TEST REPORT

Applicant Name :	CWELL TECHNOLOGY CO., LTD
Address :	Room 22,11/F,China United Plaza, 1008 Tai Nan West Street, Lai Chi Kok Kowloon, Hong Kong
Report Number :	SZNS220808-35867E-RF-00E
FCC ID:	2A8NJ-W555

Test Standard (s)

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

Sample Description

Product Type:	4G Smartphone
Model No.:	W555
Multiple Model(s) No.:	W555C,W555H(Please refer to DOS for Model difference)
Trade Mark:	UNIWA
Date Received:	2022/08/08
Report Date:	2022/09/30

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Roger Ling
EMC Engineer

Approved By:

Candy Li
EMC Engineer

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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 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band5/ LTE Band 5: -0.4dBi PCS1900/WCDMA Band 2/ LTE Band 2: -0.4dBi WCDMA Band4/LTE Band 4: -0.3dBi, LTE Band 7: -0.2dBi LTE Band 12/ LTE Band 17: -0.5dBi (provided by the applicant)
Voltage Range	DC 3.7V from battery or DC 5V from adapter
Sample serial number	SZNS220808-35867E-RF-S1 for Radiated Emissions SZNS220808-35867E-RF-S2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Normal/Extreme Condition	N.V.: Nominal Voltage: 3.7V_{DC} L.V.: Low Voltage 3.5V_{DC} H.V.: High Voltage 4.2V_{DC}
Adapter information	Model: A-0718 Input: AC 100-240V, 50/60Hz,0.3A Output: DC 5V, 2A

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H,Part24-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		$0.082*10^{-7}$
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℃
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 (ISEDC), 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 B4	4.2	1712.4	1732.6	1752.6
WCDMA B5	4.2	826.4	836.4	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 B4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
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 B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
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	707.5	711
LTE B17	5	706.5	710	713.5
	10	709	710	711

Equipment Modifications

No modification was made to the EUT.

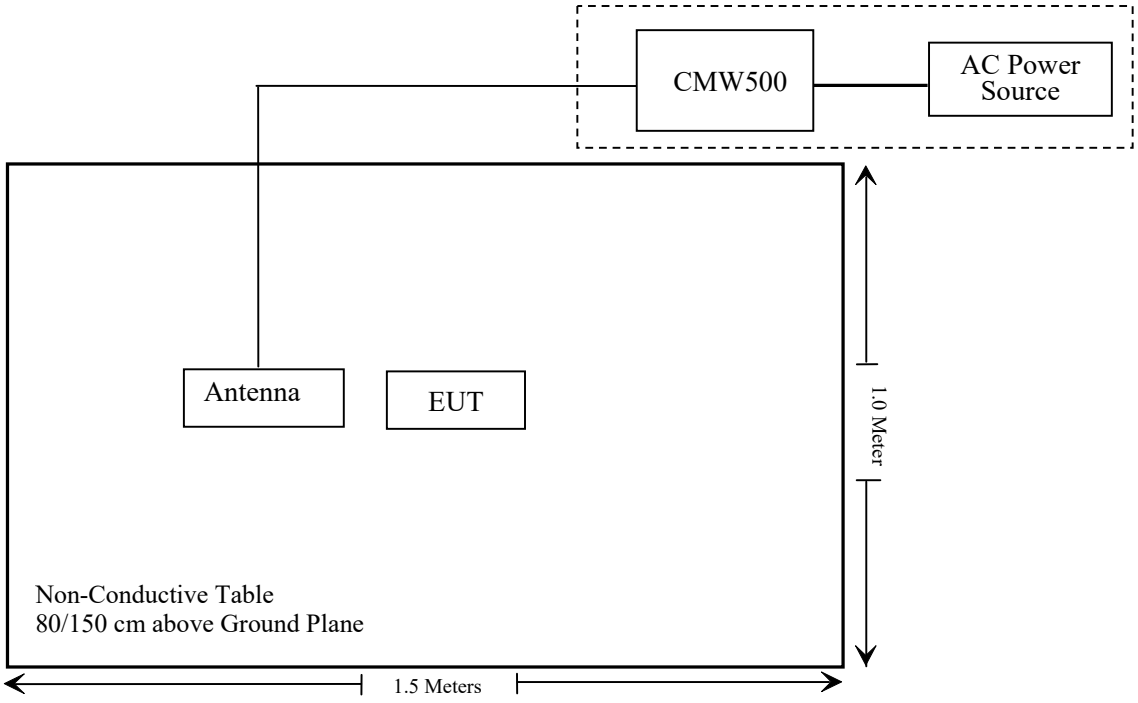
Support Equipment List and Details

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

External I/O Cable

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500

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); § 24.232 (c); §27.50 (b) (c) (d) (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 (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
Radiated Emission Test Software: e3 19821b (V9)					
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
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
PASTERNACK	Horn Antenn	PE9852/2F-20	1120 (ATC-BA-024-1)	2020/01/05	2023/01/04
PASTERNACK	Horn Antenn	PE9852/2F-20	1120 (ATC-BA-025-1)	2020/01/05	2023/01/04
Wainwright	High Pass Filter	WHKX3.6/18G-10SS	5	2021/12/14	2022/12/13
CD	High Pass Filter	HPM-1.2/18G-60	110	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N200	2021/12/14	2022/12/13
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
WEINSCHEL	10dB Attenuator	5324	AU 3842	2021/12/14	2022/12/13
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 Coaxial Cable	No.33	RF-03	Each time	

* 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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: SZNS220808-35867E-SA.

FCC§2.1047 - MODULATION CHARACTERISTIC

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)&§ 24.232 (c); §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(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.

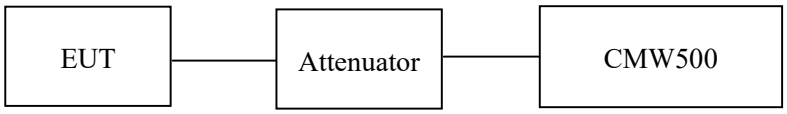
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

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:	27.2 ℃
Relative Humidity:	56.8 %
ATM Pressure:	101.0 kPa

The testing was performed by Cat Kang from 2022-08-25 to 2022-08-27.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.40	29.35	38.45
	190	836.6	32.40	29.35	38.45
	251	848.8	32.50	**29.45**	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	31.55	30.66	28.24	26.73	28.50	27.61	25.19	23.68	38.45
	190	836.6	31.41	30.87	28.66	27.23	28.36	27.82	25.61	24.18	38.45
	251	848.8	31.37	30.95	28.89	27.53	28.32	27.90	25.84	24.48	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	
EGPRS	128	824.2	27.35	26.46	24.04	22.53	**24.30**	23.41	20.99	19.48	38.45
	190	836.6	27.21	26.67	24.46	23.03	24.16	23.62	21.41	19.98	38.45
	251	848.8	27.17	26.75	24.69	23.33	24.12	23.70	21.64	20.28	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		23.76	23.62	23.50	**20.71**	20.57	20.45
	HSDPA	1	22.55	22.44	22.39	19.50	19.39	19.34
		2	22.47	22.48	22.27	19.42	19.43	19.22
		3	22.36	22.39	22.16	19.31	19.34	19.11
		4	22.41	22.28	22.27	19.36	19.23	19.22
	HSUPA	1	22.35	22.18	22.24	19.30	19.13	19.19
		2	22.52	22.23	22.31	19.47	19.18	19.26
		3	22.41	22.24	22.27	19.36	19.19	19.22
		4	22.26	22.16	22.31	19.21	19.11	19.26
		5	22.35	22.28	22.28	19.30	19.23	19.23
	HSPA+	1	22.27	22.31	22.26	19.22	19.26	19.21

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
For GSM850 / WCDMA Band5: Antenna Gain = -0.4dBi = -2.55dBd (0dBd=2.15dBi)
Cable Loss=0.5dB* (provided by the applicant)
Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	30.60	**29.70**	33
	661	1880.0	30.60	29.70	33
	810	1909.8	30.50	29.60	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	30.47	29.75	28.05	27.06	29.57	28.85	27.15	26.16	33
	661	1880.0	30.50	29.79	28.08	27.06	29.60	28.89	27.18	26.16	33
	810	1909.8	30.41	29.69	28.00	26.95	29.51	28.79	27.10	26.05	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	
EGPRS	512	1850.2	26.78	25.48	23.42	22.23	25.88	24.58	22.52	21.33	33
	661	1880.0	27.06	25.77	23.74	22.56	**26.16**	24.87	22.84	21.66	33
	810	1909.8	27.05	25.93	23.78	22.51	26.15	25.03	22.88	21.61	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		23.91	23.69	23.58	**23.01**	22.79	22.68
	HSDPA	1	22.84	22.64	22.51	21.94	21.74	21.61
		2	22.72	22.58	22.48	21.82	21.68	21.58
		3	22.69	22.59	22.62	21.79	21.69	21.72
		4	22.81	22.51	22.47	21.91	21.61	21.57
	HSUPA	1	22.41	22.29	22.11	21.51	21.39	21.21
		2	22.32	22.31	22.52	21.42	21.41	21.62
		3	22.26	22.41	22.37	21.36	21.51	21.47
		4	22.21	22.51	22.46	21.31	21.61	21.56
		5	22.35	22.32	22.31	21.45	21.42	21.41
	HSPA+	1	22.42	22.43	22.28	21.52	21.53	21.38

