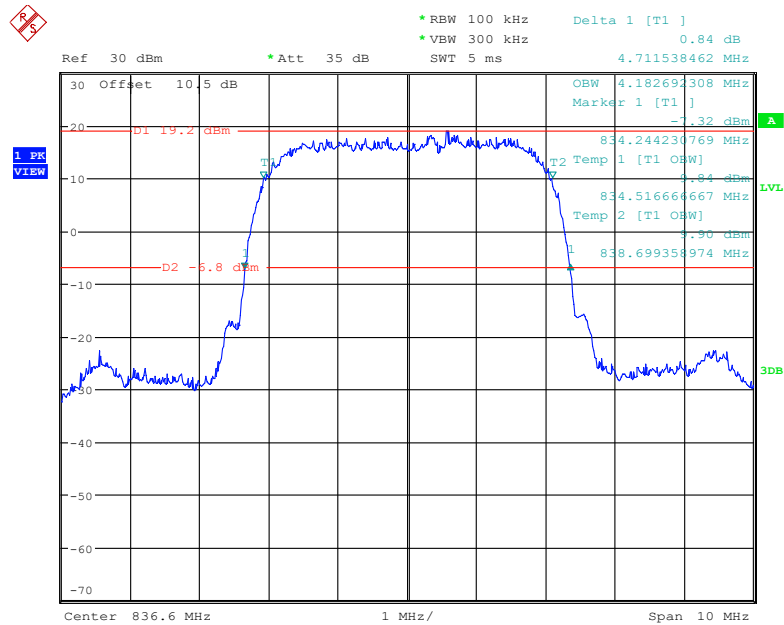
Date: 22.SEP.2022 00:35:47



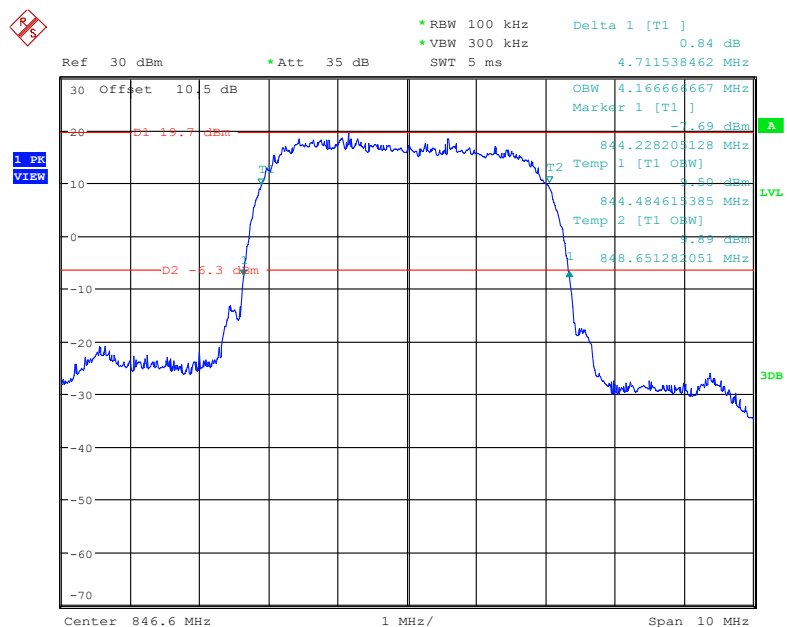
Date: 22.SEP.2022 00:35:08

**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**

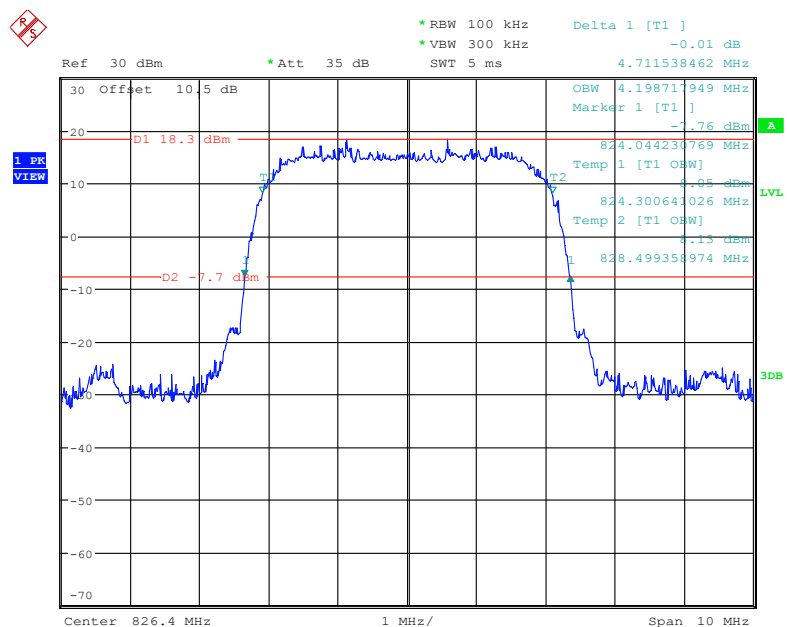
Date: 22.SEP.2022 09:38:01

**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**

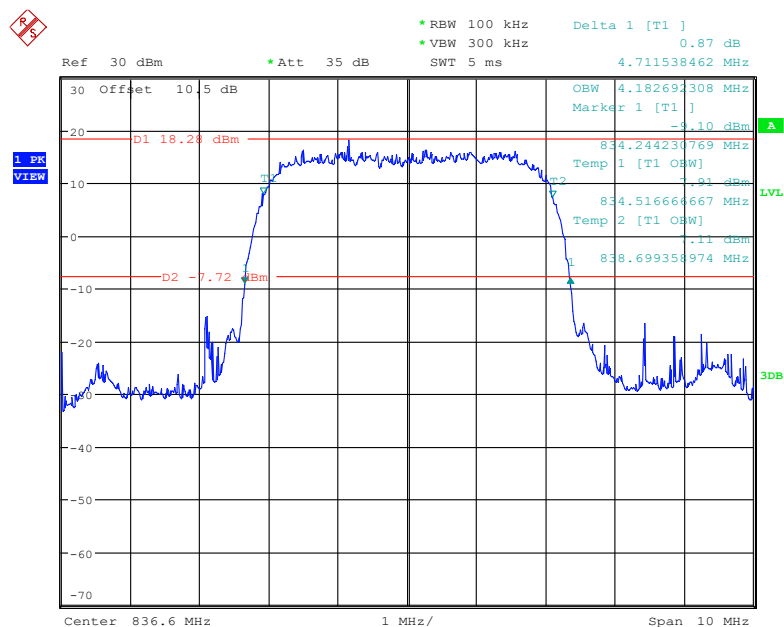
Date: 22.SEP.2022 09:39:53

**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**

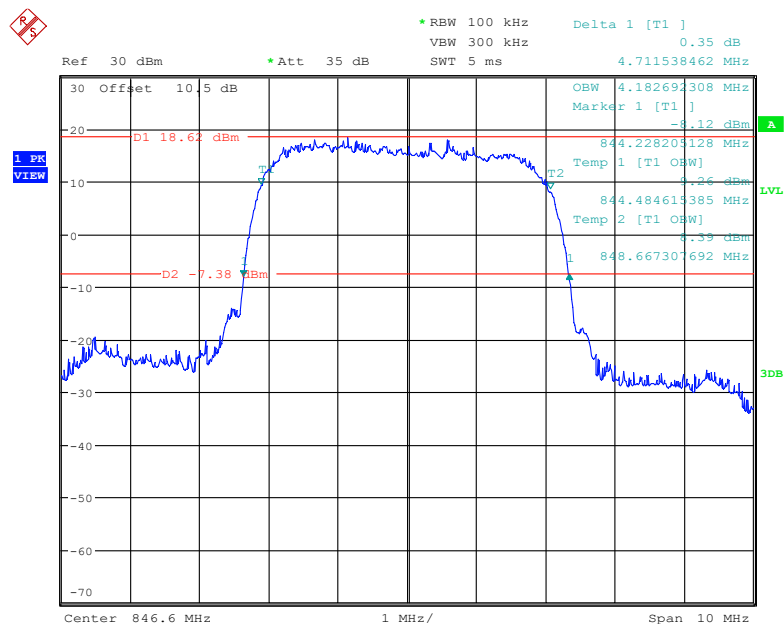
Date: 22.SEP.2022 09:40:58

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, Low channel**

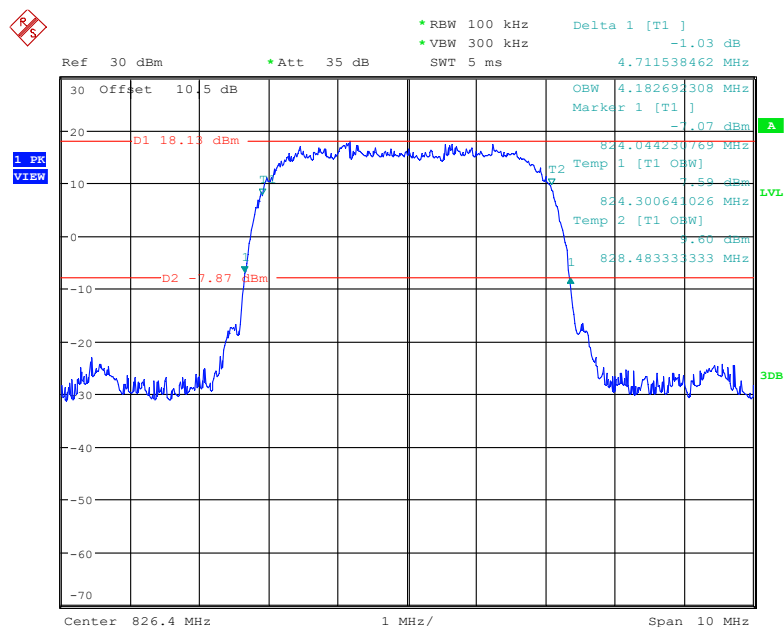
Date: 22.SEP.2022 10:08:38

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, Middle channel**

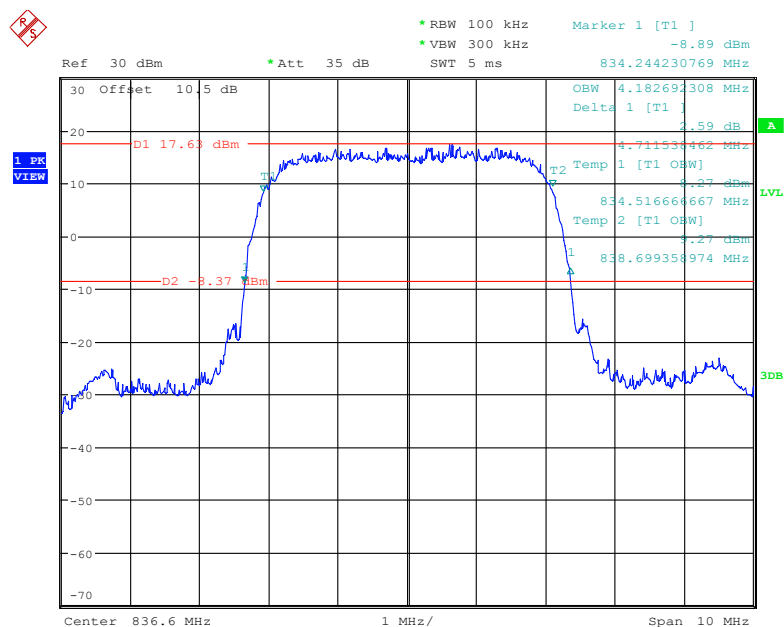
Date: 22.SEP.2022 10:07:38

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, High channel**

Date: 30.SEP.2022 15:48:14

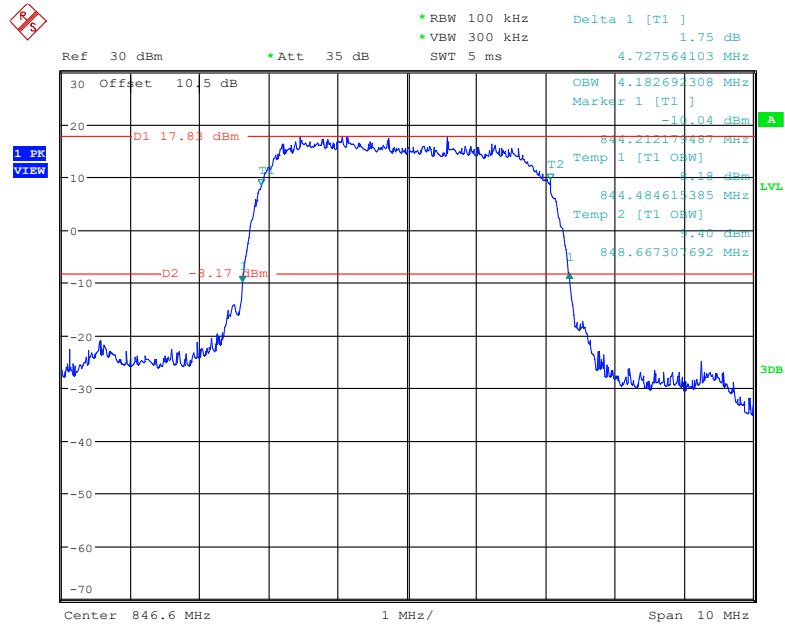
**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**

Date: 22.SEP.2022 09:56:46

**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**

Date: 22.SEP.2022 09:58:00

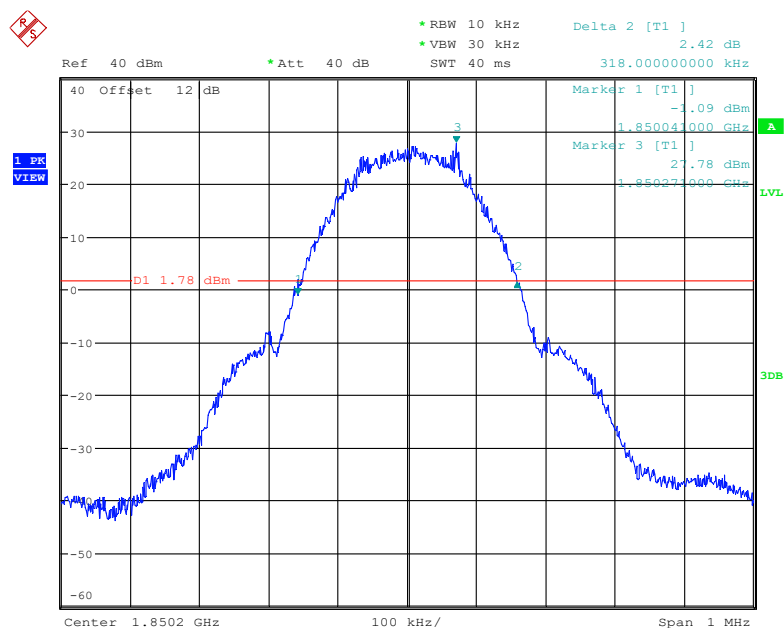


**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**

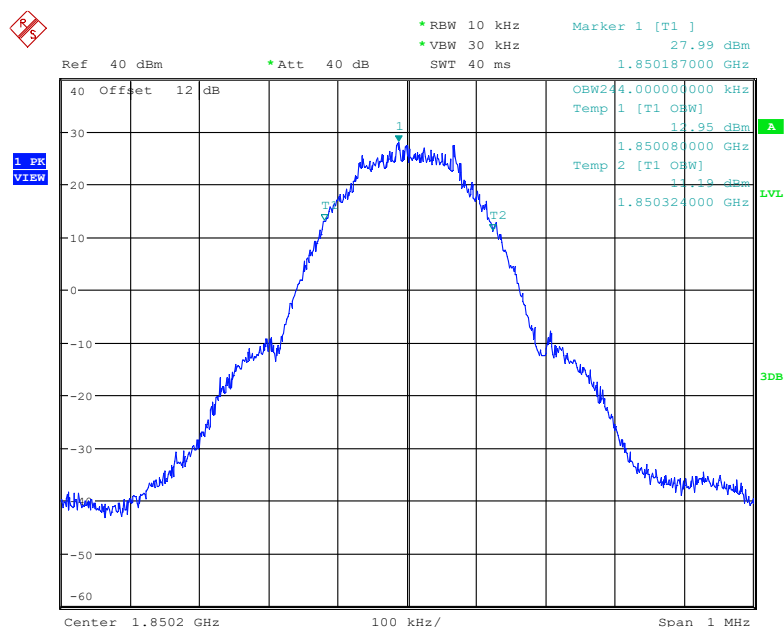
Date: 22.SEP.2022 09:59:03

## PCS Band (Part 24E)

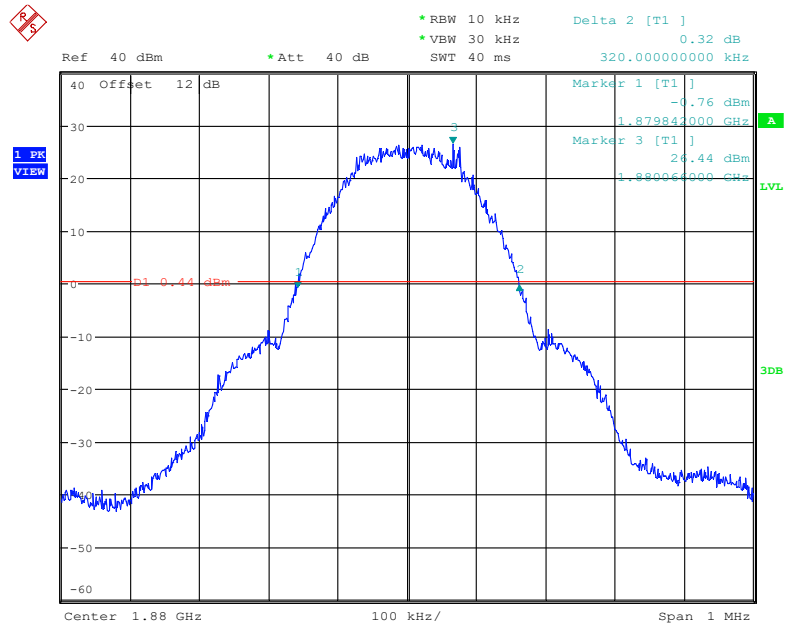
## 26 dB Emissions &amp; 99% Occupied Bandwidth for GSM(GMSK) Mode, Low channel