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For PCS1900 / WCDMA Band2: Antenna Gain = -0.4dBi
Cable Loss=0.5dB*(provided by the applicant)
Limit: EIRP≤33dBm

AWS Band

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		23.97	23.99	23.98	23.17	**23.19**	23.18
	HSDPA	1	22.67	22.72	22.79	21.87	21.92	21.99
		2	22.58	22.58	22.64	21.78	21.78	21.84
		3	22.61	22.64	22.36	21.81	21.84	21.56
		4	22.38	22.37	22.75	21.58	21.57	21.95
	HSUPA	1	22.30	22.48	22.38	21.50	21.68	21.58
		2	22.31	22.35	22.28	21.51	21.55	21.48
		3	22.25	22.41	22.36	21.45	21.61	21.56
		4	22.24	22.34	22.25	21.44	21.54	21.45
		5	22.18	22.41	22.33	21.38	21.61	21.53
	HSPA+	1	22.22	22.36	22.14	21.42	21.56	21.34

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For Band4: Antenna Gain =-0.3dBi
Cable Loss(dB) =0.5dB*(provided by the applicant)
Limit: EIRP≤30dBm

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	21.84	21.66	21.47	20.94	20.76	20.57
		RB1#3	21.97	21.81	21.66	21.07	20.91	20.76
		RB1#5	21.82	21.65	21.44	20.92	20.75	20.54
		RB3#0	21.82	21.70	21.52	20.92	20.80	20.62
		RB3#3	21.83	21.70	21.52	20.93	20.80	20.62
		RB6#0	20.89	20.72	20.55	19.99	19.82	19.65
	16QAM	RB1#0	20.76	20.6	20.53	19.86	19.70	19.63
		RB1#3	20.94	20.77	20.72	20.04	19.87	19.82
		RB1#5	20.80	20.62	20.53	19.90	19.72	19.63
		RB3#0	20.84	20.82	20.43	19.94	19.92	19.53
		RB3#3	20.86	20.83	20.44	19.96	19.93	19.54
		RB6#0	19.77	19.68	19.54	18.87	18.78	18.64
3.0	QPSK	RB1#0	21.84	21.75	21.50	20.94	20.85	20.60
		RB1#8	21.83	21.70	21.49	20.93	20.80	20.59
		RB1#14	21.83	21.69	21.46	20.93	20.79	20.56
		RB6#0	20.81	20.69	20.50	19.91	19.79	19.60
		RB6#9	20.80	20.64	20.47	19.90	19.74	19.57
		RB15#0	20.83	20.69	20.50	19.93	19.79	19.60
	16QAM	RB1#0	20.95	20.72	20.97	20.05	19.82	20.07
		RB1#8	20.93	20.70	20.99	20.03	19.80	20.09
		RB1#14	20.92	20.65	20.95	20.02	19.75	20.05
		RB6#0	19.80	19.60	19.53	18.90	18.70	18.63
		RB6#9	19.82	19.58	19.48	18.92	18.68	18.58
		RB15#0	19.74	19.73	19.52	18.84	18.83	18.62

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	21.76	21.69	21.41	20.86	20.79	20.51
		RB1#13	21.88	21.74	21.53	20.98	20.84	20.63
		RB1#24	21.78	21.65	21.36	20.88	20.75	20.46
		RB15#0	20.87	20.69	20.48	19.97	19.79	19.58
		RB15#10	20.84	20.70	20.48	19.94	19.80	19.58
		RB25#0	20.82	20.71	20.47	19.92	19.81	19.57
	16QAM	RB1#0	20.67	20.90	20.49	19.77	20.00	19.59
		RB1#13	20.79	21.01	20.61	19.89	20.11	19.71
		RB1#24	20.65	20.85	20.49	19.75	19.95	19.59
		RB15#0	19.83	19.68	19.51	18.93	18.78	18.61
		RB15#10	19.82	19.67	19.48	18.92	18.77	18.58
		RB25#0	19.81	19.67	19.48	18.91	18.77	18.58
10.0	QPSK	RB1#0	21.85	21.75	21.58	20.95	20.85	20.68
		RB1#25	22.01	21.84	21.72	21.11	20.94	20.82
		RB1#49	21.83	21.66	21.55	20.93	20.76	20.65
		RB25#0	20.90	20.73	20.50	20.00	19.83	19.60
		RB25#25	20.87	20.70	20.56	19.97	19.80	19.66
		RB50#0	20.86	20.70	20.51	19.96	19.80	19.61
	16QAM	RB1#0	21.34	20.83	20.56	20.44	19.93	19.66
		RB1#25	21.47	20.97	20.62	20.57	20.07	19.72
		RB1#49	21.33	20.79	20.50	20.43	19.89	19.60
		RB25#0	19.89	19.71	19.54	18.99	18.81	18.64
		RB25#25	19.84	19.76	19.61	18.94	18.86	18.71
		RB50#0	19.82	19.72	19.51	18.92	18.82	18.61

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	21.75	21.70	21.59	20.85	20.80	20.69
		RB1#38	21.81	21.69	21.56	20.91	20.79	20.66
		RB1#74	21.69	21.56	21.42	20.79	20.66	20.52
		RB36#0	20.91	20.81	20.68	20.01	19.91	19.78
		RB36#39	20.90	20.75	20.66	20.00	19.85	19.76
		RB75#0	20.86	20.74	20.62	19.96	19.84	19.72
	16QAM	RB1#0	21.23	20.76	20.86	20.33	19.86	19.96
		RB1#38	21.32	20.81	20.88	20.42	19.91	19.98
		RB1#74	21.19	20.67	20.72	20.29	19.77	19.82
		RB36#0	19.85	19.77	19.59	18.95	18.87	18.69
		RB36#39	19.83	19.73	19.58	18.93	18.83	18.68
		RB75#0	19.83	19.74	19.56	18.93	18.84	18.66
20.0	QPSK	RB1#0	21.61	21.55	21.37	20.71	20.65	20.47
		RB1#50	22.01	21.91	21.70	**21.11**	21.01	20.80
		RB1#99	21.55	21.43	21.23	20.65	20.53	20.33
		RB50#0	20.82	20.64	20.69	19.92	19.74	19.79
		RB50#50	20.80	20.60	20.56	19.90	19.70	19.66
		RB100#0	20.85	20.64	20.65	19.95	19.74	19.75
	16QAM	RB1#0	20.83	20.69	20.88	19.93	19.79	19.98
		RB1#50	21.23	21.03	21.21	**20.33**	20.13	20.31
		RB1#99	20.79	20.59	20.74	19.89	19.69	19.84
		RB50#0	19.74	19.63	19.65	18.84	18.73	18.75
		RB50#50	19.72	19.61	19.54	18.82	18.71	18.64
		RB100#0	19.79	19.67	19.64	18.89	18.77	18.74

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For Band2: Antenna Gain = -0.4dBi
Cable Loss=0.5dB*(provided by the applicant)
Limit: EIRP≤33dBm