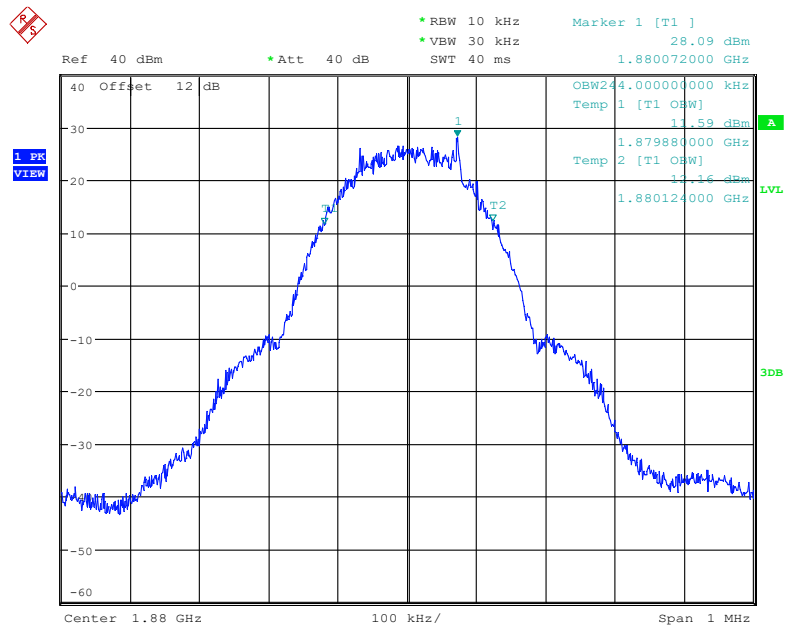
Date: 21.SEP.2022 22:57:47



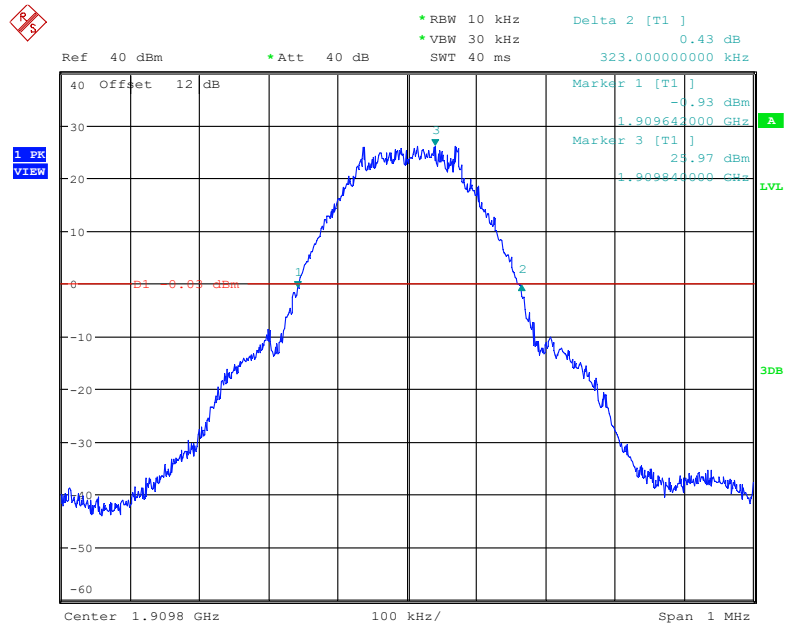
Date: 21.SEP.2022 22:57:07

**26 dB Emissions & 99% Occupied Bandwidth for GSM(GMSK) Mode, Middle channel**

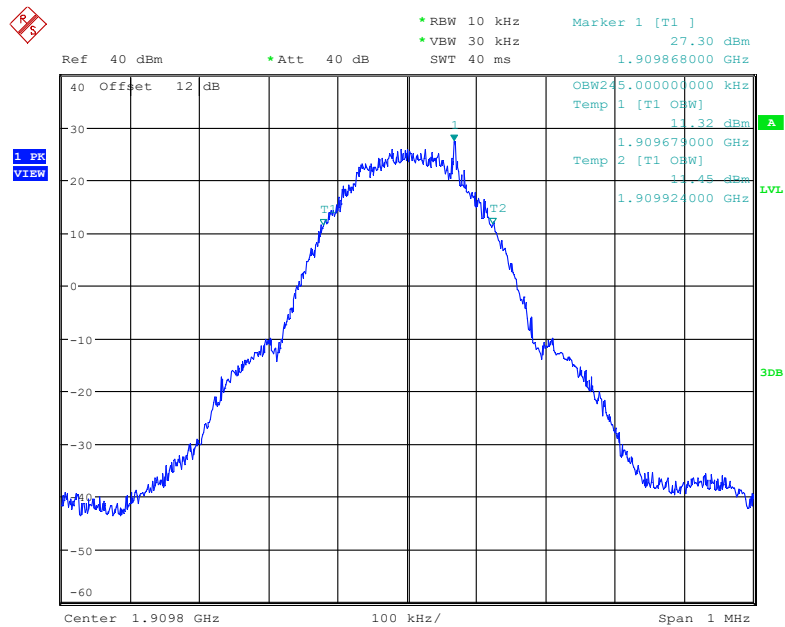
Date: 21.SEP.2022 23:07:15



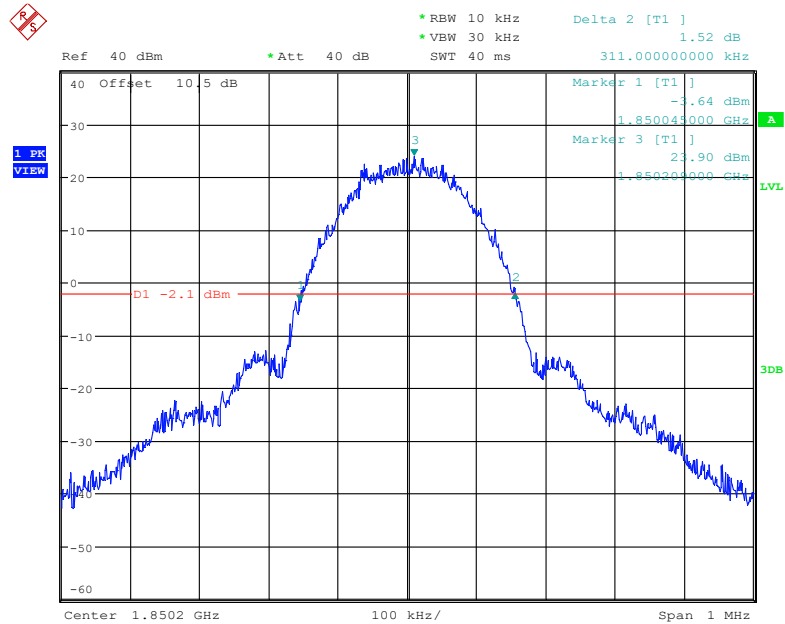
Date: 21.SEP.2022 23:06:36

**26 dB Emissions & 99% Occupied Bandwidth for GSM(GMSK) Mode, High channel**

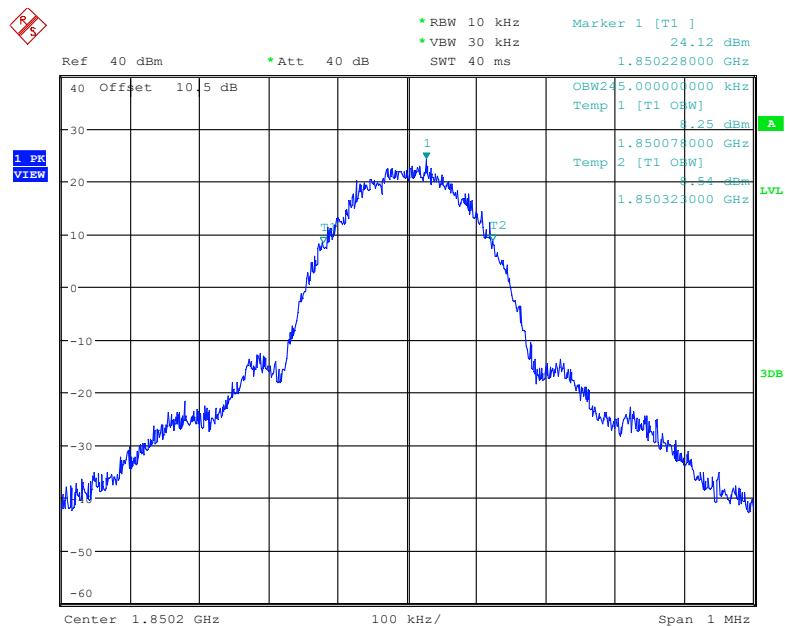
Date: 21.SEP.2022 23:14:08



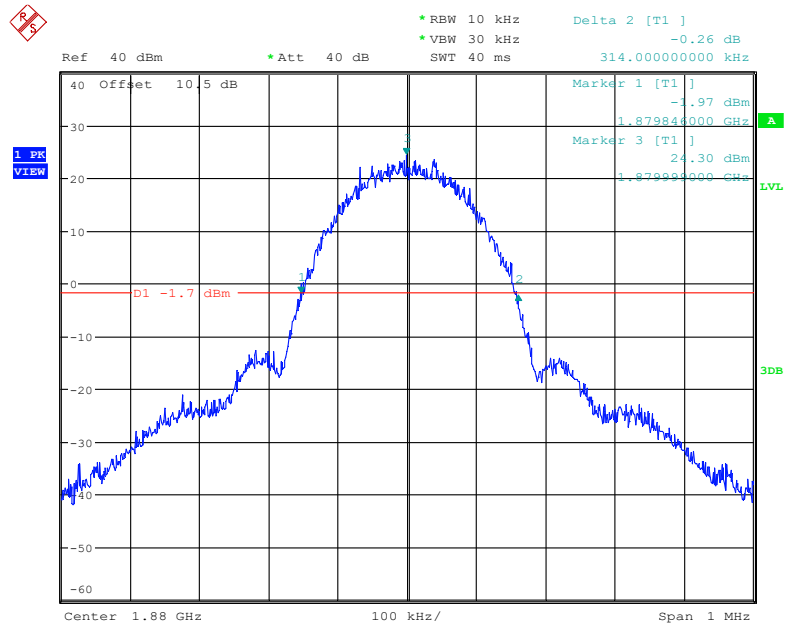
Date: 21.SEP.2022 23:13:29

**26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, Low channel**

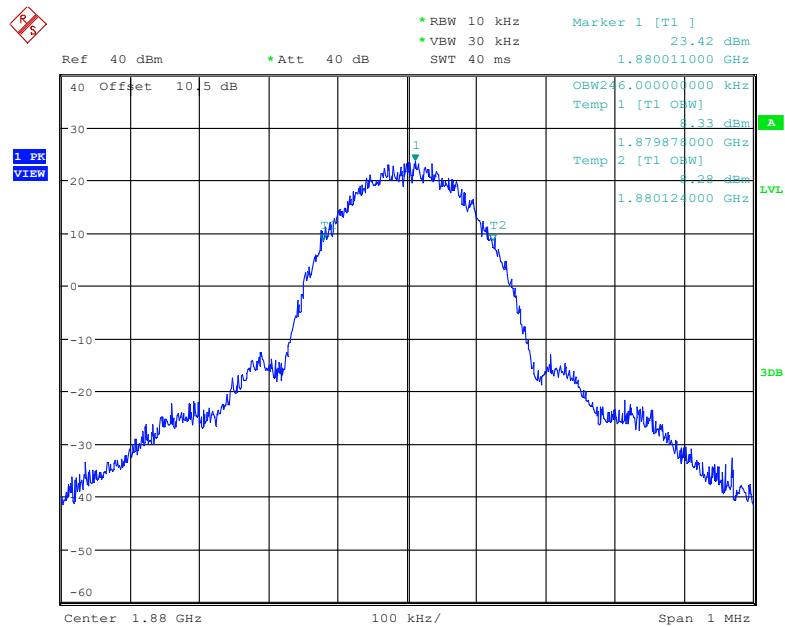
Date: 21.SEP.2022 23:47:59



Date: 21.SEP.2022 23:47:20

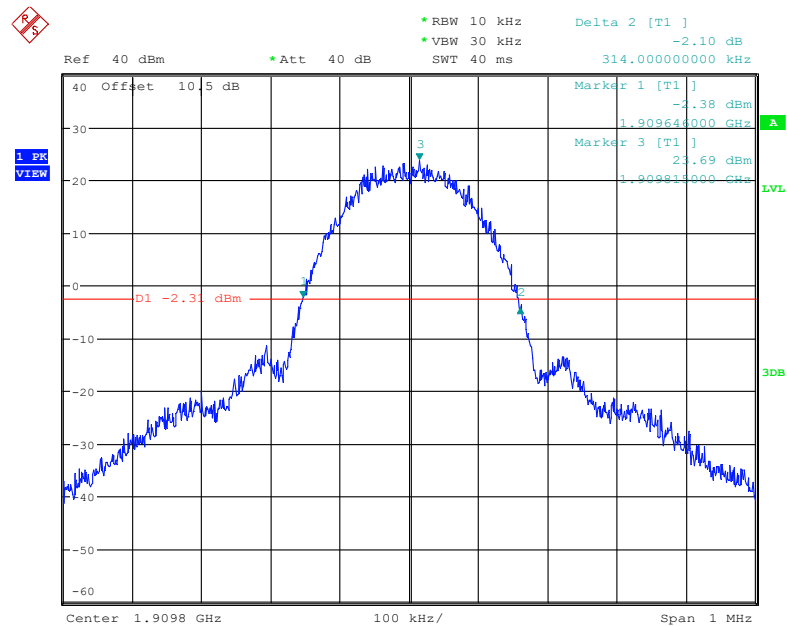
**26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, Middle channel**

Date: 21.SEP.2022 23:55:49

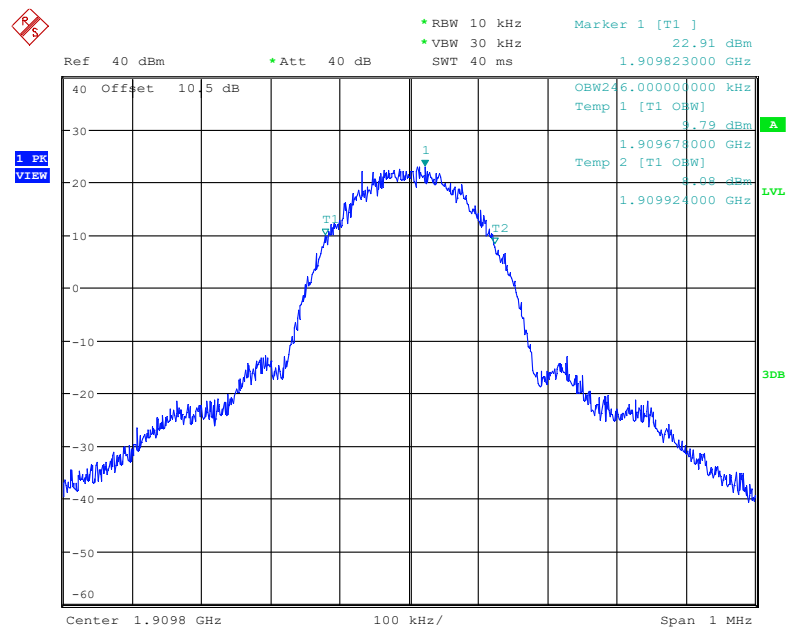


Date: 21.SEP.2022 23:55:10

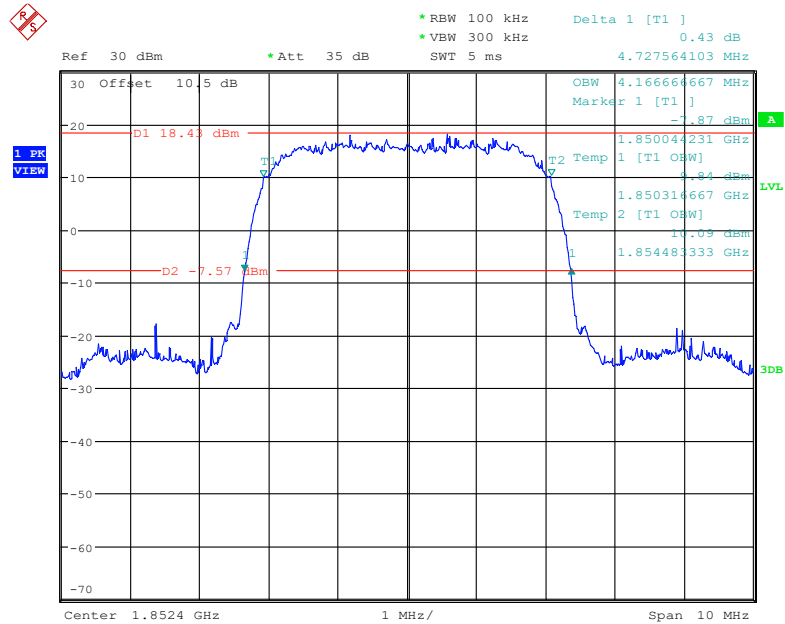
### 26 dB Emissions & 99% Occupied Bandwidth for EDGE(8PSK) Mode, High channel



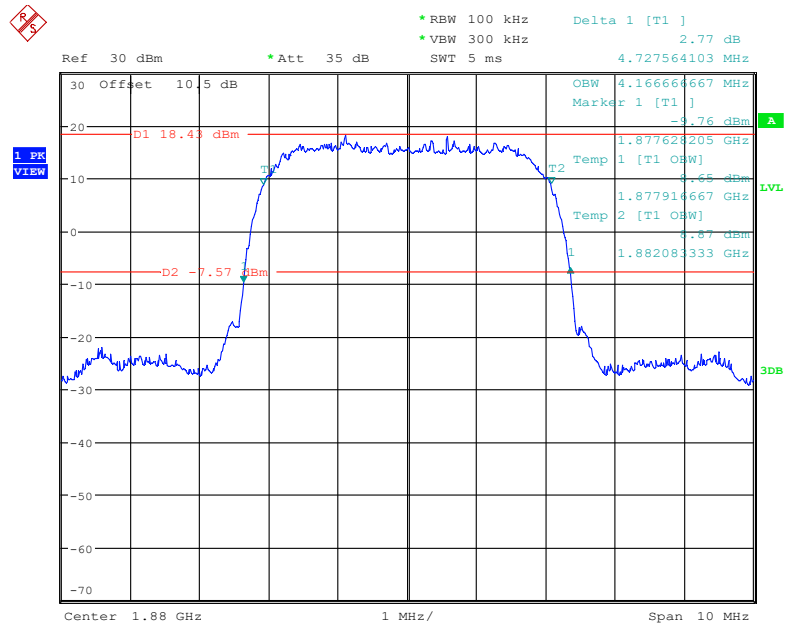
Date: 22.SEP.2022 00:01:43



Date: 22.SEP.2022 00:01:04

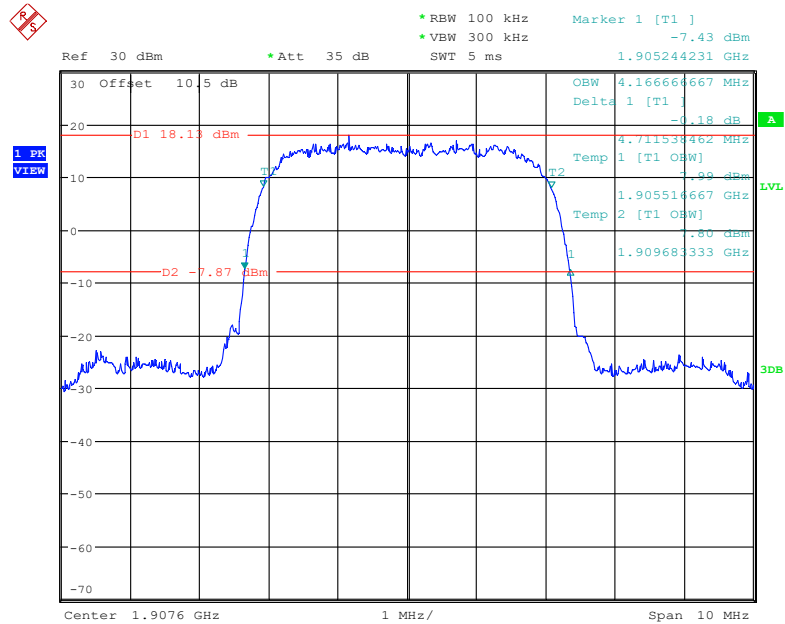
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**