LTE Band 4

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	21.46	21.51	21.42	20.66	20.71	20.62
		RB1#3	21.64	21.76	21.54	20.84	20.96	20.74
		RB1#5	21.46	21.48	21.41	20.66	20.68	20.61
		RB3#0	21.56	21.61	21.48	20.76	20.81	20.68
		RB3#3	21.51	21.61	21.50	20.71	20.81	20.70
		RB6#0	20.49	20.59	20.51	19.69	19.79	19.71
	16QAM	RB1#0	20.56	20.48	20.39	19.76	19.68	19.59
		RB1#3	20.81	20.69	20.59	20.01	19.89	19.79
		RB1#5	20.56	20.50	20.39	19.76	19.70	19.59
		RB3#0	20.51	20.69	20.56	19.71	19.89	19.76
		RB3#3	20.53	20.65	20.61	19.73	19.85	19.81
		RB6#0	19.58	19.49	19.48	18.78	18.69	18.68
3.0	QPSK	RB1#0	21.46	21.58	21.56	20.66	20.78	20.76
		RB1#8	21.49	21.61	21.51	20.69	20.81	20.71
		RB1#14	21.45	21.54	21.48	20.65	20.74	20.68
		RB6#0	20.52	20.56	20.45	19.72	19.76	19.65
		RB6#9	20.44	20.53	20.47	19.64	19.73	19.67
		RB15#0	20.49	20.59	20.45	19.69	19.79	19.65
	16QAM	RB1#0	21.06	20.70	20.51	20.26	19.90	19.71
		RB1#8	21.06	20.68	20.45	20.26	19.88	19.65
		RB1#14	21.03	20.68	20.45	20.23	19.88	19.65
		RB6#0	19.54	19.55	19.35	18.74	18.75	18.55
		RB6#9	19.51	19.58	19.38	18.71	18.78	18.58
		RB15#0	19.58	19.54	19.52	18.78	18.74	18.72

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	21.42	21.45	21.42	20.62	20.65	20.62
		RB1#13	21.50	21.59	21.56	20.70	20.79	20.76
		RB1#24	21.41	21.45	21.38	20.61	20.65	20.58
		RB15#0	20.53	20.55	20.53	19.73	19.75	19.73
		RB15#10	20.52	20.55	20.51	19.72	19.75	19.71
		RB25#0	20.47	20.52	20.44	19.67	19.72	19.64
	16QAM	RB1#0	20.47	20.35	20.30	19.67	19.55	19.50
		RB1#13	20.59	20.48	20.45	19.79	19.68	19.65
		RB1#24	20.42	20.31	20.27	19.62	19.51	19.47
		RB15#0	19.56	19.57	19.55	18.76	18.77	18.75
		RB15#10	19.51	19.55	19.51	18.71	18.75	18.71
		RB25#0	19.55	19.54	19.53	18.75	18.74	18.73
10.0	QPSK	RB1#0	21.51	21.60	21.53	20.71	20.80	20.73
		RB1#25	21.68	21.78	21.65	20.88	**20.98**	20.85
		RB1#49	21.54	21.57	21.49	20.74	20.77	20.69
		RB25#0	20.60	20.60	20.56	19.80	19.80	19.76
		RB25#25	20.64	20.60	20.54	19.84	19.80	19.74
		RB50#0	20.60	20.61	20.54	19.80	19.81	19.74
	16QAM	RB1#0	20.68	20.59	21.04	19.88	19.79	20.24
		RB1#25	20.80	20.73	21.17	20.00	19.93	**20.37**
		RB1#49	20.65	20.54	21.00	19.85	19.74	20.20
		RB25#0	19.64	19.69	19.63	18.84	18.89	18.83
		RB25#25	19.72	19.66	19.57	18.92	18.86	18.77
		RB50#0	19.64	19.64	19.57	18.84	18.84	18.77

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	21.43	21.52	21.47	20.63	20.72	20.67
		RB1#38	21.51	21.58	21.54	20.71	20.78	20.74
		RB1#74	21.43	21.45	21.38	20.63	20.65	20.58
		RB36#0	20.55	20.62	20.58	19.75	19.82	19.78
		RB36#39	20.62	20.61	20.59	19.82	19.81	19.79
		RB75#0	20.61	20.60	20.60	19.81	19.80	19.80
	16QAM	RB1#0	21.00	20.66	20.83	20.20	19.86	20.03
		RB1#38	21.11	20.72	20.93	20.31	19.92	20.13
		RB1#74	20.99	20.60	20.72	20.19	19.80	19.92
		RB36#0	19.52	19.60	19.55	18.72	18.80	18.75
		RB36#39	19.60	19.59	19.57	18.80	18.79	18.77
		RB75#0	19.61	19.59	19.55	18.81	18.79	18.75
20.0	QPSK	RB1#0	21.24	21.30	21.35	20.44	20.50	20.55
		RB1#50	21.67	21.74	21.73	20.87	**20.94**	20.93
		RB1#99	21.29	21.29	21.22	20.49	20.49	20.42
		RB50#0	20.46	20.53	20.50	19.66	19.73	19.70
		RB50#50	20.58	20.56	20.50	19.78	19.76	19.70
		RB100#0	20.55	20.52	20.54	19.75	19.72	19.74
	16QAM	RB1#0	20.82	20.58	20.51	20.02	19.78	19.71
		RB1#50	21.22	21.00	20.90	**20.42**	20.20	20.10
		RB1#99	20.83	20.57	20.42	20.03	19.77	19.62
		RB50#0	19.42	19.51	19.52	18.62	18.71	18.72
		RB50#50	19.58	19.51	19.48	18.78	18.71	18.68
		RB100#0	19.56	19.52	19.54	18.76	18.72	18.74

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For Band4: Antenna Gain = -0.30dBi
Cable Loss=0.5dB*(provided by the applicant)
Limit: EIRP≤30dBm

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	22.07	22.07	22.09	19.02	19.02	19.04
		RB1#3	22.28	22.22	22.23	19.23	19.17	19.18
		RB1#5	22.09	21.98	22.03	19.04	18.93	18.98
		RB3#0	22.25	22.14	22.15	19.20	19.09	19.10
		RB3#3	22.31	22.19	22.14	**19.26**	19.14	19.09
		RB6#0	21.12	21.08	21.11	18.07	18.03	18.06
	16QAM	RB1#0	21.18	21.02	21.02	18.13	17.97	17.97
		RB1#3	21.40	21.25	21.26	**18.35**	18.20	18.21
		RB1#5	21.21	21.12	21.04	18.16	18.07	17.99
		RB3#0	21.15	21.24	21.32	18.10	18.19	18.27
		RB3#3	21.21	21.19	21.38	18.16	18.14	18.33
		RB6#0	20.19	20.04	20.15	17.14	16.99	17.10
3.0	QPSK	RB1#0	22.15	22.09	22.05	19.10	19.04	19.00
		RB1#8	22.20	22.07	22.13	19.15	19.02	19.08
		RB1#14	22.13	22.06	22.04	19.08	19.01	18.99
		RB6#0	21.05	21.04	21.07	18.00	17.99	18.02
		RB6#9	21.09	21.01	21.11	18.04	17.96	18.06
		RB15#0	21.14	21.10	21.12	18.09	18.05	18.07
	16QAM	RB1#0	21.16	21.69	21.32	18.11	18.64	18.27
		RB1#8	21.20	21.74	21.22	18.15	18.69	18.17
		RB1#14	21.16	21.63	21.25	18.11	18.58	18.20
		RB6#0	20.06	20.15	20.11	17.01	17.10	17.06
		RB6#9	20.06	20.16	20.17	17.01	17.11	17.12
		RB15#0	20.18	20.17	20.06	17.13	17.12	17.01

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	22.08	22.02	22.00	19.03	18.97	18.95
		RB1#13	22.22	22.17	22.17	19.17	19.12	19.12
		RB1#24	22.08	22.01	22.06	19.03	18.96	19.01
		RB15#0	21.16	21.12	21.20	18.11	18.07	18.15
		RB15#10	21.17	21.20	21.14	18.12	18.15	18.09
		RB25#0	21.16	21.12	21.21	18.11	18.07	18.16
	16QAM	RB1#0	21.37	21.16	20.91	18.32	18.11	17.86
		RB1#13	21.51	21.21	21.09	18.46	18.16	18.04
		RB1#24	21.34	21.11	20.91	18.29	18.06	17.86
		RB15#0	20.19	20.14	20.31	17.14	17.09	17.26
		RB15#10	20.17	20.21	20.22	17.12	17.16	17.17
		RB25#0	20.17	20.15	20.18	17.12	17.10	17.13
10.0	QPSK	RB1#0	22.11	22.10	22.08	19.06	19.05	19.03
		RB1#25	22.28	22.28	22.24	**19.23**	19.23	19.19
		RB1#49	22.11	22.08	22.12	19.06	19.03	19.07
		RB25#0	21.31	21.18	21.21	18.26	18.13	18.16
		RB25#25	21.14	21.29	21.16	18.09	18.24	18.11
		RB50#0	21.23	21.21	21.20	18.18	18.16	18.15
	16QAM	RB1#0	21.70	21.30	21.12	18.65	18.25	18.07
		RB1#25	21.85	21.45	21.26	**18.80**	18.40	18.21
		RB1#49	21.73	21.23	21.14	18.68	18.18	18.09
		RB25#0	20.37	20.20	20.32	17.32	17.15	17.27
		RB25#25	20.24	20.36	20.26	17.19	17.31	17.21
		RB50#0	20.26	20.24	20.21	17.21	17.19	17.16