Date: 22.SEP.2022 08:58:36

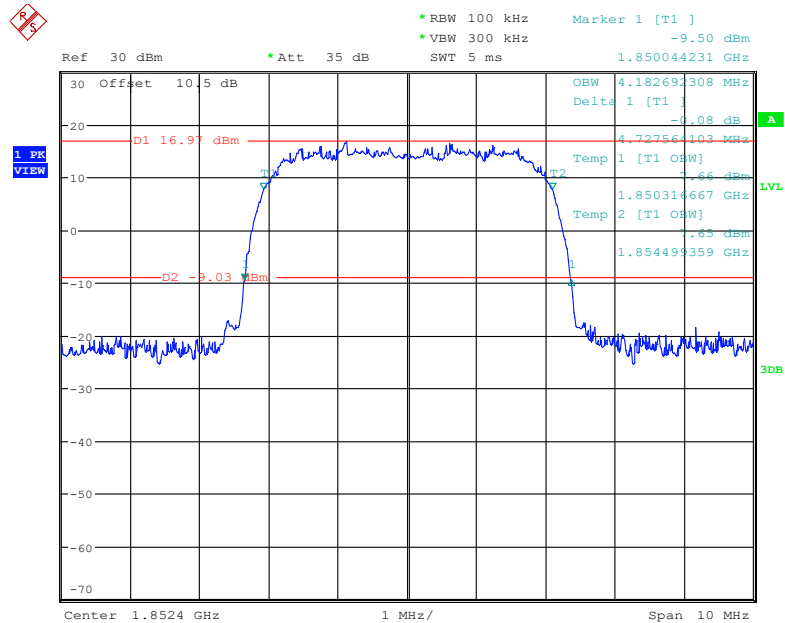
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**

Date: 22.SEP.2022 08:57:44

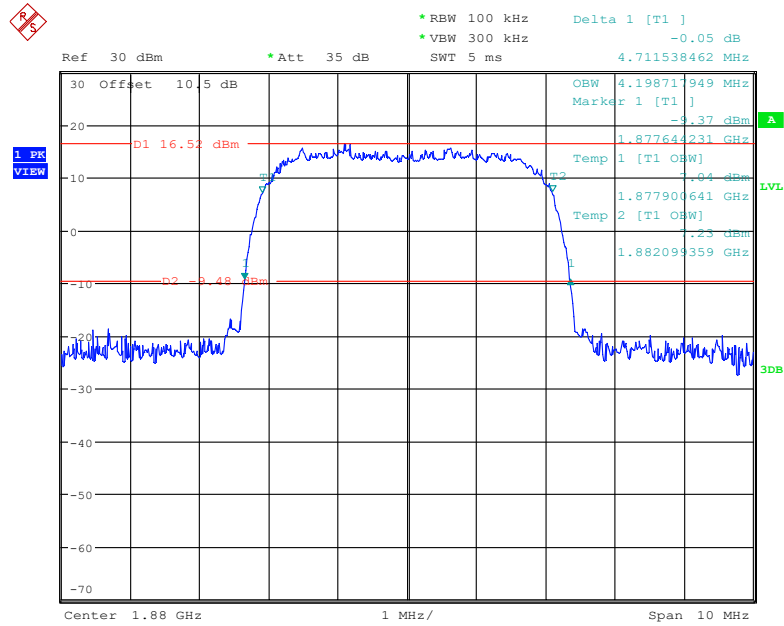


**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**

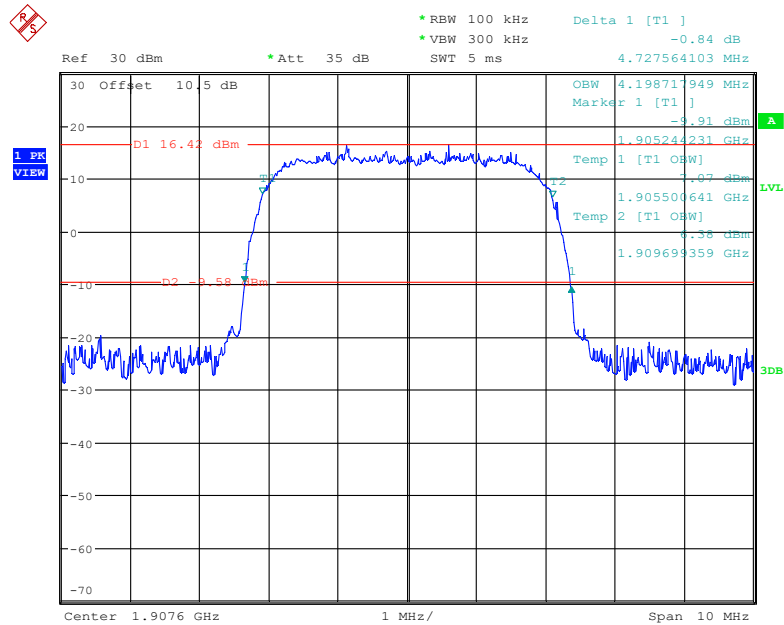
Date: 22.SEP.2022 08:59:54

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, Low channel**

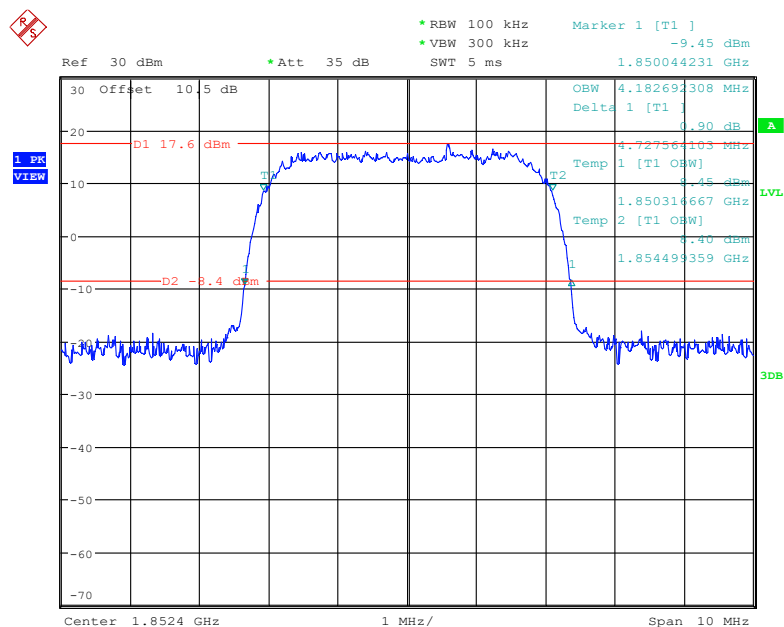
Date: 22.SEP.2022 09:31:36

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, Middle channel**

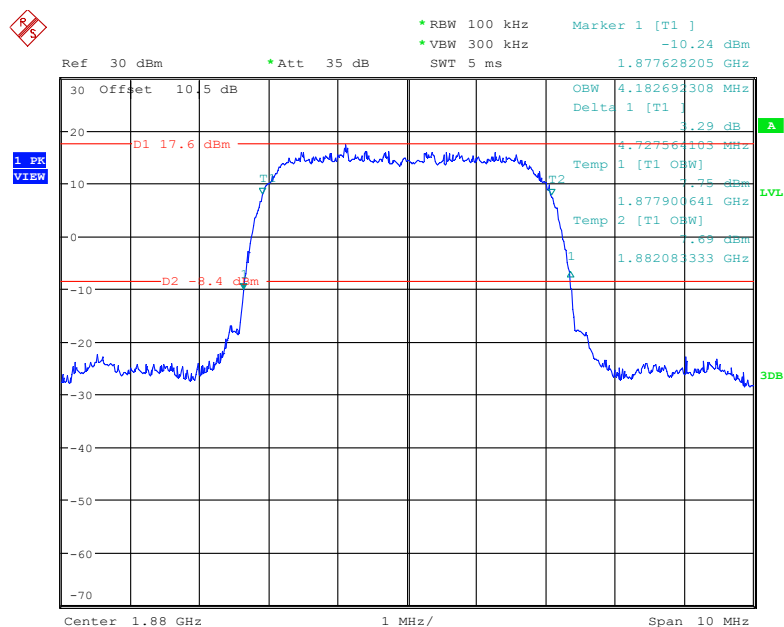
Date: 22.SEP.2022 09:29:39

**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (QPSK) Mode, High channel**

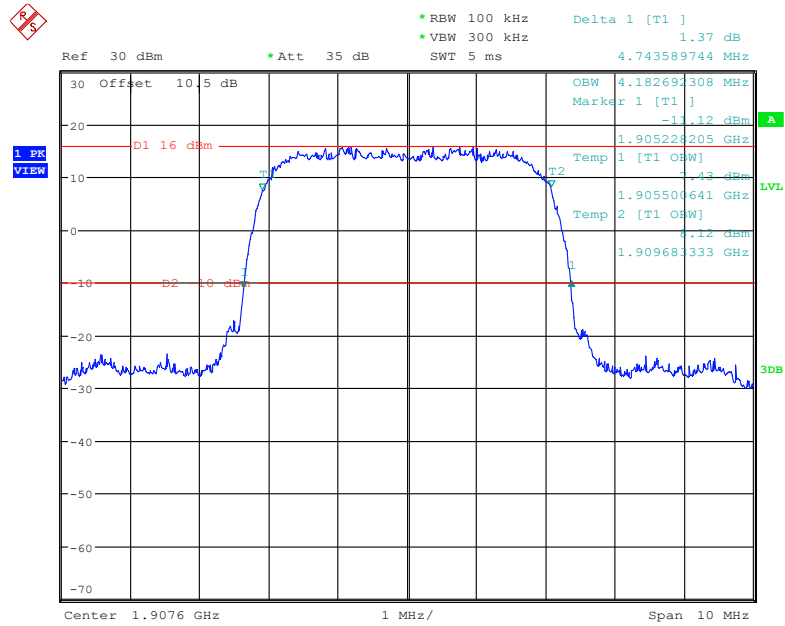
Date: 22.SEP.2022 09:28:30

**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**

Date: 22.SEP.2022 09:17:50

**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**

Date: 22.SEP.2022 09:19:22

**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**

Date: 22.SEP.2022 09:20:38

**LTE Band 2:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.314	1.110	1.332	1.104	1.296
	16QAM	1.104	1.338	1.098	1.302	1.104	1.284
3 MHz	QPSK	2.676	2.868	2.676	2.892	2.688	2.892
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.500	4.940	4.520	4.940	4.520	4.960
	16QAM	4.500	4.980	4.500	4.920	4.520	4.960
10 MHz	QPSK	8.960	9.560	8.960	9.600	8.960	9.640
	16QAM	9.000	9.680	8.960	9.680	8.960	9.560
15 MHz	QPSK	13.500	14.880	13.500	15.600	13.560	14.880
	16QAM	13.560	14.880	13.560	14.820	13.500	14.820
20 MHz	QPSK	18.000	19.440	18.000	19.360	18.000	19.360
	16QAM	17.920	19.360	18.000	19.360	17.920	19.440

**LTE Band 5:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.290	1.098	1.302	1.110	1.32
	16QAM	1.098	1.302	1.104	1.308	1.098	1.290
3 MHz	QPSK	2.688	2.892	2.688	2.880	2.688	2.880
	16QAM	2.688	2.880	2.676	2.892	2.688	2.892
5 MHz	QPSK	4.500	4.940	4.520	4.980	4.520	4.920
	16QAM	4.500	4.980	4.500	4.900	4.500	4.900
10 MHz	QPSK	8.960	9.680	9.000	9.560	8.920	9.440
	16QAM	8.960	9.640	8.960	9.480	8.920	9.440

**LTE Band 12:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.098	1.314	1.104	1.296	1.104	1.314
	16QAM	1.092	1.296	1.104	1.296	1.110	1.320
3 MHz	QPSK	2.688	2.892	2.688	2.880	2.688	2.880
	16QAM	2.676	2.868	2.688	2.892	2.688	2.880
5 MHz	QPSK	4.500	5.080	4.540	5.240	4.520	5.200
	16QAM	4.520	5.180	4.540	5.160	4.540	5.200
10 MHz	QPSK	8.960	9.800	8.960	9.920	9.000	9.920
	16QAM	8.960	9.720	9.000	9.920	8.960	9.920

**LTE Band 13:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.540	5.120	4.540	5.160	4.540	5.160
	16QAM	4.540	5.160	4.540	5.240	4.540	5.220
10 MHz	QPSK	/	/	9.000	9.840	/	/
	16QAM	/	/	9.000	9.840	/	/

**LTE Band 41**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.520	4.960	4.520	4.980	4.520	5.160
	16QAM	4.500	5.140	4.500	4.960	4.500	5.080
10 MHz	QPSK	8.960	9.600	8.960	9.800	8.960	9.760
	16QAM	9.000	9.480	8.960	10.040	8.960	9.520
15 MHz	QPSK	13.560	15.780	13.500	15.480	13.620	15.780
	16QAM	13.560	17.460	13.620	17.100	13.560	16.320
20 MHz	QPSK	18.000	19.760	18.000	20.240	18.000	19.840
	16QAM	18.000	20.400	18.000	19.280	18.000	20.000

The test plots of LTE band please refer to the Appendix A.

## FCC §2.1051, §22.917(a) & §24.238(a)& §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

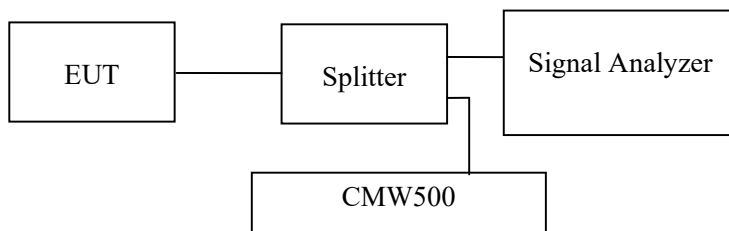
### Applicable Standard

FCC §2.1051, §22.917(a) & §24.238(a)&§27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

### Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.



Note: the worst path loss (cable loss and splitter inset loss) among the test frequency range was added into plots.

### Test Data

#### Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

*The testing was performed by Cat Kang from 2022-09-20 to 2022-09-22.*

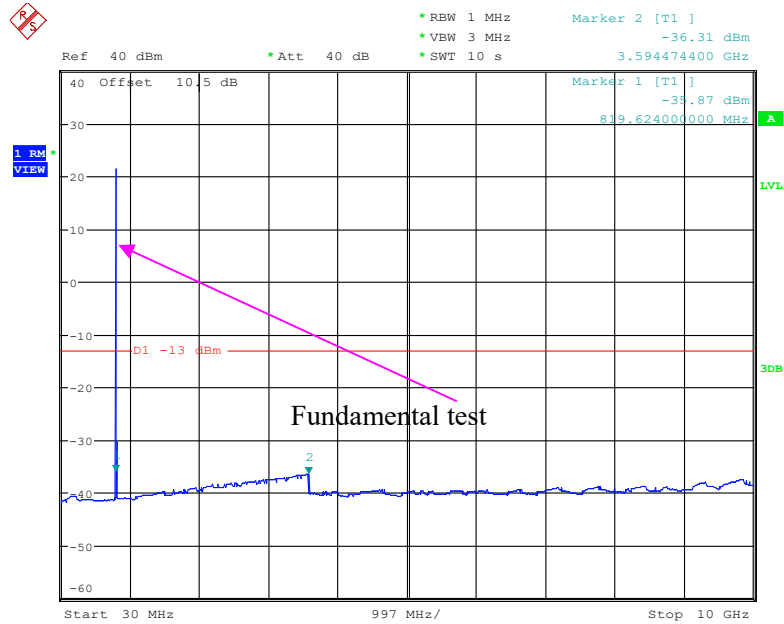
*EUT operation mode: Transmitting*

**Test result: Pass**

*Please refer to the following plots.*

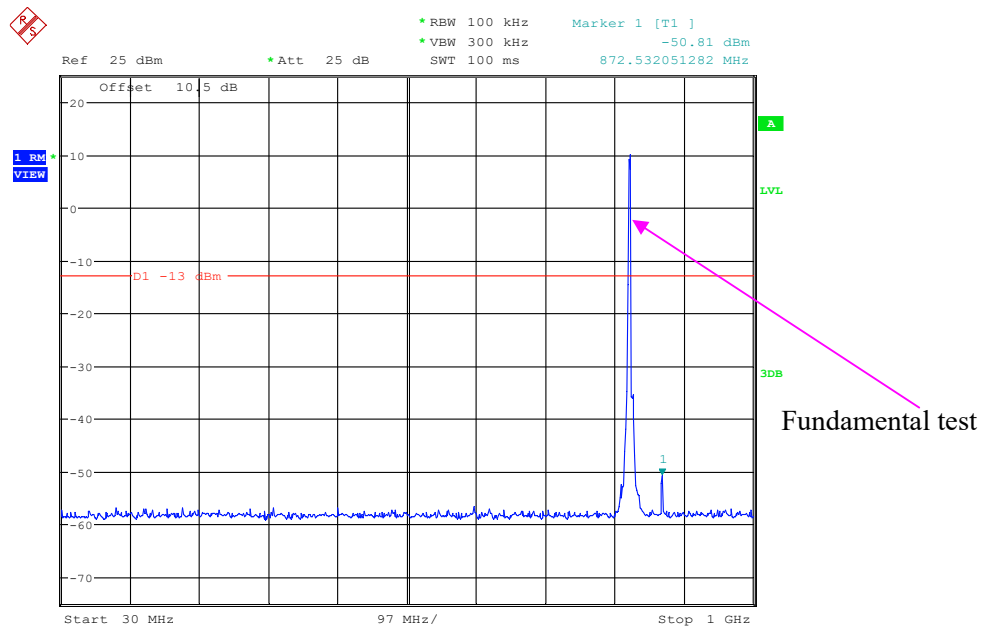
### Cellular Band Low Channel:

### 30 MHz – 10 GHz (GSM Mode)



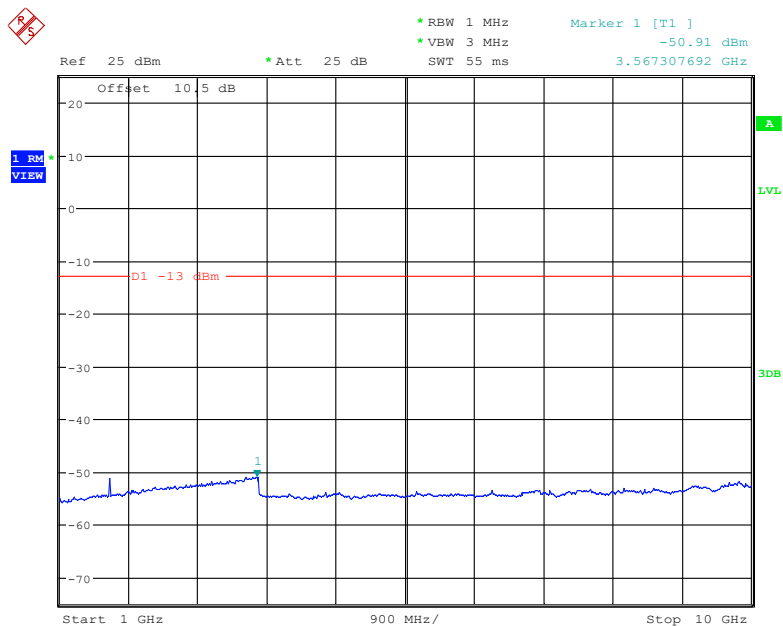
Date: 22.SEP.2022 00:20:12

### 30 MHz – 1 GHz (WCDMA Mode)

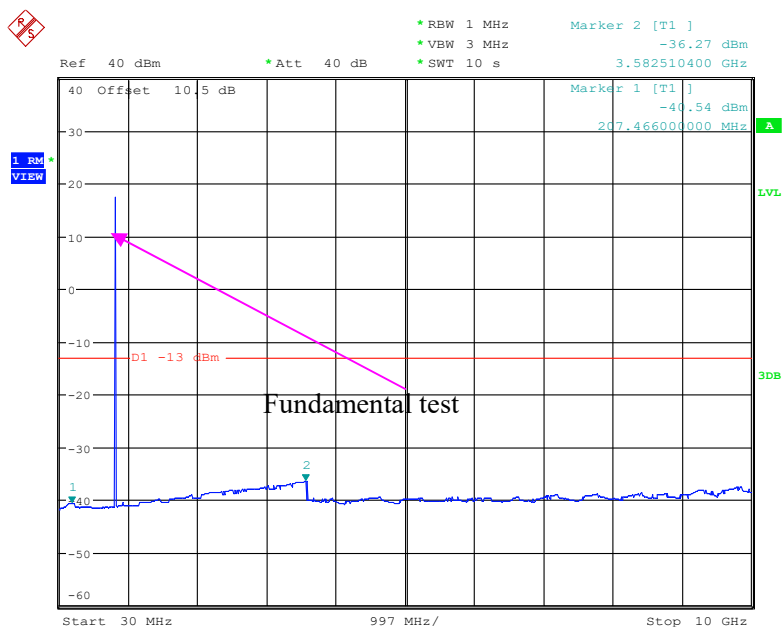


Date: 22.SEP.2022 09:46:57

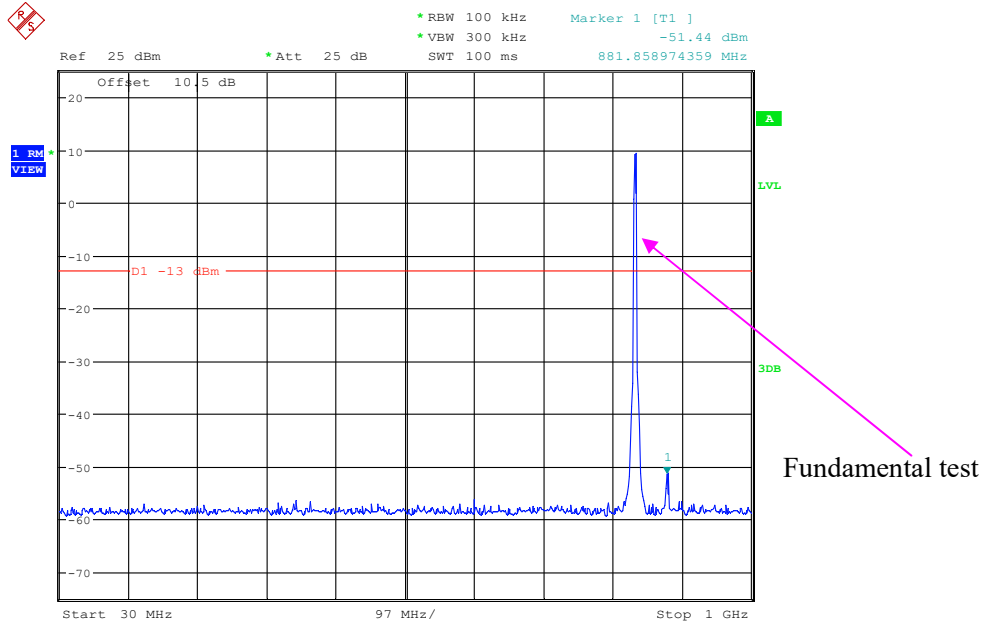


**1 GHz – 10 GHz (WCDMA Mode)**

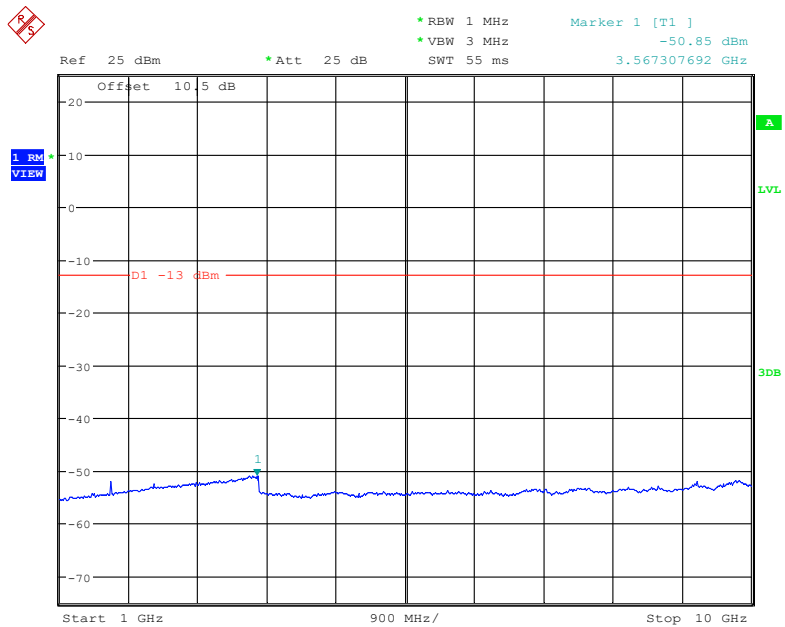
Date: 22.SEP.2022 09:52:04

**Middle Channel:****30 MHz – 10 GHz (GSM Mode)**

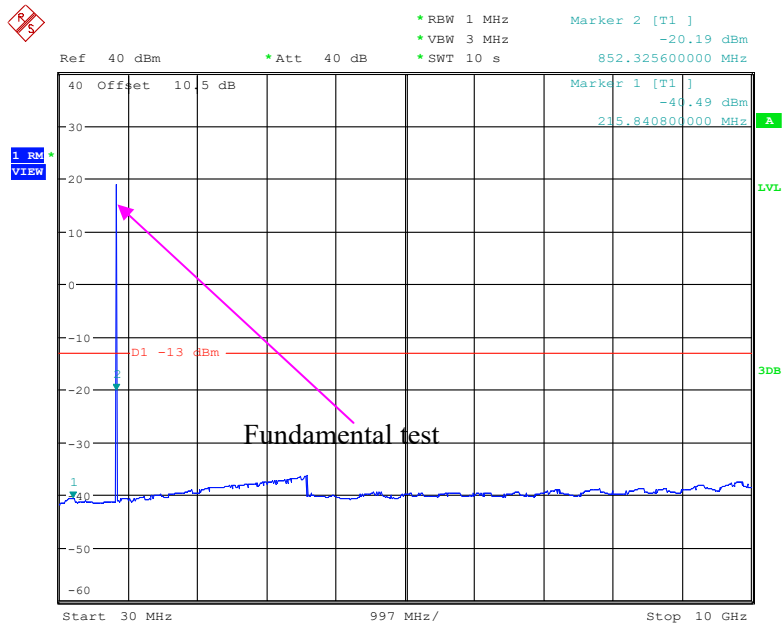
Date: 22.SEP.2022 00:26:14

**30 MHz – 1 GHz (WCDMA Mode)**

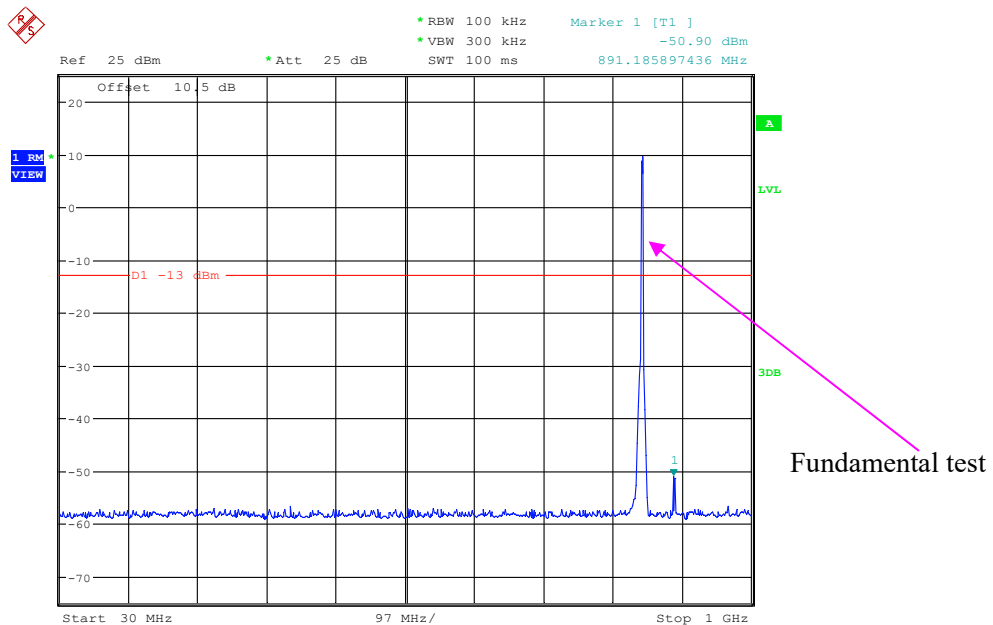
Date: 22.SEP.2022 09:48:11

**1 GHz – 10 GHz (WCDMA Mode)**

Date: 22.SEP.2022 09:51:45

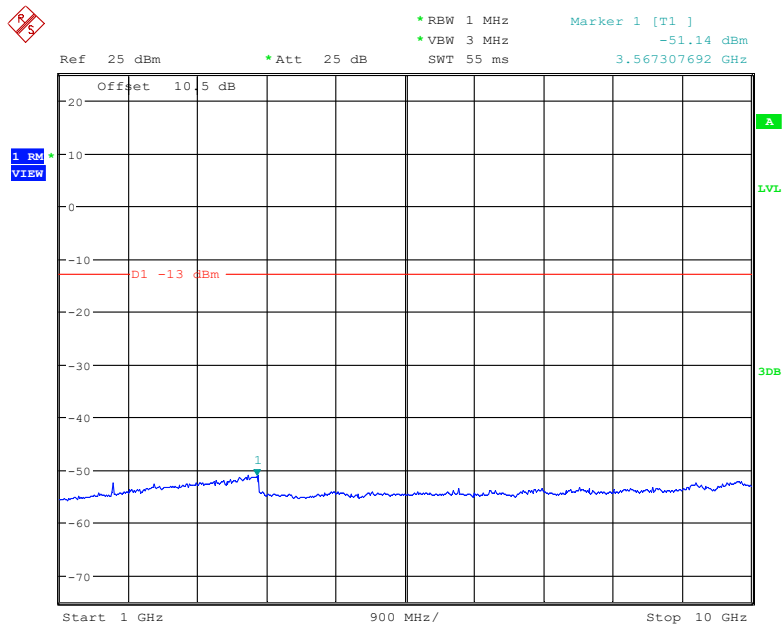
**High Channel:****30 MHz – 10 GHz (GSM Mode)**

Date: 22.SEP.2022 00:31:54

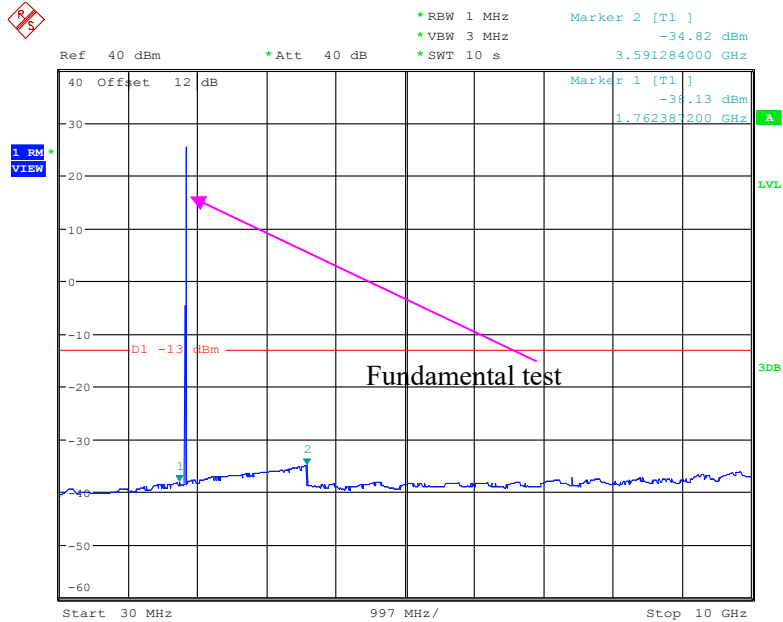
**30 MHz – 1 GHz (WCDMA Mode)**

Date: 22.SEP.2022 09:48:31

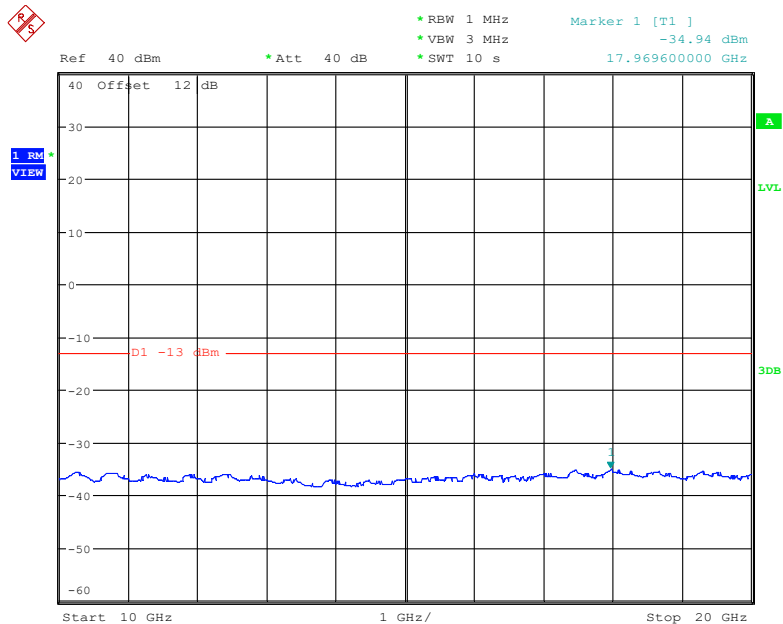
1 GHz – 10 GHz (WCDMA Mode)