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For Band5: Antenna Gain = -0.40dBi = -2.55dBd(0dBd=2.15dBi)
Cable Loss=0.5B*(provided by the applicant)
Limit: ERP≤38.45dBm

LTE Band 7

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	21.44	21.49	21.61	20.74	20.79	20.91
		RB1#13	21.61	21.6	21.76	20.91	20.90	**21.06**
		RB1#24	21.49	21.52	21.67	20.79	20.82	20.97
		RB15#0	21.07	20.68	21.22	20.37	19.98	20.52
		RB15#10	20.88	20.92	21.33	20.18	20.22	20.63
		RB25#0	21.13	20.93	21.35	20.43	20.23	20.65
	16QAM	RB1#0	20.84	21.07	21.04	20.14	20.37	20.34
		RB1#13	20.58	21.09	21.26	19.88	20.39	20.56
		RB1#24	21.02	20.97	21.06	20.32	20.27	20.36
		RB15#0	21.04	20.79	20.92	20.34	20.09	20.22
		RB15#10	20.97	21.09	21.21	20.27	20.39	20.51
		RB25#0	20.73	21.30	21.27	20.03	**20.60**	20.57
10.0	QPSK	RB1#0	21.00	21.32	20.81	20.30	20.62	20.11
		RB1#25	21.04	21.01	21.35	20.34	20.31	20.65
		RB1#49	21.12	21.05	21.48	20.42	20.35	20.78
		RB25#0	20.74	21.17	21.01	20.04	20.47	20.31
		RB25#25	20.97	21.29	21.47	20.27	20.59	20.77
		RB50#0	20.74	21.01	20.84	20.04	20.31	20.14
	16QAM	RB1#0	20.59	20.86	21.37	19.89	20.16	20.67
		RB1#25	21.23	20.83	20.84	20.53	20.13	20.14
		RB1#49	21.08	20.65	20.86	20.38	19.95	20.16
		RB25#0	20.69	21.33	21.08	19.99	20.63	20.38
		RB25#25	20.62	21.30	21.15	19.92	20.60	20.45
		RB50#0	20.98	21.22	20.83	20.28	20.52	20.13

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	21.19	21.17	21.40	20.49	20.47	20.70
		RB1#38	20.54	21.09	21.43	19.84	20.39	20.73
		RB1#74	20.58	21.22	20.97	19.88	20.52	20.27
		RB36#0	20.55	21.12	20.85	19.85	20.42	20.15
		RB36#39	21.05	20.93	21.07	20.35	20.23	20.37
		RB75#0	20.90	21.07	21.25	20.20	20.37	20.55
	16QAM	RB1#0	21.22	20.81	21.33	20.52	20.11	20.63
		RB1#38	21.06	20.75	21.18	20.36	20.05	20.48
		RB1#74	21.00	21.31	21.19	20.30	20.61	20.49
		RB36#0	21.19	21.11	21.00	20.49	20.41	20.30
		RB36#39	21.18	20.96	20.87	20.48	20.26	20.17
		RB75#0	20.72	21.27	21.34	20.02	20.57	20.64
20.0	QPSK	RB1#0	21.13	21.33	21.08	20.43	20.63	20.38
		RB1#50	20.89	21.08	21.01	20.19	20.38	20.31
		RB1#99	20.82	21.31	21.29	20.12	20.61	20.59
		RB50#0	21.21	21.31	21.14	20.51	20.61	20.44
		RB50#50	20.65	21.17	21.01	19.95	20.47	20.31
		RB100#0	20.84	21.11	21.40	20.14	20.41	**20.70**
	16QAM	RB1#0	20.95	21.08	21.17	20.25	20.38	20.47
		RB1#50	21.11	21.15	21.44	20.41	20.45	20.74
		RB1#99	21.11	21.15	20.96	20.41	20.45	20.26
		RB50#0	21.23	20.71	21.45	20.53	20.01	**20.75**
		RB50#50	20.75	20.78	20.97	20.05	20.08	20.27
		RB100#0	21.15	20.99	20.88	20.45	20.29	20.18

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For Band7: Antenna Gain = -0.2dBi
Cable Loss=0.5dB*(provided by the applicant)
Limit: ERP≤33dBm

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	22.25	21.84	22.62	19.10	18.69	19.47
		RB1#3	22.47	22.02	22.78	19.32	18.87	19.63
		RB1#5	22.25	21.86	22.65	19.10	18.71	19.50
		RB3#0	22.38	22.03	22.73	19.23	18.88	19.58
		RB3#3	22.38	21.98	22.74	19.23	18.83	19.59
		RB6#0	21.33	20.96	21.69	18.18	17.81	18.54
	16QAM	RB1#0	21.32	20.95	21.78	18.17	17.80	18.63
		RB1#3	21.52	21.12	21.96	18.37	17.97	18.81
		RB1#5	21.36	20.95	21.76	18.21	17.80	18.61
		RB3#0	21.47	21.24	21.76	18.32	18.09	18.61
		RB3#3	21.47	21.22	21.76	18.32	18.07	18.61
		RB6#0	20.34	20.03	20.75	17.19	16.88	17.60
3.0	QPSK	RB1#0	22.34	22.04	22.08	19.19	18.89	18.93
		RB1#8	22.26	22.04	22.07	19.11	18.89	18.92
		RB1#14	22.31	21.97	22.01	19.16	18.82	18.86
		RB6#0	21.32	21.00	21.00	18.17	17.85	17.85
		RB6#9	21.23	20.99	21.00	18.08	17.84	17.85
		RB15#0	21.38	21.06	21.08	18.23	17.91	17.93
	16QAM	RB1#0	21.87	21.26	21.17	18.72	18.11	18.02
		RB1#8	21.96	21.23	21.10	18.81	18.08	17.95
		RB1#14	21.92	21.21	21.02	18.77	18.06	17.87
		RB6#0	20.45	20.06	20.00	17.30	16.91	16.85
		RB6#9	20.33	20.13	19.97	17.18	16.98	16.82
		RB15#0	20.52	20.09	20.19	17.37	16.94	17.04

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	22.34	21.81	21.90	19.19	18.66	18.75
		RB1#13	22.36	21.89	21.98	19.21	18.74	18.83
		RB1#24	22.30	21.72	21.86	19.15	18.57	18.71
		RB15#0	21.47	20.93	21.05	18.32	17.78	17.90
		RB15#10	21.44	20.84	21.08	18.29	17.69	17.93
		RB25#0	21.49	20.87	21.06	18.34	17.72	17.91
	16QAM	RB1#0	21.64	20.96	20.77	18.49	17.81	17.62
		RB1#13	21.71	21.01	20.95	18.56	17.86	17.80
		RB1#24	21.67	20.90	20.81	18.52	17.75	17.66
		RB15#0	20.46	19.94	20.16	17.31	16.79	17.01
		RB15#10	20.48	19.92	20.15	17.33	16.77	17.00
		RB25#0	20.51	19.94	20.14	17.36	16.79	16.99
10.0	QPSK	RB1#0	22.39	22.81	22.79	19.24	19.66	19.64
		RB1#25	22.46	22.93	22.91	19.31	**19.78**	19.76
		RB1#49	22.25	22.77	22.80	19.10	19.62	19.65
		RB25#0	21.43	21.82	22.05	18.28	18.67	18.90
		RB25#25	21.51	21.80	22.02	18.36	18.65	18.87
		RB50#0	21.47	21.83	22.03	18.32	18.68	18.88
	16QAM	RB1#0	21.98	22.05	21.90	18.83	18.90	18.75
		RB1#25	22.12	22.17	22.01	18.97	**19.02**	18.86
		RB1#49	21.90	21.98	21.85	18.75	18.83	18.70
		RB25#0	20.51	20.90	21.14	17.36	17.75	17.99
		RB25#25	20.59	20.83	21.09	17.44	17.68	17.94
		RB50#0	20.50	20.86	21.06	17.35	17.71	17.91

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For Band12: Antenna Gain = -0.5dBi=-2.65 dBd (0dBd=2.15dBi)
Cable Loss=0.5dB*(provided by the applicant)
Limit: ERP≤34.77dBm

LTE Band 17

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	22.80	22.31	22.28	19.65	19.16	19.13
		RB1#13	22.85	22.36	22.30	**19.70**	19.21	19.15
		RB1#24	22.71	22.22	22.26	19.56	19.07	19.11
		RB15#0	21.85	21.51	21.40	18.70	18.36	18.25
		RB15#10	21.88	21.36	21.47	18.73	18.21	18.32
		RB25#0	21.87	21.38	21.43	18.72	18.23	18.28
	16QAM	RB1#0	22.14	21.42	21.24	18.99	18.27	18.09
		RB1#13	22.19	21.52	21.33	**19.04**	18.37	18.18
		RB1#24	22.10	21.38	21.19	18.95	18.23	18.04
		RB15#0	20.85	20.57	20.48	17.70	17.42	17.33
		RB15#10	20.87	20.41	20.52	17.72	17.26	17.37
		RB25#0	20.91	20.49	20.52	17.76	17.34	17.37
10.0	QPSK	RB1#0	22.36	22.58	22.70	19.21	19.43	19.55
		RB1#25	22.54	22.71	22.79	19.39	19.56	**19.64**
		RB1#49	22.30	22.49	22.65	19.15	19.34	19.50
		RB25#0	21.41	21.70	21.85	18.26	18.55	18.70
		RB25#25	21.29	21.57	21.82	18.14	18.42	18.67
		RB50#0	21.39	21.69	21.83	18.24	18.54	18.68
	16QAM	RB1#0	22.05	21.79	21.73	18.90	18.64	18.58
		RB1#25	22.16	21.88	21.90	**19.01**	18.73	18.75
		RB1#49	21.93	21.73	21.71	18.78	18.58	18.56
		RB25#0	20.48	20.78	20.99	17.33	17.63	17.84
		RB25#25	20.39	20.64	20.93	17.24	17.49	17.78
		RB50#0	20.45	20.73	20.85	17.30	17.58	17.70

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)
For Band17: Antenna Gain = -0.50dBi = -2.65Bd (0dBd=2.15dBi)
Cable Loss=0.5dB*(provided by the applicant)
Limit: ERP≤34.77dBm

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.52	13
	Middle	3.51	13
	High	3.44	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.17	13
	Middle	3.55	13
	High	3.24	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.26	13
	Middle	3.37	13
	High	3.41	13
HSDPA (16QAM)	Low	3.62	13
	Middle	3.38	13
	High	3.58	13
HSUPA (BPSK)	Low	3.64	13
	Middle	3.49	13
	High	3.44	13
HSPA+	Low	3.51	13
	Middle	3.47	13
	High	3.44	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.87	13
	Middle	3.53	13
	High	3.46	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.44	13
	Middle	3.59	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.88	13
	Middle	3.76	13
	High	3.54	13
HSDPA (16QAM)	Low	3.69	13
	Middle	3.54	13
	High	3.41	13
HSUPA (BPSK)	Low	3.51	13
	Middle	3.69	13
	High	3.33	13
HSPA+	Low	3.49	13
	Middle	3.52	13
	High	3.61	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.44	13
	Middle	3.52	13
	High	3.56	13
HSDPA (16QAM)	Low	3.47	13
	Middle	3.52	13
	High	3.41	13
HSUPA (BPSK)	Low	3.44	13
	Middle	3.35	13
	High	3.47	13
HSPA+	Low	3.46	13
	Middle	3.51	13
	High	3.48	13

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.65	4.58	5.06	13	Pass
QPSK (100RB Size)	5.38	5.45	5.51	13	Pass
16QAM (1RB Size)	5.67	5.51	6.35	13	Pass
16QAM (100RB Size)	6.25	6.31	6.31	13	Pass

LTE Band 4 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.1	4.87	4.94	13	Pass
QPSK (100RB Size)	5.61	5.58	5.61	13	Pass
16QAM (1RB Size)	6.22	5.58	6.25	13	Pass
16QAM (100RB Size)	6.51	6.41	6.38	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.9	4.9	5.48	13	Pass
QPSK (50RB Size)	5.64	5.74	5.77	13	Pass
16QAM (1RB Size)	6.22	5.8	6.70	13	Pass
16QAM (50RB Size)	6.51	6.63	6.51	13	Pass

LTE Band 7 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.94	4.42	4.52	13	Pass
QPSK (100RB Size)	5.42	5.58	5.38	13	Pass
16QAM (1RB Size)	4.87	5.61	5.77	13	Pass
16QAM (100RB Size)	6.31	6.38	6.31	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.29	5.35	5.22	13	Pass
QPSK (50RB Size)	5.67	5.58	5.71	13	Pass
16QAM (1RB Size)	5.19	6.35	5.83	13	Pass
16QAM (50RB Size)	6.63	6.54	6.60	13	Pass

LTE Band 17 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.38	5.48	5.00	13	Pass
QPSK (50RB Size)	5.74	5.71	5.77	13	Pass
16QAM (1RB Size)	6.22	6.47	5.83	13	Pass
16QAM (50RB Size)	6.54	6.60	6.60	13	Pass

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

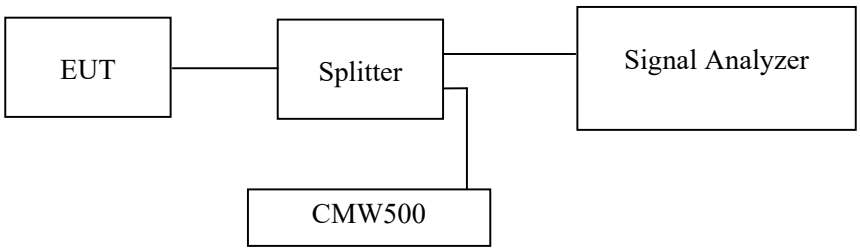
Applicable Standard

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:	27.2 ℃
Relative Humidity:	56.8 %
ATM Pressure:	101.0 kPa

The testing was performed by Cat Kang from 2022-08-25 to 2022-09-14.

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	246.00	321.00
	190	836.6	245.00	318.00
	251	848.8	244.00	321.00
EGPRS(8PSK)	128	824.2	246.00	311.00
	190	836.6	244.00	312.00
	251	848.8	246.00	310.00

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.16	4.73
	836.4	4.17	4.73
	846.6	4.19	4.74
HSDPA	826.4	4.17	4.73
	836.4	4.19	4.73
	846.6	4.17	4.74
HSUPA	826.4	4.23	5.09
	836.4	4.25	5.60
	846.6	4.25	5.24

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM (GMSK)	512	1850.2	245.00	317.00
	661	1880.0	244.00	321.00
	810	1909.8	244.00	316.00
EGPRS(8PSK)	512	1850.2	251.00	318.00
	661	1880.0	250.00	322.00
	810	1909.8	251.00	313.00

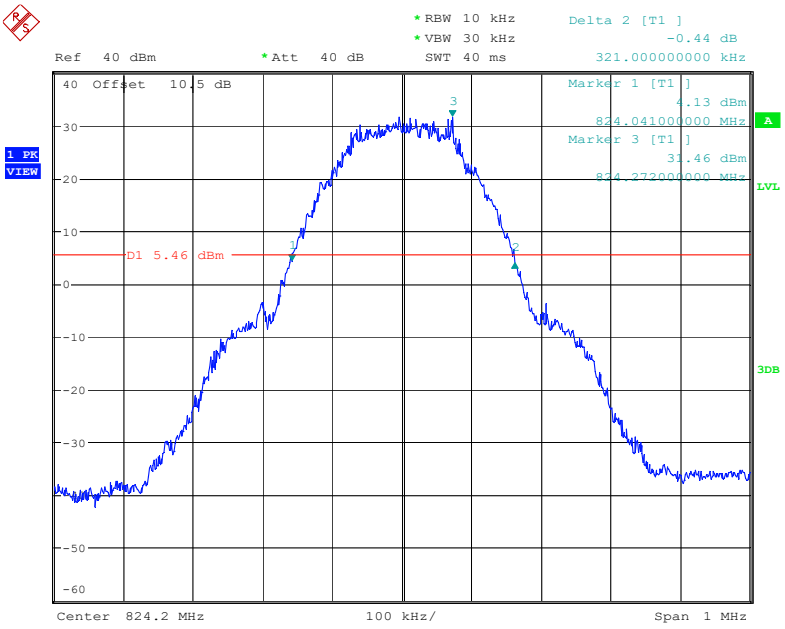
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.17	4.76
	1880.0	4.17	4.76
	1907.6	4.17	4.74
HSDPA	1852.4	4.17	4.76
	1880.0	4.20	4.83
	1907.6	4.17	4.94
HSUPA	1852.4	4.20	4.80
	1880.0	4.20	4.83
	1907.6	4.20	4.94