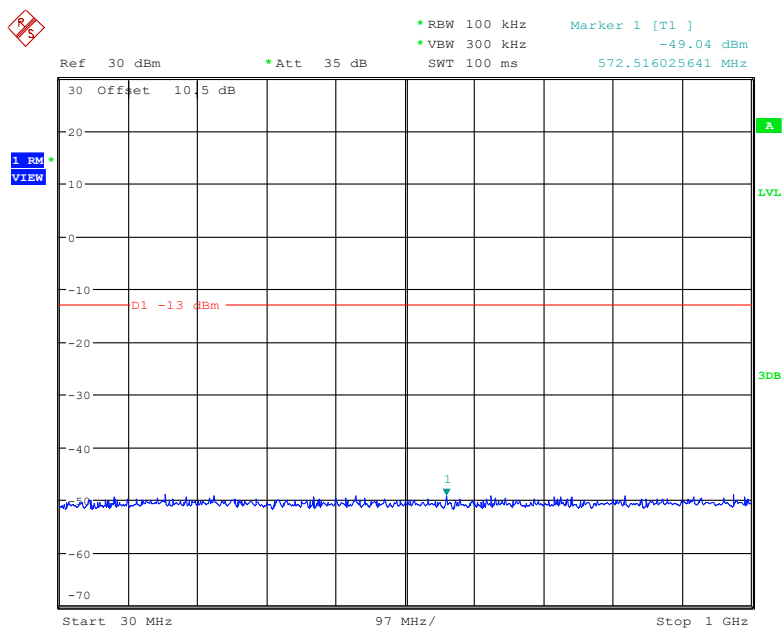
Date: 22.SEP.2022 09:51:17

**PCS Band  
Low Channel:****30 MHz – 10 GHz (GSM Mode)**

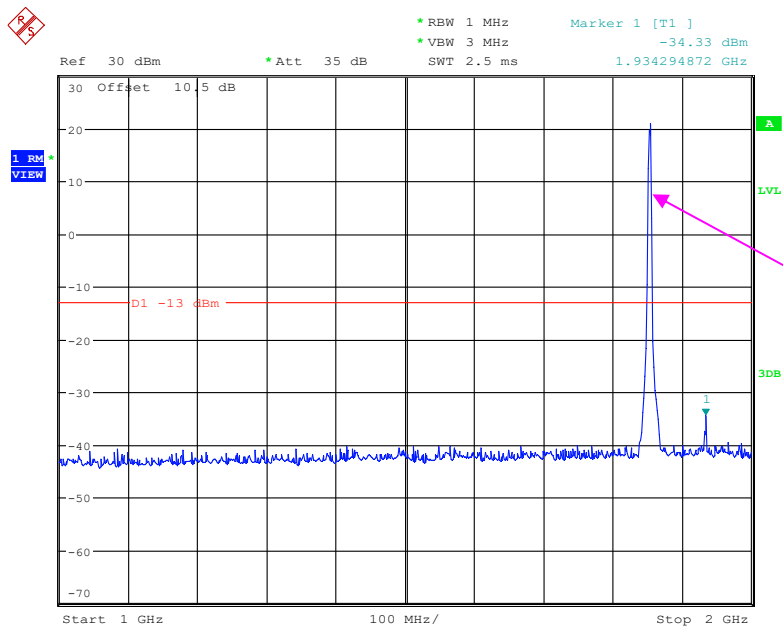
Date: 21.SEP.2022 23:00:28

**10 GHz – 20 GHz (GSM Mode)**

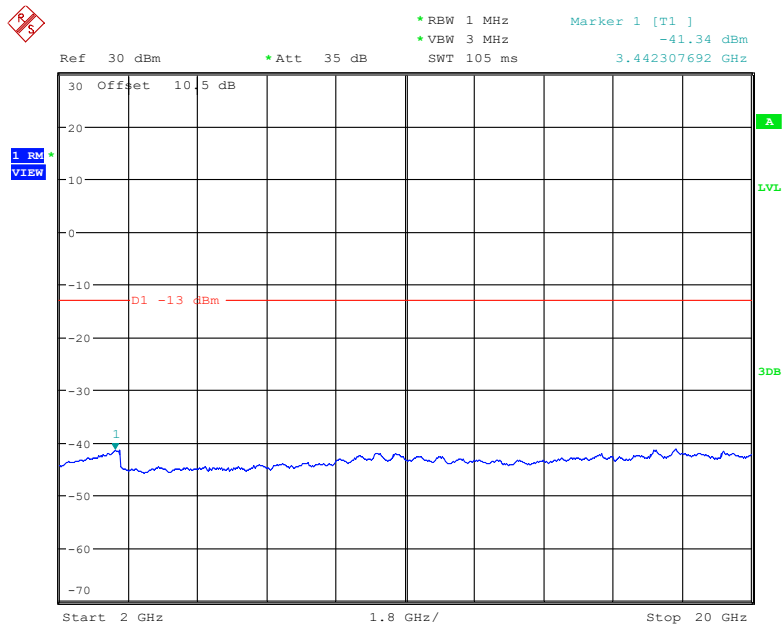
Date: 21.SEP.2022 23:01:39

**30MHz – 1 GHz (WCDMA Mode)**

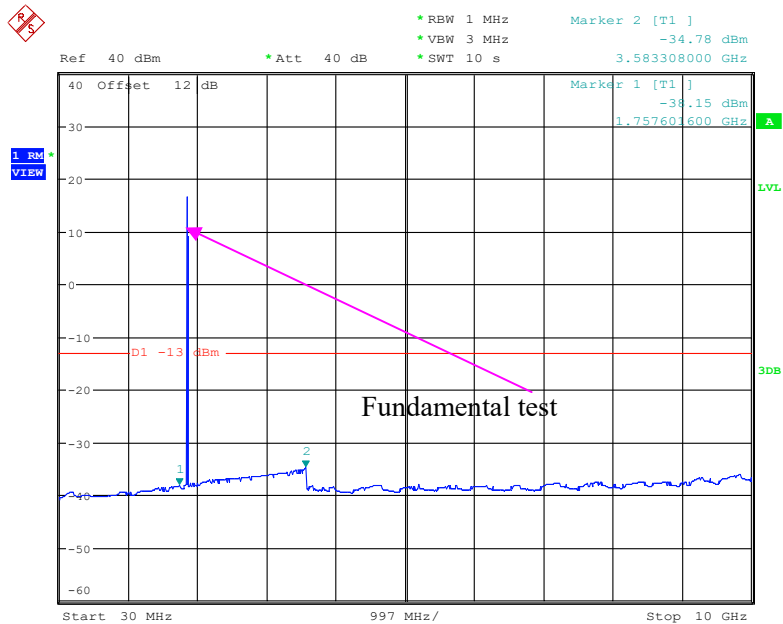
Date: 22.SEP.2022 10:16:42

**1 GHz – 2 GHz (WCDMA Mode)**

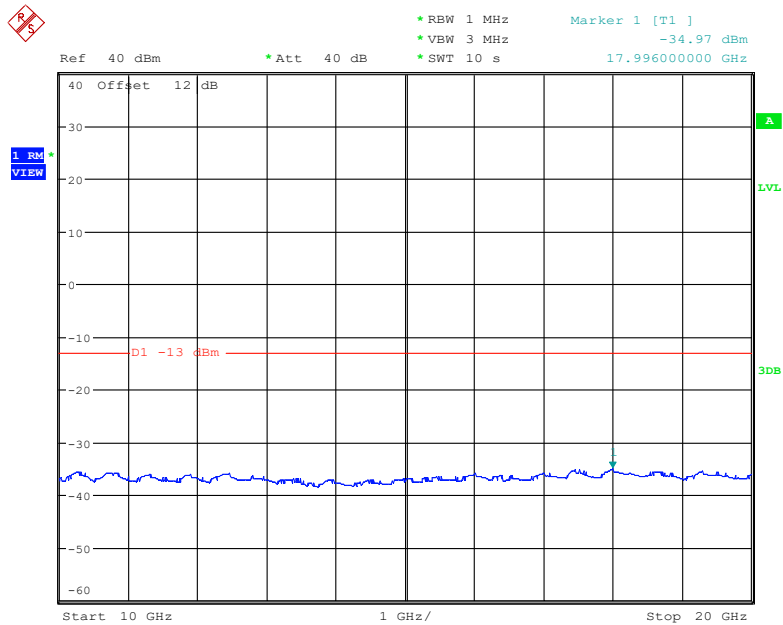
Date: 22.SEP.2022 10:19:40

**2 GHz – 20 GHz (WCDMA Mode)**

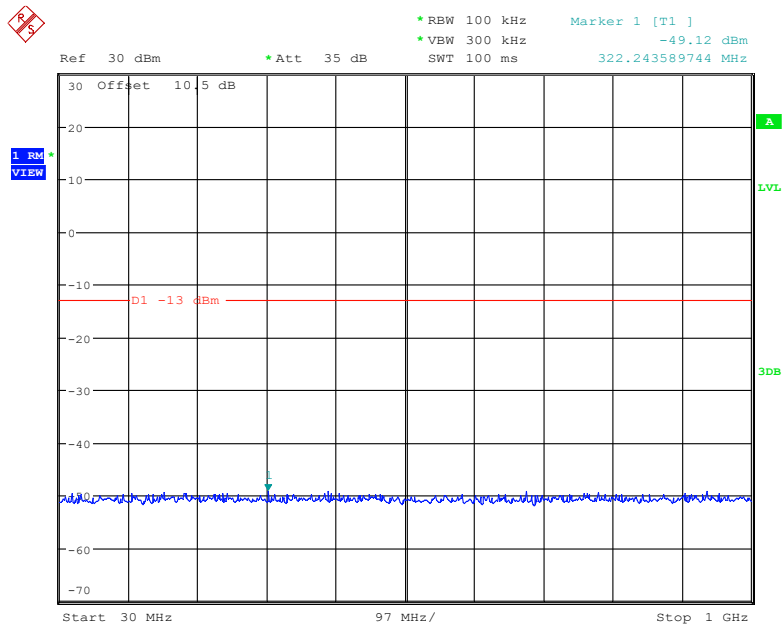
Date: 22.SEP.2022 10:20:23

**Middle Channel:****30 MHz – 10 GHz (GSM Mode)**

Date: 21.SEP.2022 23:08:26

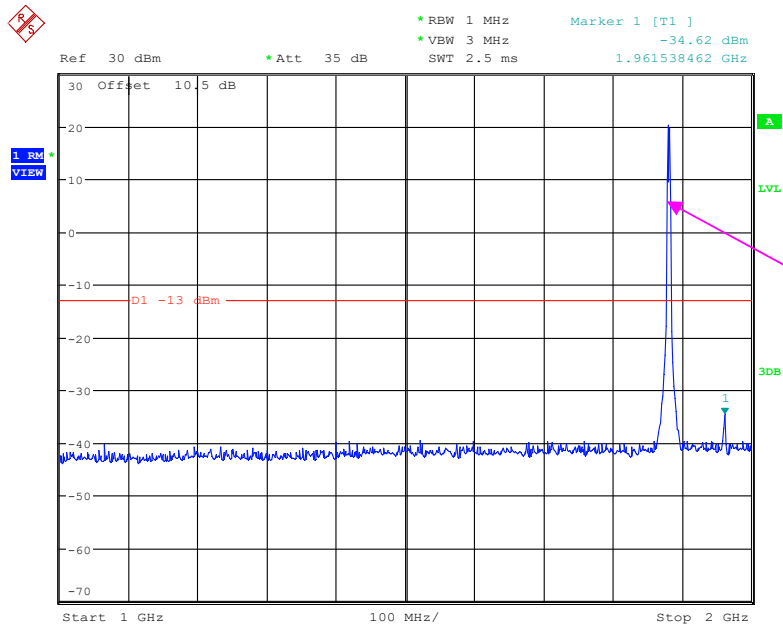
**10 GHz – 20 GHz (GSM Mode)**

Date: 21.SEP.2022 23:09:38

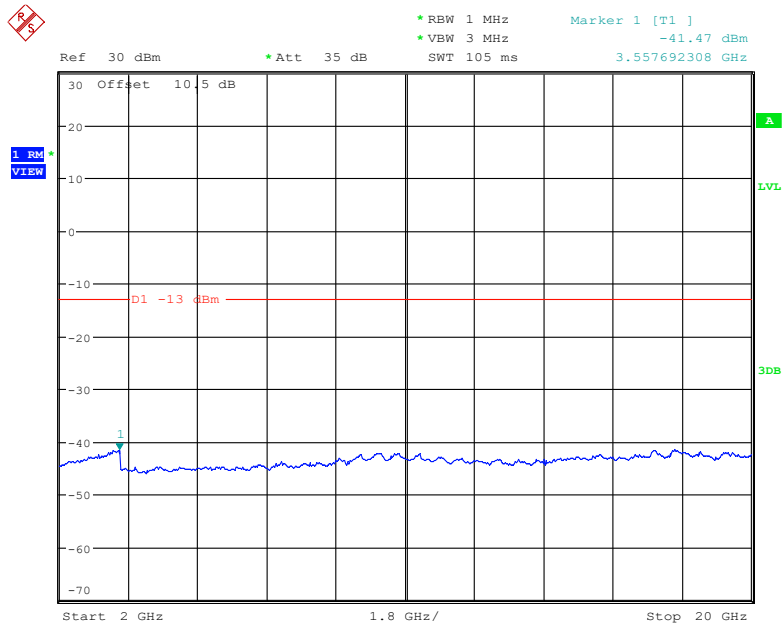
**30 MHz – 1 GHz (WCDMA Mode)**

Date: 22.SEP.2022 10:17:14

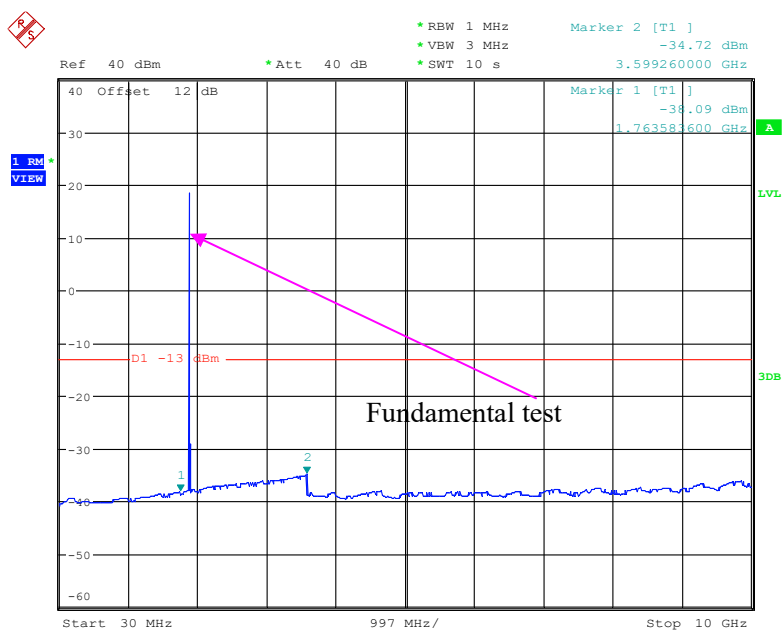


**1 GHz – 2 GHz (WCDMA Mode)**

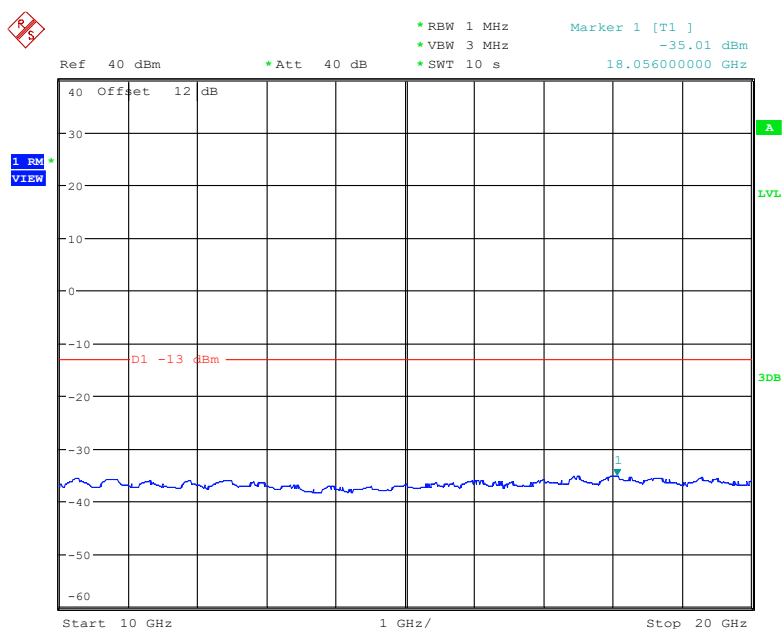
Date: 22.SEP.2022 10:18:40

**2 GHz – 20 GHz (WCDMA Mode)**

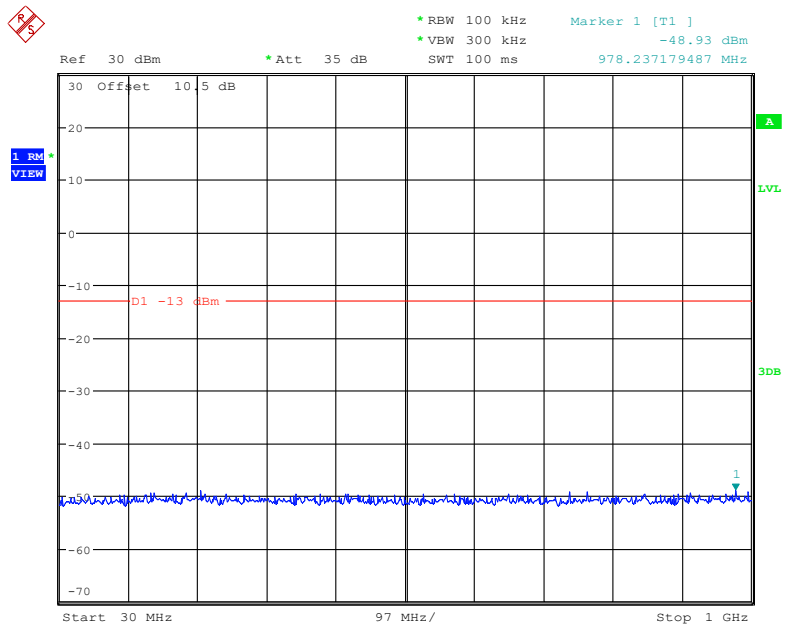
Date: 22.SEP.2022 10:20:41

**High Channel:****30 MHz – 10 GHz (GSM Mode)**

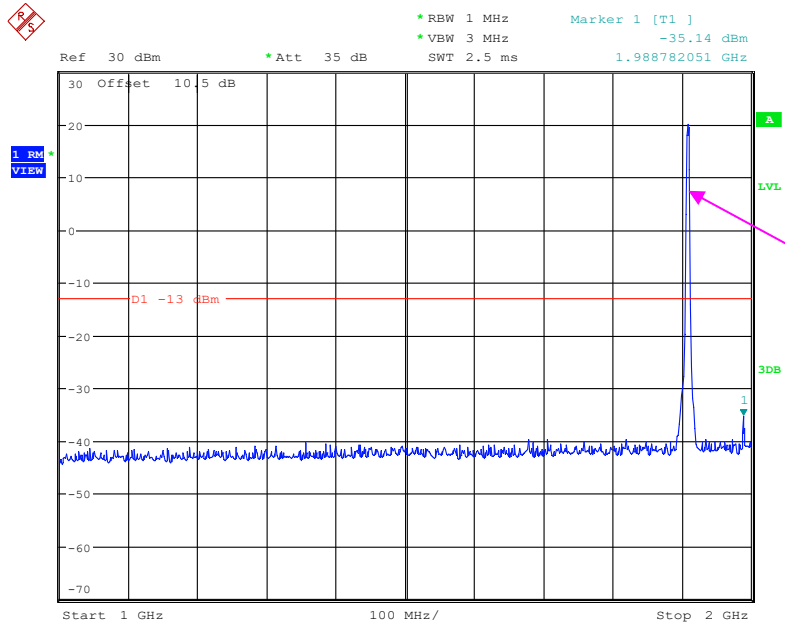
Date: 21.SEP.2022 23:16:50

**10 GHz – 20 GHz (GSM Mode)**

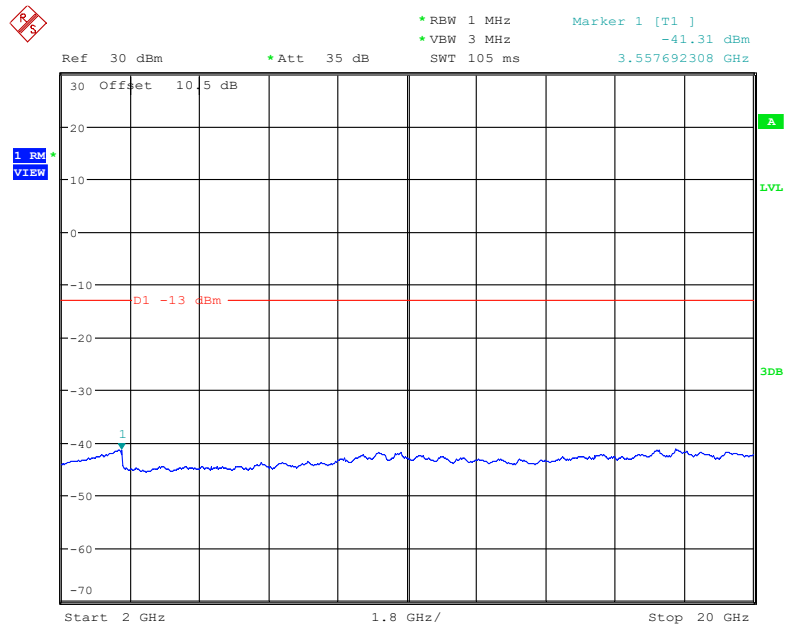
Date: 21.SEP.2022 23:18:01

**30 MHz – 1 GHz (WCDMA Mode)**

Date: 22.SEP.2022 10:17:29

**1 GHz – 2 GHz (WCDMA Mode)**

Date: 22.SEP.2022 10:18:04

**2 GHz – 20 GHz (WCDMA Mode)**

Date: 22.SEP.2022 10:21:38

The test plots of LTE band please refer to the Appendix B.

**FCC § 2.1053; § 22.917 (a); § 24.238 (a); § 27.53 - SPURIOUS RADIATED EMISSIONS****Applicable Standard**

FCC § 2.1053, § 22.917(a) & § 24.238(a) & § 27.53.

**Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

**Test Data****Environmental Conditions**

<b>Temperature:</b>	26.8 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Level Li on 2022-09-14.*

*EUT operation mode: Transmitting (Scan with X-AXIS, Y-AXIS, Z-AXIS, the worst case Y-AXIS was recorded)*

*The worst case is as below:*

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Test frequency range: 30MHz-10GHz								
GSM850, 824.2MHz								
949.7	-72.8	71	1.5	H	10	-62.8	-13	49.8
949.7	-76.5	251	1.2	V	11.7	-64.8	-13	51.8
1648.4	-54.3	115	2.1	H	3.5	-50.8	-13	37.8
1648.4	-55.2	12	1.1	V	3.1	-52.1	-13	39.1
2472.6	-41.5	103	1.2	H	6.6	-34.9	-13	21.9
2472.6	-41.8	54	1.2	V	5.8	-36	-13	23
3296.8	-51.7	91	1.3	H	6.4	-45.3	-13	32.3
3296.8	-50.7	209	1.7	V	5.7	-45	-13	32
GSM850, 836.6MHz								
956.6	-72.8	233	1.3	H	10	-62.8	-13	49.8
956.6	-75	90	1.6	V	11.7	-63.3	-13	50.3
1673.2	-50.4	13	1.3	H	3.8	-46.6	-13	33.6
1673.2	-51.4	251	1	V	3.1	-48.3	-13	35.3
2509.8	-37.8	136	2.1	H	6.2	-31.6	-13	18.6
2509.8	-34.2	261	1.8	V	5.6	-28.6	-13	15.6
3346.4	-51.6	200	1.1	H	6.6	-45	-13	32
3346.4	-50.2	89	1.4	V	5.4	-44.8	-13	31.8
GSM850, 848.8MHz								
951.7	-73.2	259	1.5	H	10	-63.2	-13	50.2
951.7	-75.5	5	2.2	V	11.7	-63.8	-13	50.8
1697.6	-51.2	358	2.2	H	4.1	-47.1	-13	34.1
1697.6	-50.9	189	1.9	V	3.1	-47.8	-13	34.8
2546.4	-40	264	1.3	H	6.1	-33.9	-13	20.9
2546.4	-37.9	315	1.5	V	5.8	-32.1	-13	19.1
3395.2	-51.3	261	1.4	H	6.2	-45.1	-13	32.1
3395.2	-49.9	313	1.8	V	5.4	-44.5	-13	31.5

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Test frequency range: 30MHz-20GHz								
GSM1900, 1850.2MHz								
953.4	-73.4	12	1.9	H	10	-63.4	-13	50.4
953.4	-75.3	168	1.9	V	11.7	-63.6	-13	50.6
3700.4	-52.6	324	1.5	H	8.1	-44.5	-13	31.5
3700.4	-49.9	146	1.7	V	7.6	-42.3	-13	29.3
5550.6	-53.1	85	1.8	H	9.6	-43.5	-13	30.5
5550.6	-52	353	1.3	V	9.1	-42.9	-13	29.9
GSM1900, 1880MHz								
957.5	-72.2	199	1.4	H	10	-62.2	-13	49.2
957.5	-75.9	186	1.3	V	11.7	-64.2	-13	51.2
3760	-54.2	79	2	H	8.8	-45.4	-13	32.4
3760	-51.2	219	2	V	8	-43.2	-13	30.2
5640	-55	199	1.4	H	10.2	-44.8	-13	31.8
5640	-53.5	324	1.6	V	9.4	-44.1	-13	31.1
GSM1900, 1909.8MHz								
953.3	-74.5	145	1.8	H	10	-64.5	-13	51.5
953.3	-73.8	199	2	V	11.7	-62.1	-13	49.1
3819.6	-53.6	61	1.7	H	8.7	-44.9	-13	31.9
3819.6	-49.6	70	1.1	V	8	-41.6	-13	28.6
5729.4	-55.5	24	1.4	H	10.6	-44.9	-13	31.9
5729.4	-54.1	198	1.7	V	10.2	-43.9	-13	30.9

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Test frequency range: 30MHz-20GHz								
WCDMA Band 2,1852.4MHz								
952.9	-73	227	1.5	H	10	-63	-13	50
952.9	-74.7	298	1	V	11.7	-63	-13	50
3704.8	-54.9	292	1.6	H	8.2	-46.7	-13	33.7
3704.8	-53.3	283	1.1	V	7.6	-45.7	-13	32.7
5557.2	-53	49	1.3	H	9.7	-43.3	-13	30.3
5557.2	-52.5	203	2	V	9.1	-43.4	-13	30.4
WCDMA Band2,1880MHz								
948.7	-74	59	1.5	H	10	-64	-13	51
948.7	-74.8	151	1.9	V	11.7	-63.1	-13	50.1
3760	-56.2	296	1.6	H	8.8	-47.4	-13	34.4
3760	-54.4	267	1.3	V	8	-46.4	-13	33.4
5640	-54.8	259	2.1	H	10.2	-44.6	-13	31.6
5640	-53.8	270	1.3	V	9.4	-44.4	-13	31.4
WCDMA Band2,1907.6MHz								
953.2	-72.6	193	1.6	H	10	-62.6	-13	49.6
953.2	-76.8	251	1.4	V	11.7	-65.1	-13	52.1
3815.2	-56.3	82	1.2	H	8.7	-47.6	-13	34.6
3815.2	-54.6	105	1.7	V	7.9	-46.7	-13	33.7
5722.8	-55.7	243	1.1	H	10.6	-45.1	-13	32.1
5722.8	-54.8	281	1.7	V	10.1	-44.7	-13	31.7



Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Test frequency range: 30MHz-10GHz								
WCDMA Band 5,826.4MHz								
948.4	-73.2	88	2	H	10	-63.2	-13	50.2
948.4	-73.9	268	1.7	V	11.7	-62.2	-13	49.2
1652.8	-55.1	172	1.8	H	3.5	-51.6	-13	38.6
1652.8	-51.8	209	1.4	V	3.1	-48.7	-13	35.7
2479.2	-37.3	64	1.1	H	6.5	-30.8	-13	17.8
2479.2	-37.2	253	2.1	V	5.7	-31.5	-13	18.5
3305.6	-51.8	187	1.3	H	6.4	-45.4	-13	32.4
3305.6	-51	291	2.2	V	5.7	-45.3	-13	32.3
WCDMA Band5,836.6MHz								
948.1	-72.7	110	1.3	H	10	-62.7	-13	49.7
948.1	-74.8	54	1.5	V	11.7	-63.1	-13	50.1
1673.2	-55.1	164	1.5	H	3.8	-51.3	-13	38.3
1673.2	-51.6	153	1.8	V	3.1	-48.5	-13	35.5
2509.8	-55.1	223	1.8	H	6.2	-48.9	-13	35.9
2509.8	-51.1	70	2.1	V	5.7	-45.4	-13	32.4
3346.4	-51.6	250	1.4	H	6.6	-45	-13	32
3346.4	-50.5	114	1.8	V	5.4	-45.1	-13	32.1
WCDMA Band5,846.6MHz								
954.3	-72	28	2.1	H	10	-62	-13	49
954.3	-75.6	229	1.7	V	11.7	-63.9	-13	50.9
1693.2	-58	185	1.5	H	4	-54	-13	41
1693.2	-56.2	306	1.8	V	3.1	-53.1	-13	40.1
2509.8	-56.3	126	2.1	H	6.1	-50.2	-13	37.2
2509.8	-52.4	281	1.6	V	5.7	-46.7	-13	33.7
3386.4	-52	174	1.4	H	6.3	-45.7	-13	32.7
3386.4	-50.8	81	1.1	V	5.4	-45.4	-13	32.4

**LTE Bands:** (pre-scan all bandwidth/modulation, the worst case as below)

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 2, Test frequency range: 30MHz-20GHz								
QPSK,1.4MHz,1850.7MHz								
957.3	-73.5	110	1.8	H	10	-63.5	-13	50.5
957.3	-74.5	149	1.9	V	11.7	-62.8	-13	49.8
3701.4	-54.4	134	1.8	H	8.1	-46.3	-13	33.3
3701.4	-54	343	1.5	V	7.6	-46.4	-13	33.4
5552.1	-52.3	222	1.8	H	9.6	-42.7	-13	29.7
5552.1	-52.6	41	1.5	V	9.1	-43.5	-13	30.5
QPSK,1.4MHz,1880MHz								
949.6	-73.3	85	1.2	H	10	-63.3	-13	50.3
949.6	-75.6	124	1.3	V	11.7	-63.9	-13	50.9
3760	-55.8	58	2	H	8.8	-47	-13	34
3760	-54.7	311	2.2	V	8	-46.7	-13	33.7
5640	-52.3	74	1.9	H	10.2	-42.1	-13	29.1
5640	-53	277	1.5	V	9.4	-43.6	-13	30.6
QPSK,1.4MHz,1909.3MHz								
952.1	-74	30	1.1	H	10	-64	-13	51
952.1	-75	229	1.7	V	11.7	-63.3	-13	50.3
3818.6	-55.6	245	1.1	H	8.7	-46.9	-13	33.9
3818.6	-54.6	84	1.2	V	8	-46.6	-13	33.6
5727.9	-52.4	72	2	H	10.6	-41.8	-13	28.8
5727.9	-53.6	70	2.1	V	10.2	-43.4	-13	30.4

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 5, Test frequency range: 30MHz-10GHz								
QPSK,1.4MHz,824.7MHz								
955.3	-73.3	20	2.1	H	10	-63.3	-13	50.3
955.3	-74.8	130	1.8	V	11.7	-63.1	-13	50.1
1649.4	-58.4	279	2	H	3.2	-55.2	-13	42.2
1649.4	-58.3	5	1.4	V	3.1	-55.2	-13	42.2
2474.1	-40	183	1.5	H	6.6	-33.4	-13	20.4
2474.1	-36.1	67	2.2	V	5.8	-30.3	-13	17.3
3298.8	-51.5	100	1.1	H	6.4	-45.1	-13	32.1
3298.8	-50.6	58	1.4	V	5.7	-44.9	-13	31.9
QPSK,1.4MHz,836.5Hz								
954	-74.4	149	2.2	H	10	-64.4	-13	51.4
954	-76	127	1.2	V	11.7	-64.3	-13	51.3
1673.0	-52.7	280	1.5	H	3.8	-48.9	-13	35.9
1673.0	-50.2	135	1.2	V	3.1	-47.1	-13	34.1
2509.5	-46.2	67	1.5	H	6.2	-40	-13	27
2509.5	-42.3	352	1.6	V	5.6	-36.7	-13	23.7
3346.0	-52	102	2.1	H	6.6	-45.4	-13	32.4
3346.0	-50.2	34	2.1	V	5.4	-44.8	-13	31.8
QPSK,1.4MHz,848.3Hz								
955.4	-74	212	1.4	H	10	-64	-13	51
955.4	-76.6	312	1.4	V	11.7	-64.9	-13	51.9
1696.6	-57.3	166	1.7	H	4.1	-53.2	-13	40.2
1696.6	-55.5	22	2.1	V	3.1	-52.4	-13	39.4
2544.9	-43.6	90	2	H	6.1	-37.5	-13	24.5
2544.9	-41.1	20	1.8	V	5.8	-35.3	-13	22.3
3393.2	-51.6	294	1.5	H	6.3	-45.3	-13	32.3
3393.2	-50.3	282	1.8	V	5.4	-44.9	-13	31.9

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 12, Test frequency range: 30MHz-10GHz								
QPSK, 1.4MHz, 699.7MHz								
951.5	-72.1	112	1.2	H	10	-62.1	-13	49.1
951.5	-75.1	11	1.8	V	11.7	-63.4	-13	50.4
1399.4	-61.9	233	1.8	H	5.9	-56	-13	43
1399.4	-62.5	15	1.4	V	5.9	-56.6	-13	43.6
2099.1	-50.1	160	1.3	H	6.3	-43.8	-13	30.8
2099.1	-48	106	2.1	V	5.1	-42.9	-13	29.9
QPSK, 1.4MHz, 707.5MHz								
957.4	-72.3	73	1	H	10	-62.3	-13	49.3
957.4	-75.3	286	1.1	V	11.7	-63.6	-13	50.6
1415	-61.6	116	1.8	H	5.7	-55.9	-13	42.9
1415	-61.3	73	1.9	V	5.4	-55.9	-13	42.9
2122.5	-44.9	235	1.7	H	6.7	-38.2	-13	25.2
2122.5	-43.1	345	1.1	V	5.8	-37.3	-13	24.3
QPSK, 1.4MHz, 715.3MHz								
957.2	-73.1	287	1.8	H	10	-63.1	-13	50.1
957.2	-76.4	69	1.6	V	11.7	-64.7	-13	51.7
1430.6	-59.9	50	1.6	H	5.4	-54.5	-13	41.5
1430.6	-58.4	241	2.2	V	4.8	-53.6	-13	40.6
2145.9	-46.6	177	1.1	H	7	-39.6	-13	26.6
2145.9	-46.2	79	1.9	V	6.6	-39.6	-13	26.6

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 13, Test frequency range: 30MHz-10GHz								
QPSK, 5MHz, 779.5MHz								
952.5	-72.7	161	2	H	10	-62.7	-13	49.7
952.5	-76.3	106	1.4	V	11.7	-64.6	-13	51.6
1559	-57.6	256	1	H	4.2	-53.4	-40	13.4
1559	-56.8	114	1.8	V	3.3	-53.5	-40	13.5
2338.5	-46.3	360	1.2	H	7.3	-39	-13	26
2338.5	-42.6	275	1.6	V	6.5	-36.1	-13	23.1
3118	-53.8	44	1.6	H	7.3	-46.5	-13	33.5
3118	-52.4	163	2	V	6.5	-45.9	-13	32.9
QPSK, 5MHz, 782MHz								
956.1	-72.6	131	1.4	H	10	-62.6	-13	49.6
956.1	-74.1	298	1.6	V	11.7	-62.4	-13	49.4
1564	-58.5	279	1.3	H	4.2	-54.3	-40	14.3
1564	-58	268	1.4	V	3.3	-54.7	-40	14.7
2346	-45.8	38	1.7	H	7.3	-38.5	-13	25.5
2346	-41.5	226	1.7	V	6.4	-35.1	-13	22.1
3128	-53.4	136	2.1	H	7.3	-46.1	-13	33.1
3128	-52.9	355	2	V	6.6	-46.3	-13	33.3
QPSK, 5MHz, 784.5MHz								
952.9	-74.3	167	1.2	H	10	-64.3	-13	51.3
952.9	-76.5	271	1.8	V	11.7	-64.8	-13	51.8
1569	-58.4	127	1.6	H	4.2	-54.2	-40	14.2
1569	-57.9	249	1.6	V	3.3	-54.6	-40	14.6
2353.5	-49	250	1.5	H	7.3	-41.7	-13	28.7
2353.5	-45.3	91	1.3	V	6.4	-38.9	-13	25.9
3138	-53.5	218	2.1	H	7.4	-46.1	-13	33.1
3138	-51.9	193	1	V	6.6	-45.3	-13	32.3

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 41, Test frequency range: 30MHz-26.5GHz								
QPSK,5MHz,2537.5MHz								
952.9	-75.2	49	1.6	H	10	-65.2	-25	40.2
952.9	-74.6	92	2	V	11.7	-62.9	-25	37.9
5075	-55.2	304	1.1	H	11.2	-44	-25	19
5075	-54.2	48	1.6	V	10.8	-43.4	-25	18.4
7612.5	-65.4	122	1.8	H	21.2	-44.2	-25	19.2
7612.5	-64.4	46	1.4	V	20.2	-44.2	-25	19.2
QPSK, 5MHz,2595MHz								
951.5	-72.1	118	1.5	H	10	-62.1	-25	37.1
951.5	-75.2	339	1.9	V	11.7	-63.5	-25	38.5
5190	-54.82	281	1.1	H	10.52	-44.3	-25	19.3
5190	-53.6	118	1.2	V	10	-43.6	-25	18.6
7785	-61	121	1.1	H	18.3	-42.7	-25	17.7
7785	-60.9	118	1.2	V	18	-42.9	-25	17.9
QPSK, 5MHz,2652.5MHz								
954.6	-74.7	78	1.4	H	10	-64.7	-25	39.7
954.6	-76.5	195	1.4	V	11.7	-64.8	-25	39.8
5305	-51.8	158	1.6	H	9.6	-42.2	-25	17.2
5305	-50.7	79	1	V	8.8	-41.9	-25	16.9
7957.5	-62.8	248	1.1	H	18.9	-43.9	-25	18.9
7957.5	-63.5	168	1.4	V	18.5	-45	-25	20

**Note:**

Absolute Level = Reading Level + Substituted Factor

Substituted Factor contains: SG Level - Cable loss + Antenna Gain

Margin = Limit - Absolute Level

**FCC§ 22.917 (a);§ 24.238 (a); §27.53 (c)(h)(m) - BAND EDGES****Applicable Standard**

According to § 22.917(a), the power of any emissions 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.

According to §24.238(a), the power of any emissions 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.

According to FCC §27.53 (c), For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $76 + 10 \log(P)$  dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log(P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;

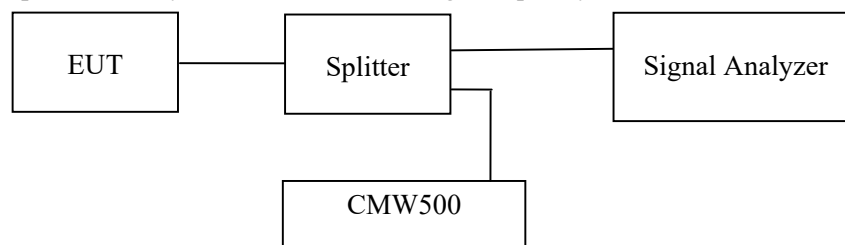
According to FCC §27.53 (h), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC §27.53 (m), For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log(P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  dB at or below 2490.5MHz.

**Test Procedure**

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



**Test Data****Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Cat Kang from 2022-09-20 to 2022-09-30.*

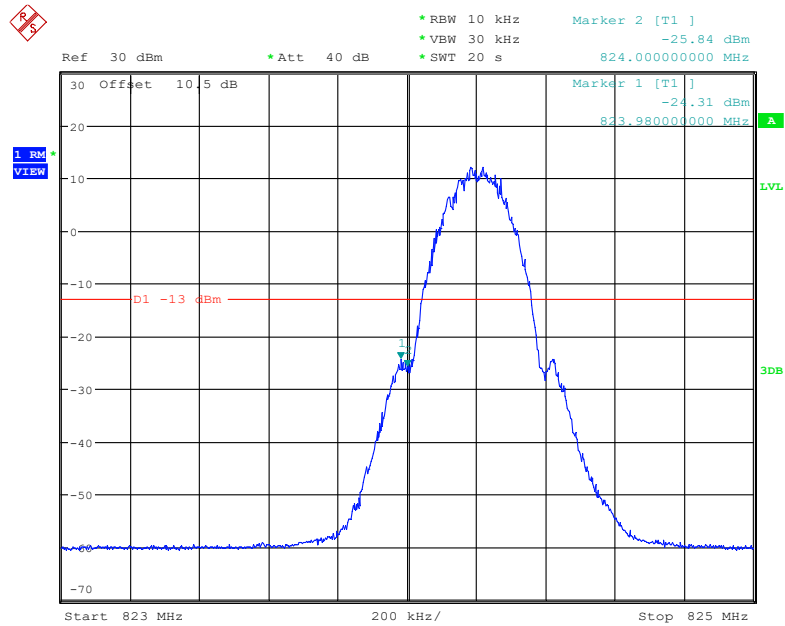
*EUT operation mode: Transmitting (Worst case)*