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.17	4.74
	1732.6	4.17	4.73
	1752.6	4.17	4.76
HSDPA	1712.4	4.17	4.74
	1732.6	4.23	5.18
	1752.6	4.23	5.27
HSUPA	1712.4	4.22	5.19
	1732.6	4.25	6.92
	1752.6	4.28	6.42

Cellular Band (Part 22H)

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



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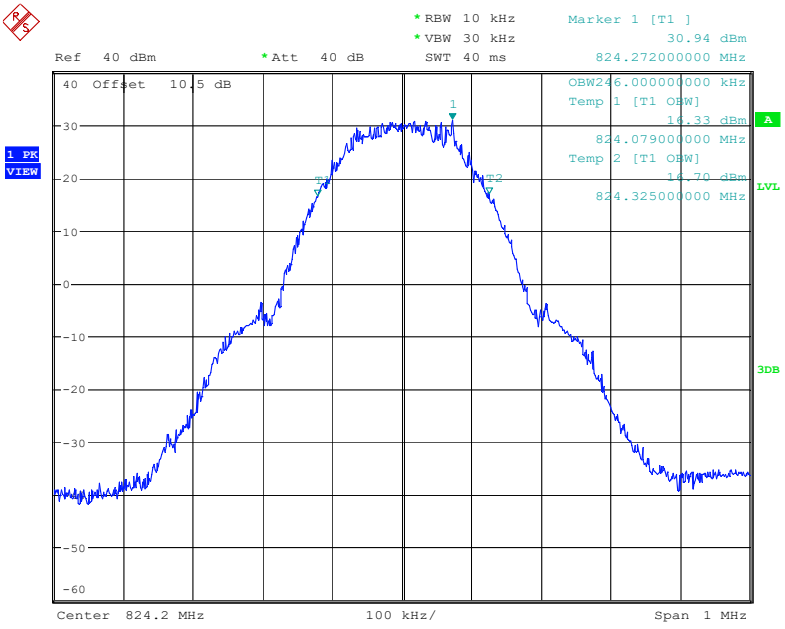

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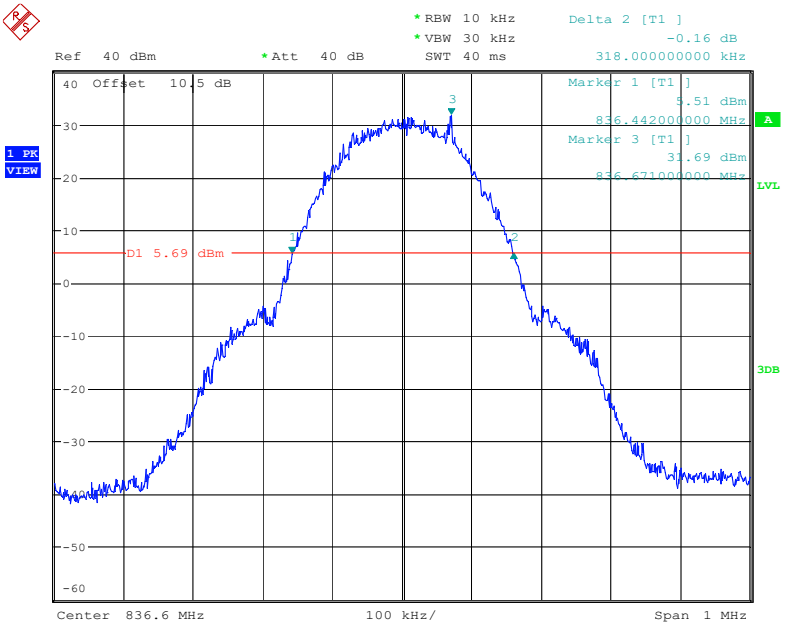
26 dB Emissions &99% Occupied Bandwidth for GSM(GMSK) Mode, Middle channel



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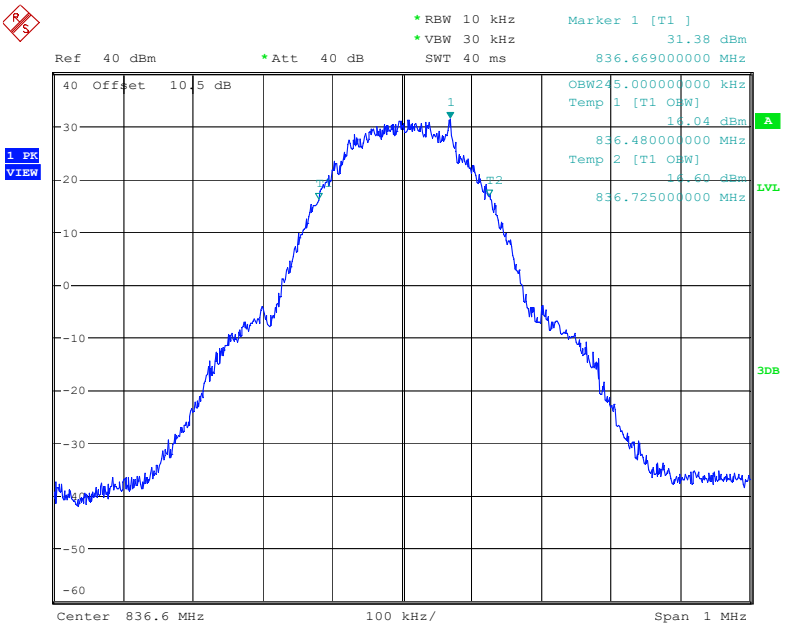

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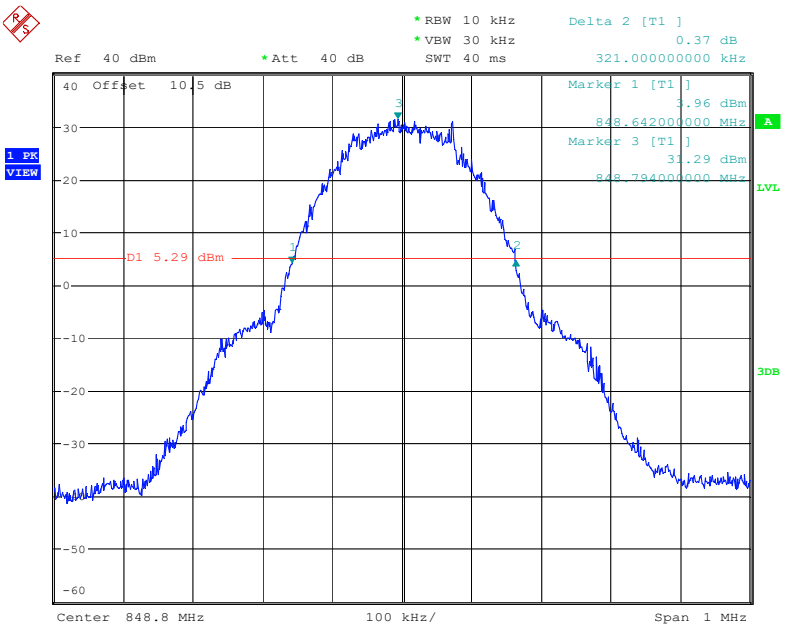
26 dB Emissions &99% Occupied Bandwidth for GSM(GMSK) Mode, High channel



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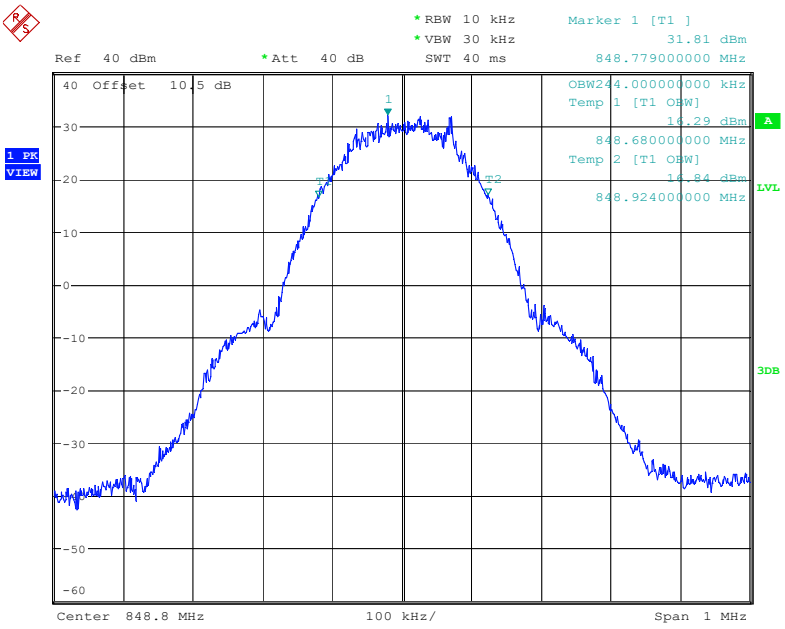
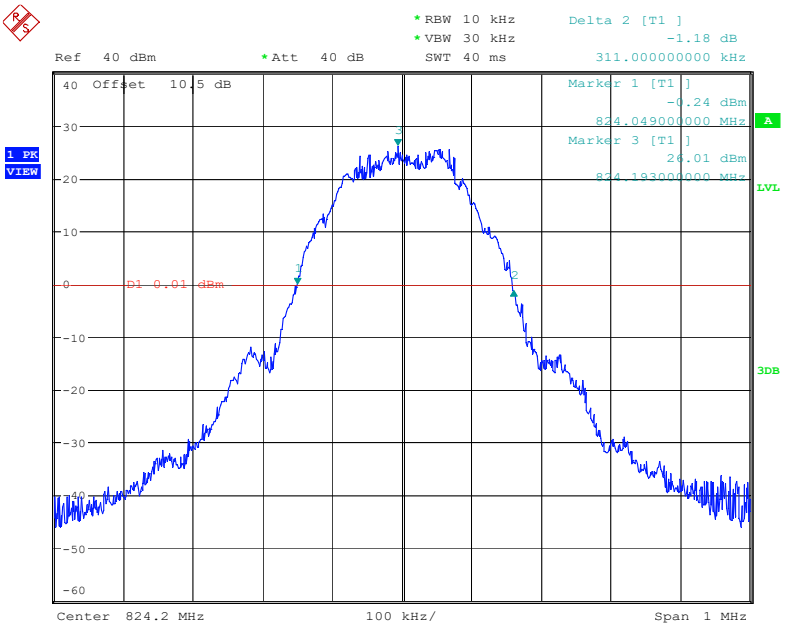


Date: 26.AUG.2022 11:29:35

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



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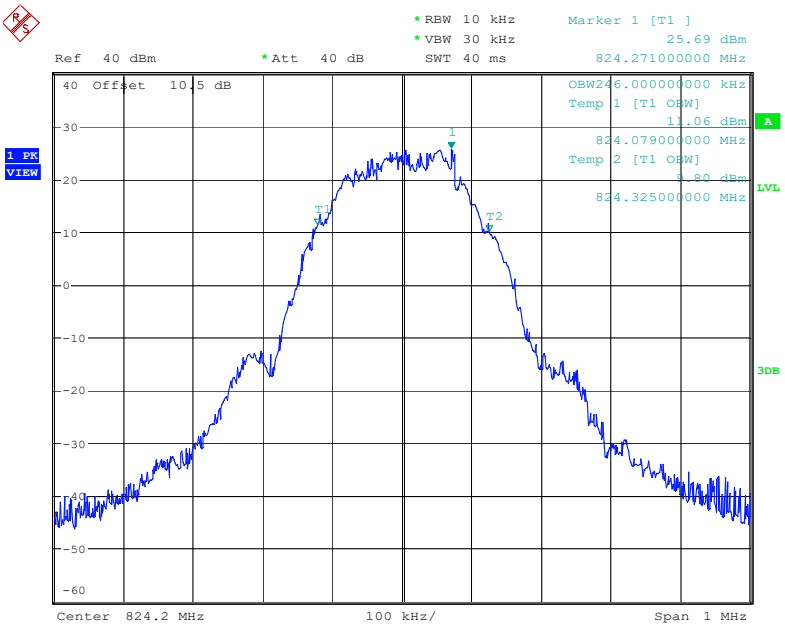

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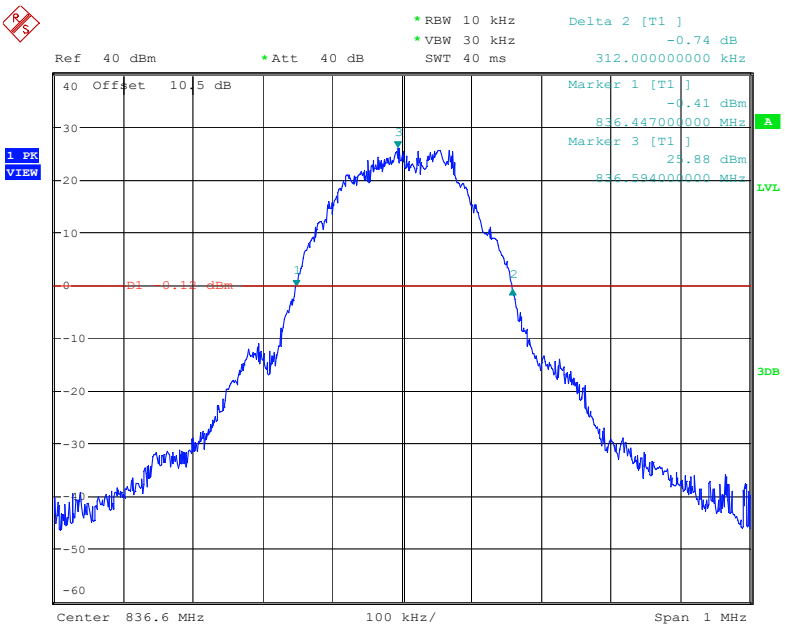
26 dB Emissions &99% Occupied Bandwidth for EGPRS(8PSK) Mode, Middle channel



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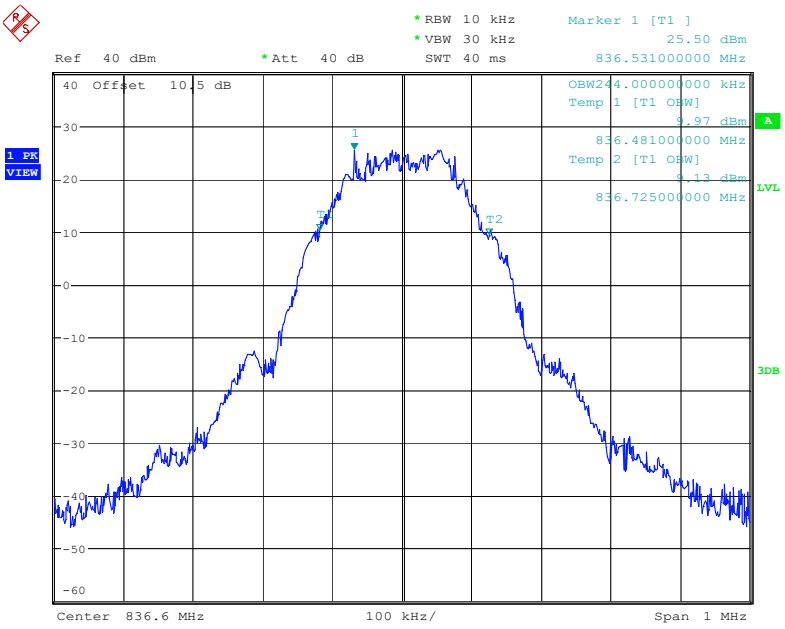

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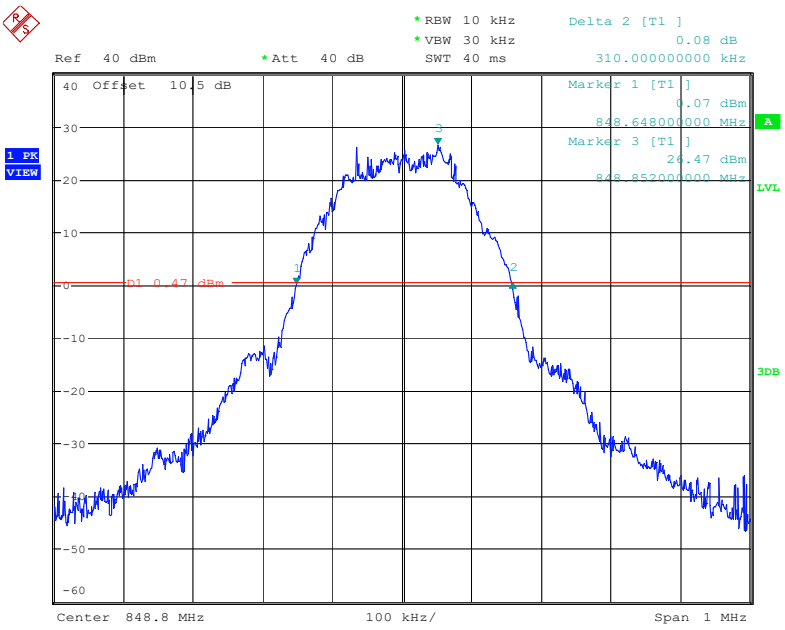
26 dB Emissions &99% Occupied Bandwidth for EGPRS(8PSK) Mode, High channel