**Test Result: Pass**

*Please refer to the following plots.*

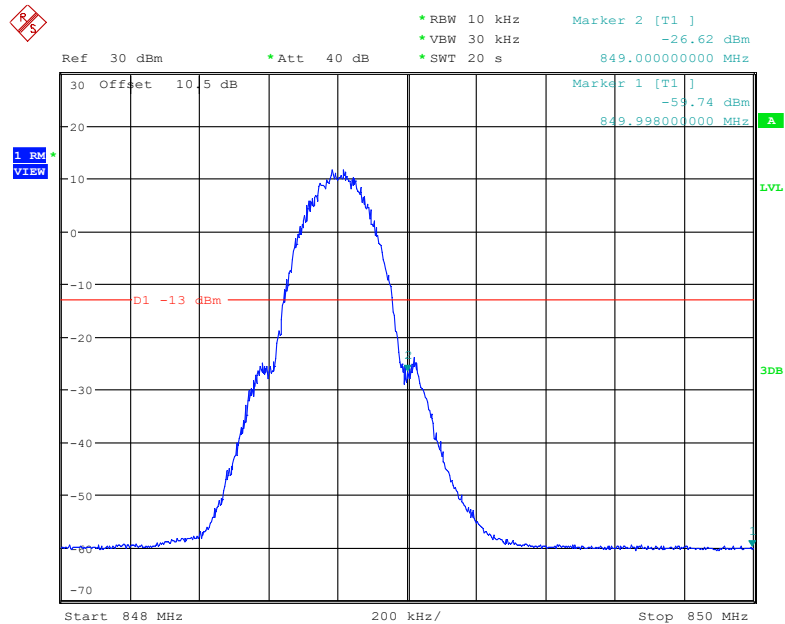


## Cellular Band, Left Band Edge for GSM (GMSK) Mode



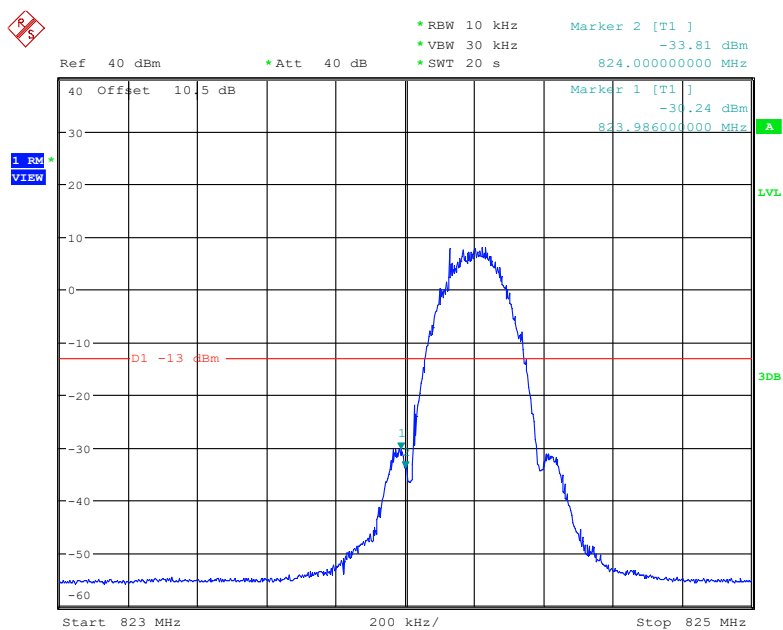
Date: 22.SEP.2022 00:19:02

## Cellular Band, Right Band Edge for GSM (GMSK) Mode



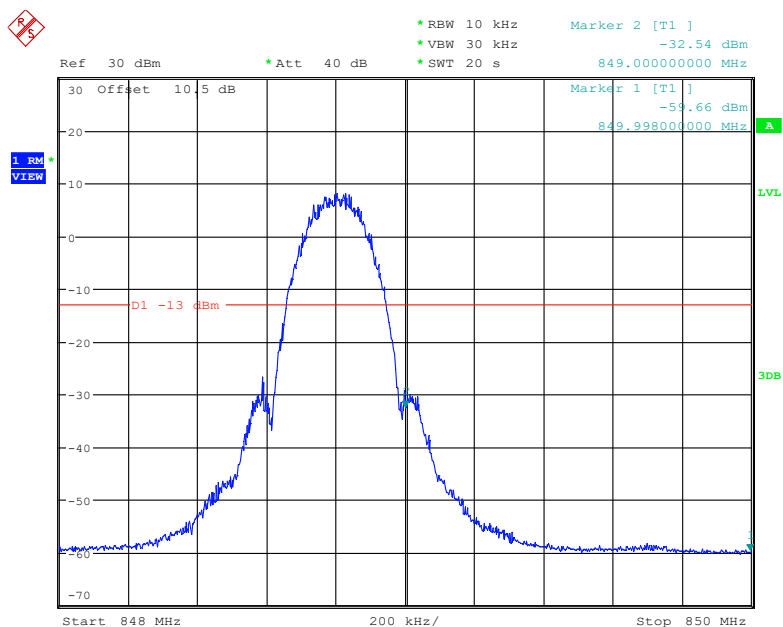
Date: 22.SEP.2022 00:30:43

## Cellular Band, Left Band Edge for EDGE (8PSK) Mode



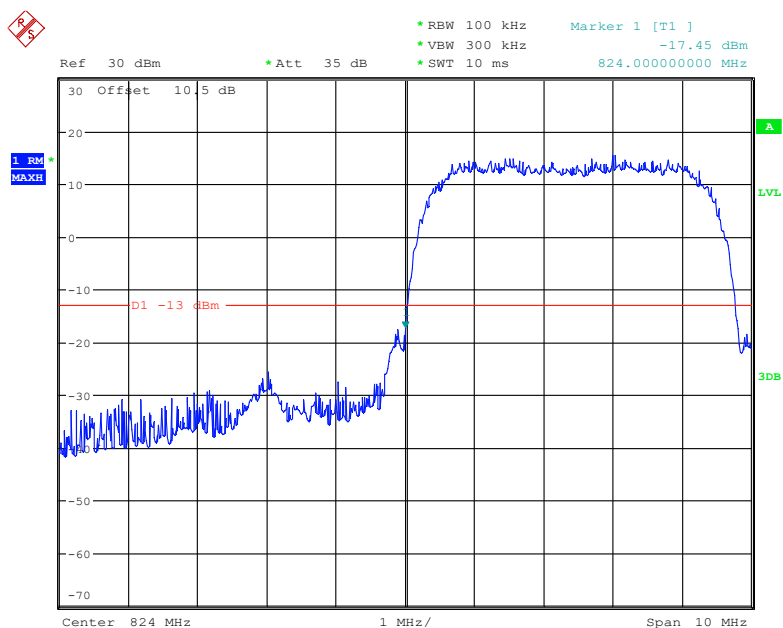
Date: 22.SEP.2022 00:51:04

## Cellular Band, Right Band Edge for EDGE (8PSK) Mode



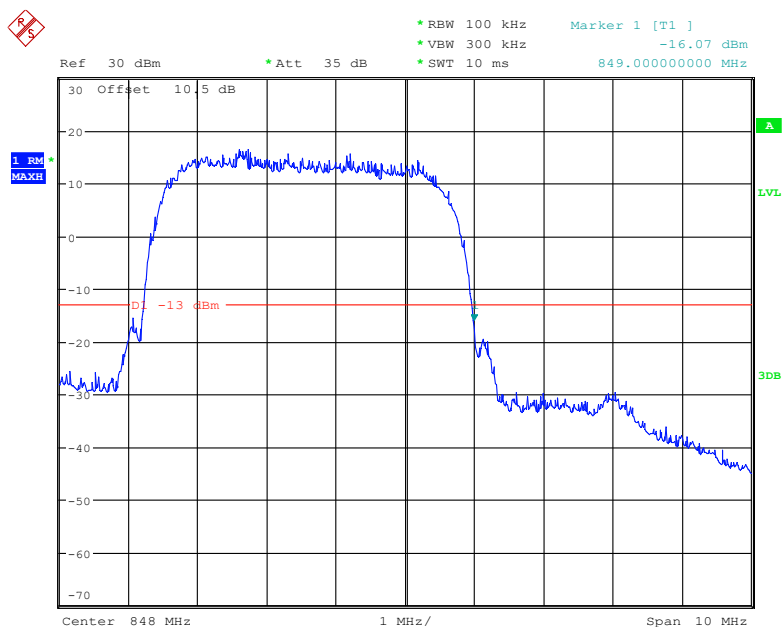
Date: 22.SEP.2022 00:37:17

## Cellular Band, Left Band Edge for RMC (BPSK) Mode



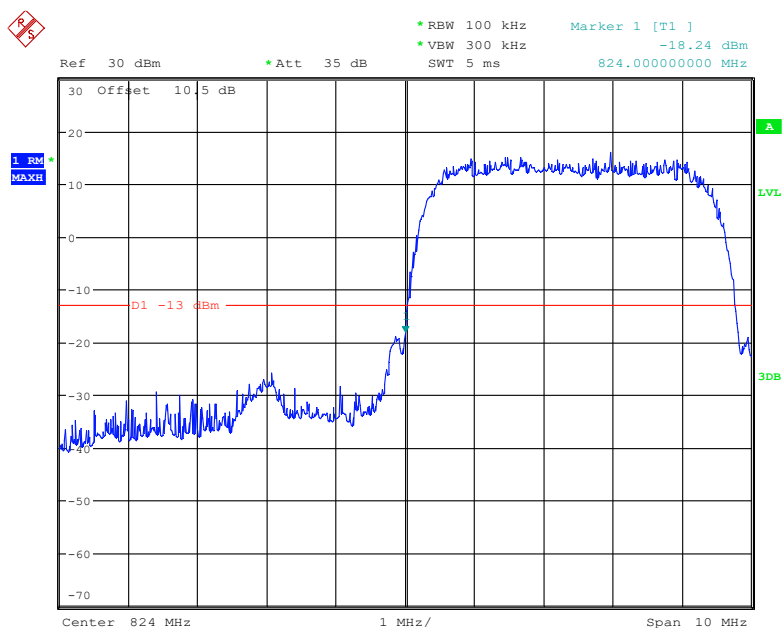
Date: 22.SEP.2022 09:43:21

## Cellular Band, Right Band Edge for RMC (BPSK) Mode



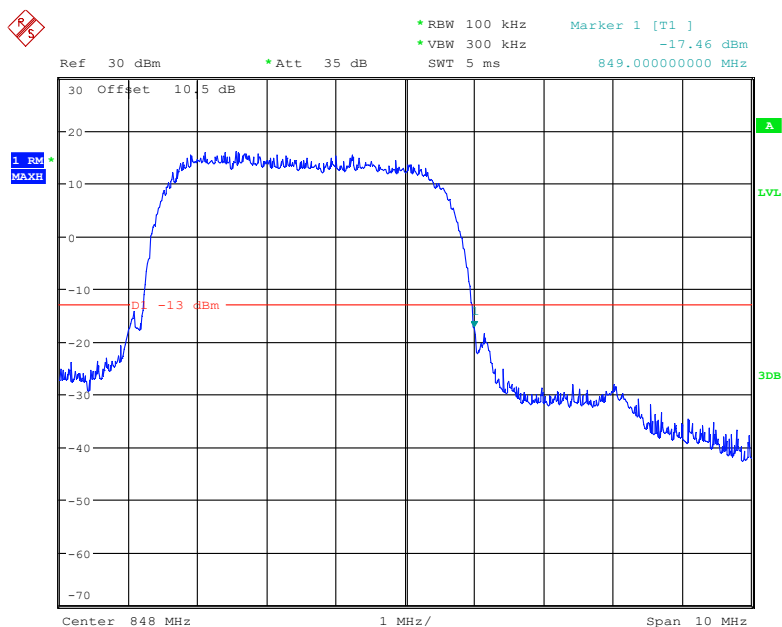
Date: 22.SEP.2022 09:42:38

## Cellular Band, Left Band Edge for HSDPA(16QAM) Mode



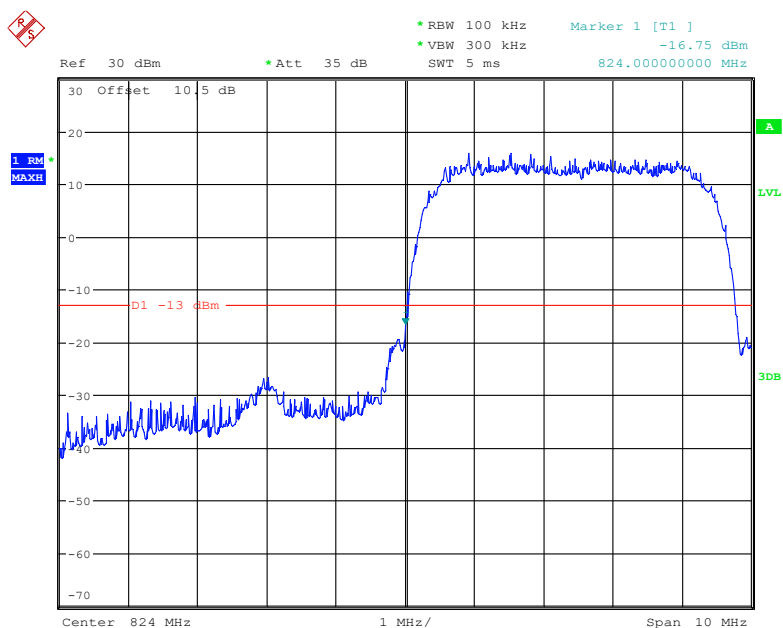
Date: 22.SEP.2022 10:01:08

## Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



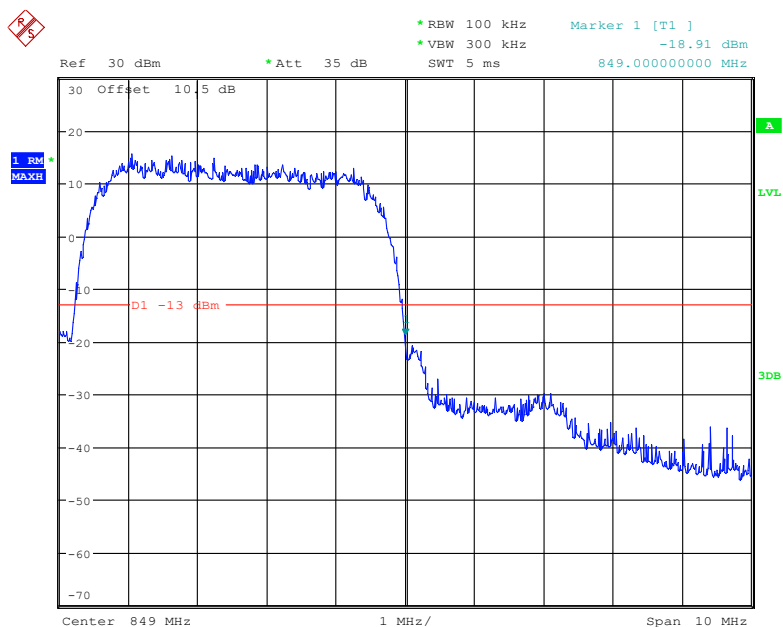
Date: 22.SEP.2022 10:00:49

## Cellular Band, Left Band Edge for HSUPA (QPSK) Mode



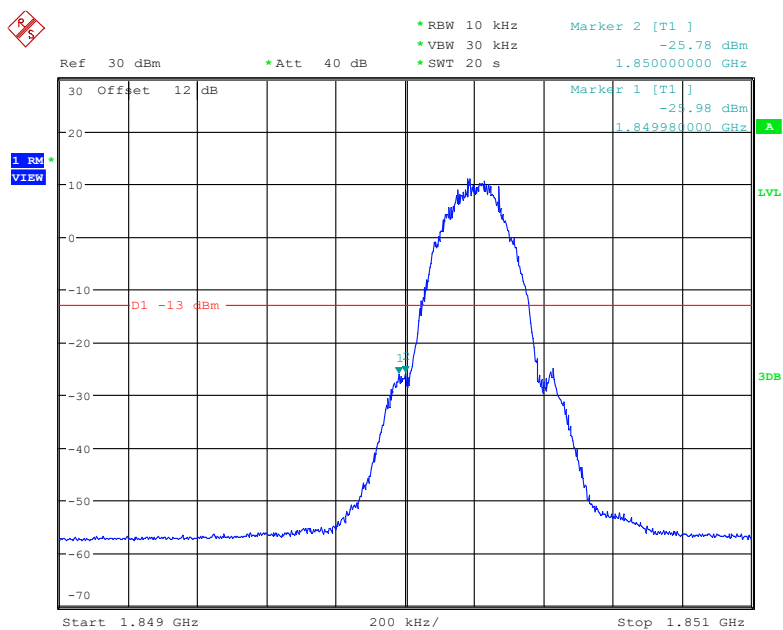
Date: 22.SEP.2022 10:03:55

## Cellular Band, Right Band Edge for HSUPA (QPSK) Mode



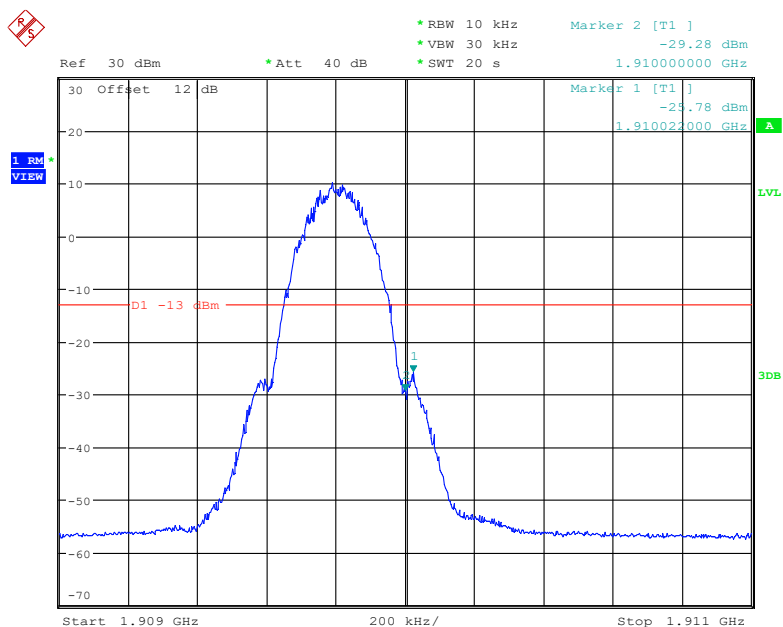
Date: 22.SEP.2022 10:04:15

## PCS Band, Left Band Edge for GSM (GMSK) Mode



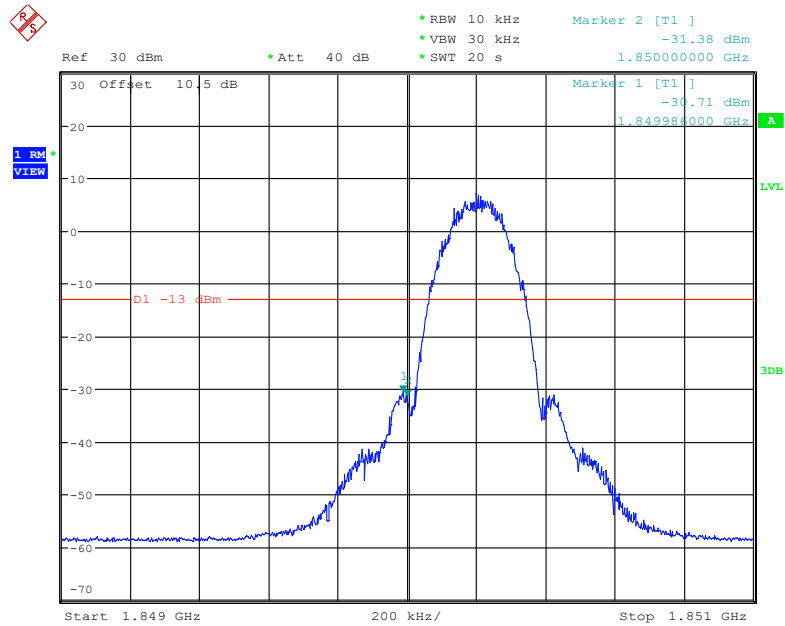
Date: 21.SEP.2022 22:59:17

## PCS Band, Right Band Edge for GSM (GMSK) Mode



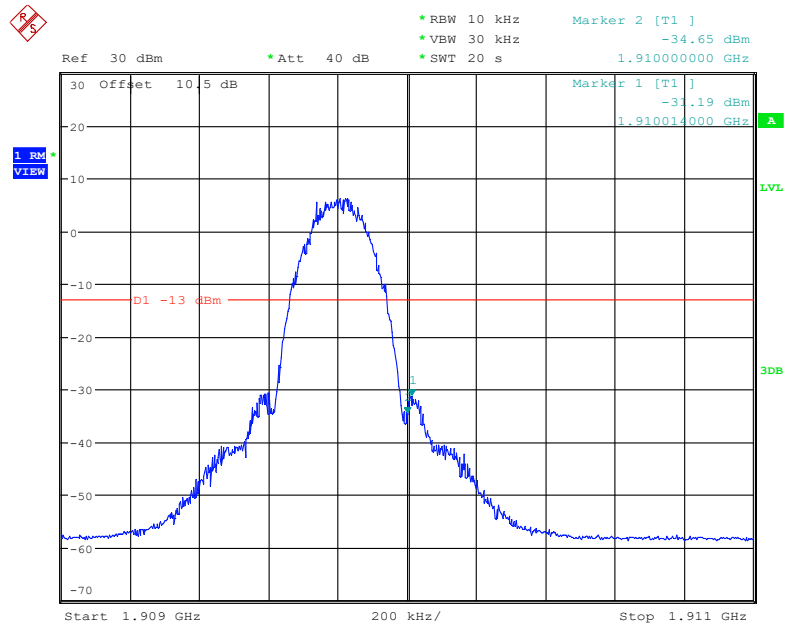
Date: 21.SEP.2022 23:15:38

## PCS Band, Left Band Edge for EDGE (8PSK) Mode



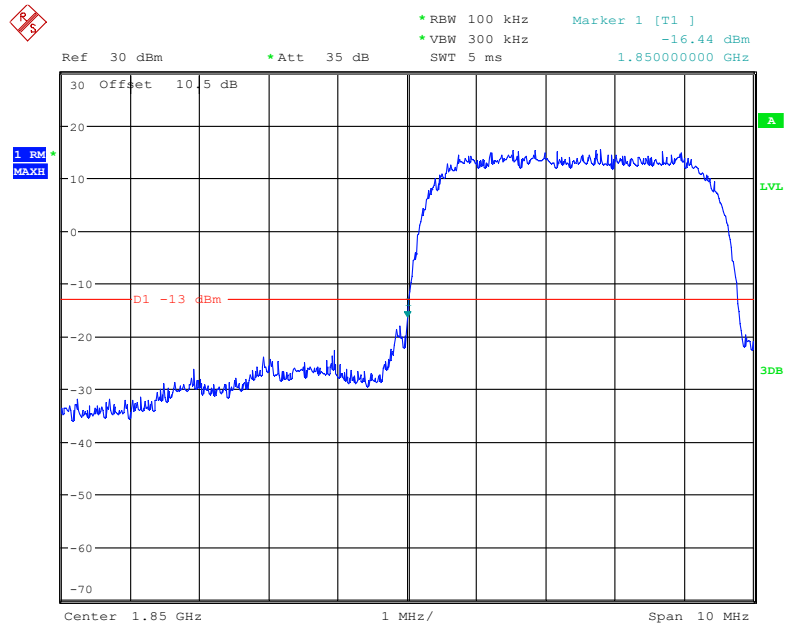
Date: 21.SEP.2022 23:49:29

## PCS Band, Right Band Edge for EDGE (8PSK) Mode



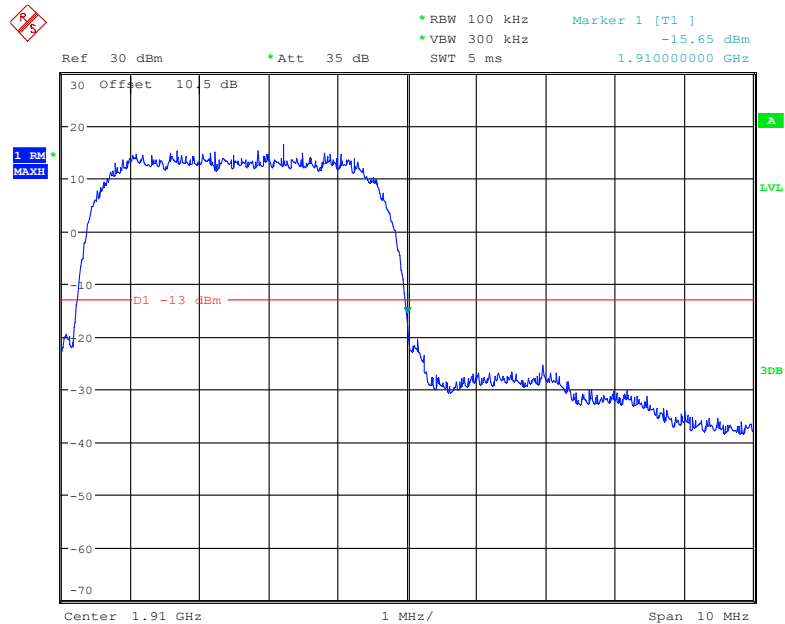
Date: 22.SEP.2022 00:03:13

## PCS Band, Left Band Edge for RMC (BPSK) Mode



Date: 22.SEP.2022 09:02:16

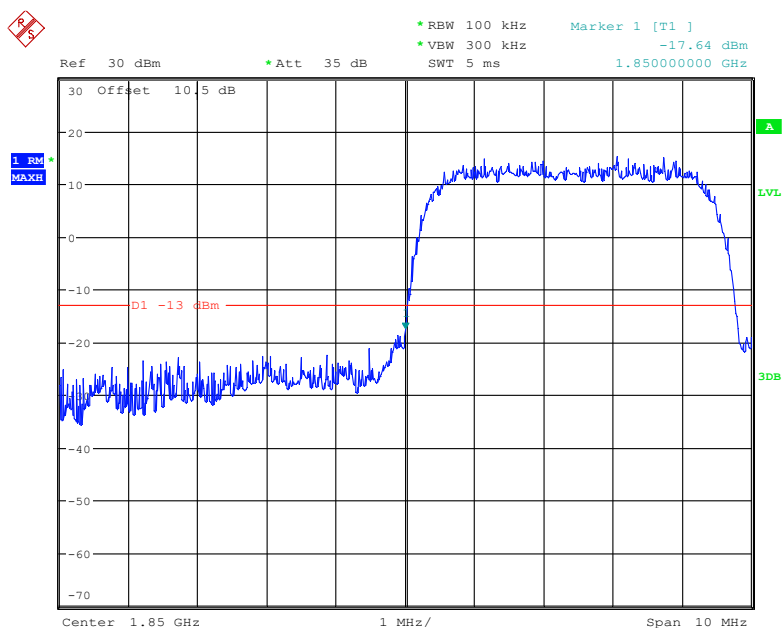
## PCS Band, Right Band Edge for RMC (BPSK) Mode



Date: 22.SEP.2022 09:01:47

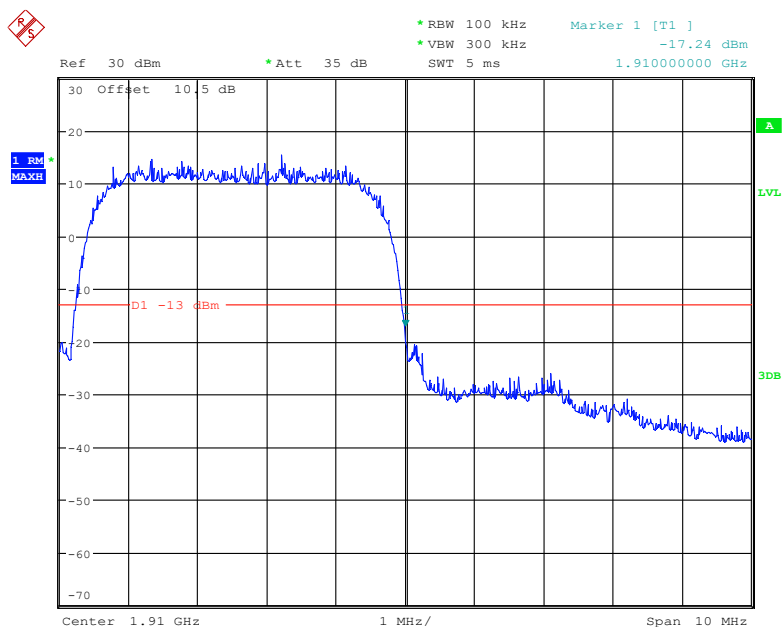


## PCS Band, Left Band Edge for HSDPA(16QAM) Mode

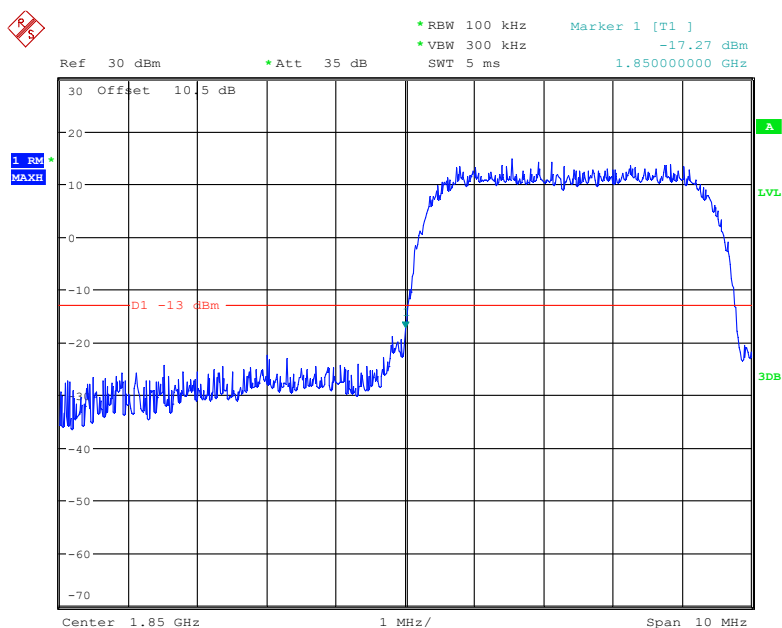


Date: 22.SEP.2022 09:22:14

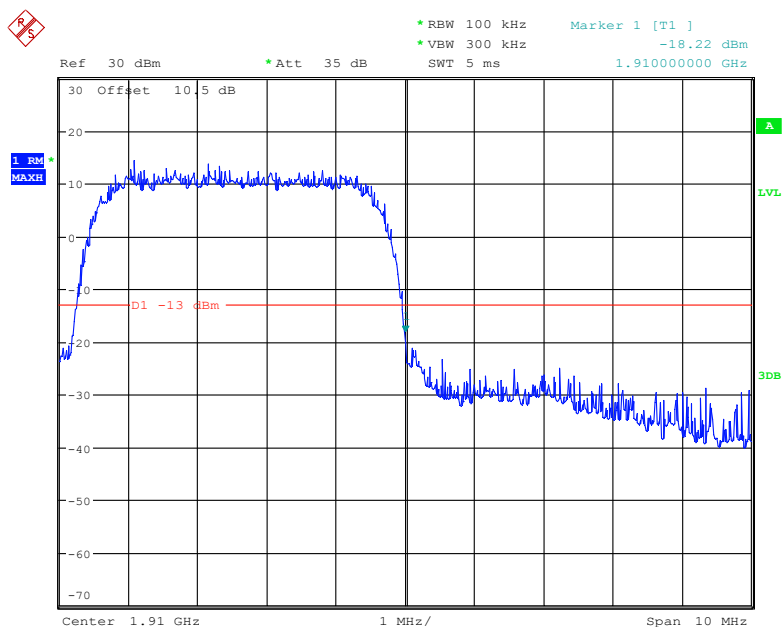
## PCS Band, Right Band Edge for HSDPA (16QAM) Mode



Date: 22.SEP.2022 09:21:45

**PCS Band, Left Band Edge for HSUPA (QPSK) Mode**

Date: 22.SEP.2022 09:26:10

**PCS Band, Right Band Edge for HSUPA (QPSK) Mode**

Date: 22.SEP.2022 09:26:32

The test plots of LTE bands please refer to the Appendix C.

## **FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY**

### **Applicable Standard**

FCC § 2.1055, §22.355, §24.235&§27.54.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile > 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

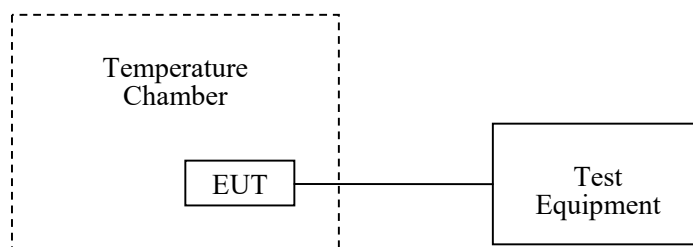
According to §24.235&§27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### **Test Procedure**

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



**Test Data****Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Cat Kang from 2022-09-20 to 2022-09-28.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables.*

**Cellular Band (Part 22H)**  
**GSM Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	4	0.0048	2.5
-20		2	0.0024	2.5
-10		3	0.0036	2.5
0		7	0.0084	2.5
10		3	0.0036	2.5
20		2	0.0024	2.5
30		4	0.0048	2.5
40		5	0.0060	2.5
50		2	0.0024	2.5
20	L.V.	3	0.0036	2.5
	H.V.	2	0.0024	2.5

**EDGE Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	4	0.0048	2.5
-20		2	0.0024	2.5
-10		7	0.0084	2.5
0		3	0.0036	2.5
10		5	0.0060	2.5
20		6	0.0072	2.5
30		5	0.0060	2.5
40		3	0.0036	2.5
50		6	0.0072	2.5
20	L.V.	5	0.0060	2.5
	H.V.	4	0.0048	2.5

**WCDMA Mode**

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	2.17	0.0026	2.5
-20		1.48	0.0018	2.5
-10		2.55	0.0030	2.5
0		2.31	0.0028	2.5
10		2.02	0.0024	2.5
20		1.09	0.0013	2.5
30		2.11	0.0025	2.5
40		1.08	0.0013	2.5
50		1.68	0.0020	2.5
20	L.V.	1.72	0.0021	2.5
	H.V.	1.55	0.0019	2.5

**PCS Band (Part 24E)  
GSM Mode**

Middle Channel, $f_0=1880.0\text{ MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	6	0.0032	pass
-20		5	0.0027	pass
-10		4	0.0021	pass
0		3	0.0016	pass
10		2	0.0011	pass
20		11	0.0058	pass
30		7	0.0037	pass
40		3	0.0016	pass
50		4	0.0021	pass
20	L.V.	5	0.0027	pass
	H.V.	2	0.0011	pass

**EDGE Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	9	0.0048	pass
-20		5	0.0027	pass
-10		7	0.0037	pass
0		4	0.0021	pass
10		6	0.0032	pass
20		18	0.0096	pass
30		10	0.0053	pass
40		5	0.0027	pass
50		3	0.0016	pass
20	L.V.	6	0.0032	pass
	H.V.	5	0.0027	pass

**WCDMA Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	1.89	0.0010	pass
-20		1.67	0.0009	pass
-10		1.68	0.0009	pass
0		1.56	0.0008	pass
10		1.52	0.0008	pass
20		1.04	0.0006	pass
30		2.02	0.0011	pass
40		2.11	0.0011	pass
50		2.34	0.0012	pass
20	L.V.	2.28	0.0012	pass
	H.V.	2.11	0.0011	pass

**LTE:**  
**QPSK:**  
**Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-4.58	-0.0024	pass
-20		-8.74	-0.0046	pass
-10		-6.81	-0.0036	pass
0		-8.98	-0.0048	pass
10		-7.10	-0.0038	pass
20		-7.01	-0.0037	pass
30		-6.47	-0.0034	pass
40		-5.68	-0.0030	pass
50		-6.65	-0.0035	pass
20	L.V.	-5.26	-0.0028	pass
	H.V.	-5.04	-0.0027	pass

**Band 5:**

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-6.75	-0.0081	2.5
-20		6.85	0.0082	2.5
-10		6.32	0.0076	2.5
0		-9.79	-0.0117	2.5
10		8.71	0.0104	2.5
20		-8.38	-0.0100	2.5
30		7.71	0.0092	2.5
40		-5.55	-0.0066	2.5
50		-9.56	-0.0114	2.5
20	L.V.	-7.22	-0.0086	2.5
	H.V.	-9.29	-0.0111	2.5



**Band 12:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	699.0374	715.9632	699	716
-20		699.0362	715.9627	699	716
-10		699.0362	715.9671	699	716
0		699.0318	715.9665	699	716
10		699.0345	715.9647	699	716
20		699.0384	715.9672	699	716
30		699.0378	715.9665	699	716
40		699.0377	715.9691	699	716
50		699.0362	715.9654	699	716
20	L.V.	699.0338	715.9672	699	716
	H.V.	699.0375	715.9647	699	716

**Band 13:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	777.1295	786.8437	777	787
-20		777.1237	786.8424	777	787
-10		777.1276	786.8461	777	787
0		777.1216	786.8452	777	787
10		777.1248	786.8423	777	787
20		777.1256	786.8418	777	787
30		777.1252	786.8433	777	787
40		777.1242	786.8428	777	787
50		777.1223	786.8442	777	787
20	L.V.	777.1217	786.8451	777	787
	H.V.	777.1232	786.8431	777	787

**Band 41:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2535.0544	2654.9457	2535	2655
-20		2535.0556	2654.9468	2535	2655
-10		2535.0521	2654.9424	2535	2655
0		2535.0534	2654.9431	2535	2655
10		2535.0514	2654.9412	2535	2655
20		2535.0527	2654.9426	2535	2655
30		2535.0534	2654.9436	2535	2655
40		2535.0565	2654.9442	2535	2655
50		2535.0562	2654.9334	2535	2655
20	L.V.	2535.0497	2654.9417	2535	2655
	H.V.	2535.0526	2654.9432	2535	2655

**16QAM:****Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-1.73	-0.0009	pass
-20		-5.76	-0.0031	pass
-10		9.02	0.0048	pass
0		-9.54	-0.0051	pass
10		9.71	0.0052	pass
20		8.71	0.0046	pass
30		8.09	0.0043	pass
40		6.57	0.0035	pass
50		7.02	0.0037	pass
20	L.V.	7.08	0.0038	pass
	H.V.	5.29	0.0028	pass

**Band 5:**

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied ( $V_{DC}$ )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-6.19	-0.0074	2.5
-20		-5.05	-0.0060	2.5
-10		8.21	0.0098	2.5
0		-5.62	-0.0067	2.5
10		-8.09	-0.0097	2.5
20		-8.86	-0.0106	2.5
30		7.15	0.0085	2.5
40		5.13	0.0061	2.5
50		6.17	0.0074	2.5
20	L.V.	8.97	0.0107	2.5
	H.V.	5.71	0.0068	2.5

**Band 12:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	699.0326	715.9687	699	716
-20		699.0352	715.9631	699	716
-10		699.0348	715.9672	699	716
0		699.0328	715.9673	699	716
10		699.0343	715.9652	699	716
20		699.0427	715.9617	699	716
30		699.0314	715.9626	699	716
40		699.0335	715.9625	699	716
50		699.0345	715.9635	699	716
20	L.V.	699.0365	715.9633	699	716
	H.V.	699.0341	715.9672	699	716

**Band 13:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	777.0325	786.9233	777	787
-20		777.0344	786.9226	777	787
-10		777.0326	786.9235	777	787
0		777.0318	786.9248	777	787
10		777.0333	786.9237	777	787
20		777.0341	786.9226	777	787
30		777.0353	786.9234	777	787
40		777.0315	786.9252	777	787
50		777.0227	786.9236	777	787
20	L.V.	777.0342	786.9214	777	787
	H.V.	777.0341	786.9255	777	787

**Band 41:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	2535.0553	2654.8522	2535	2655
-20		2535.0448	2654.8531	2535	2655
-10		2535.0428	2654.8541	2535	2655
0		2535.0433	2654.8526	2535	2655
10		2535.0456	2654.8534	2535	2655
20		2535.0434	2654.8528	2535	2655
30		2535.0428	2654.8516	2535	2655
40		2535.0436	2654.8525	2535	2655
50		2535.0441	2654.8534	2535	2655
20	L.V.	2535.0452	2654.8542	2535	2655
	H.V.	2535.0436	2654.8522	2535	2655

\*\*\*\*\* END OF REPORT \*\*\*\*\*