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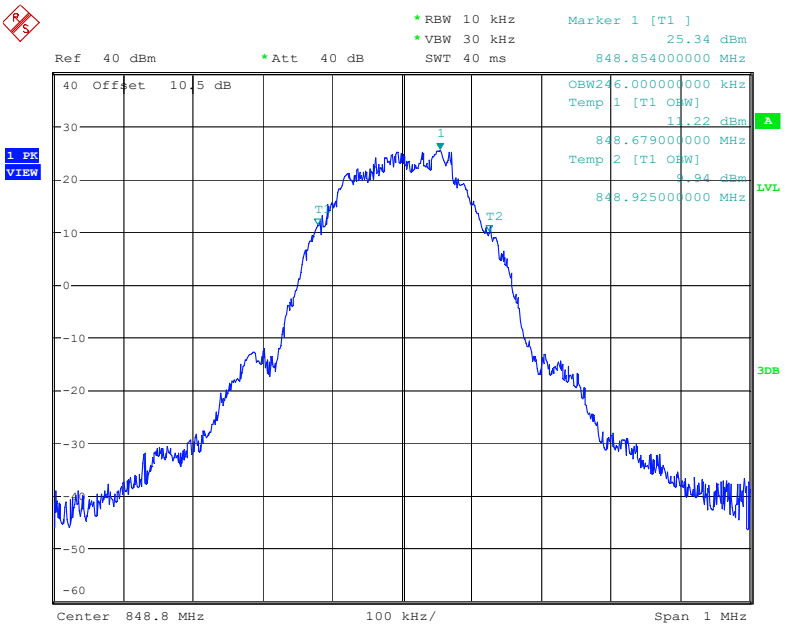

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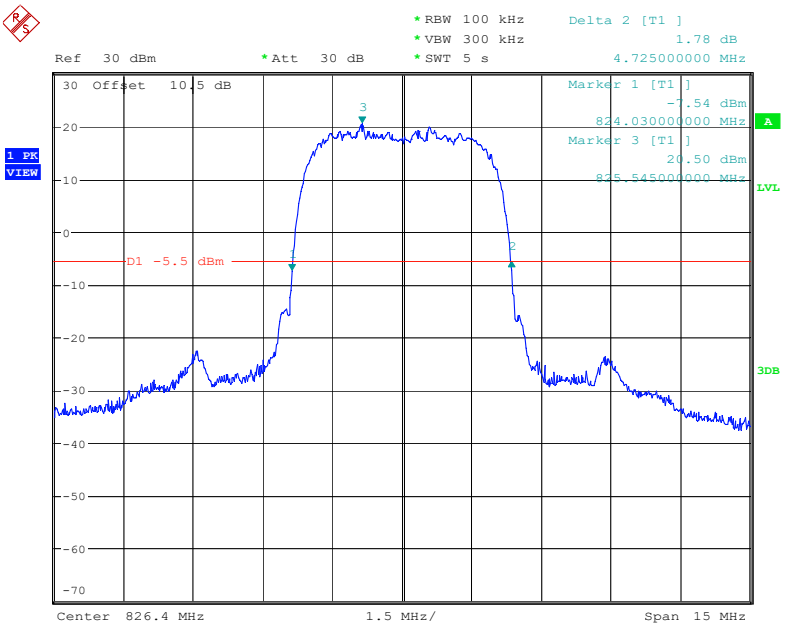
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



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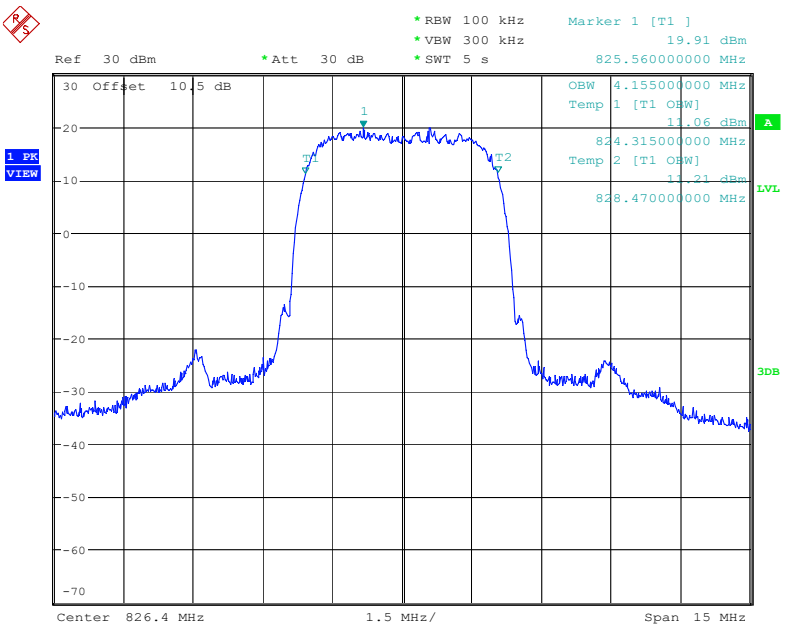

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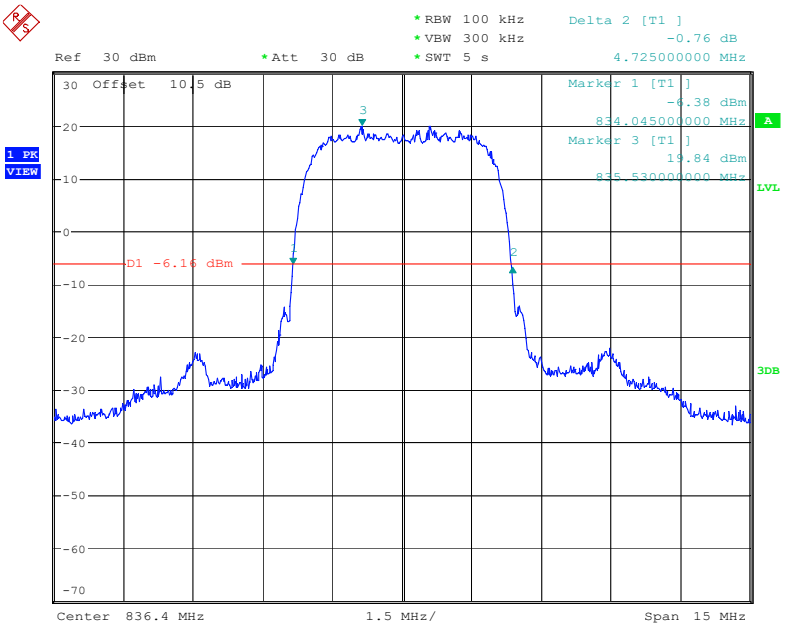
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



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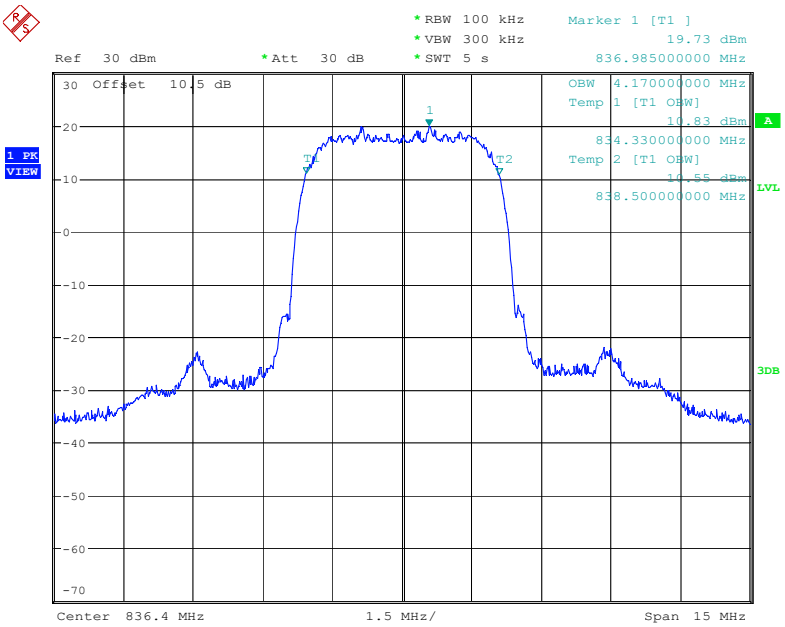

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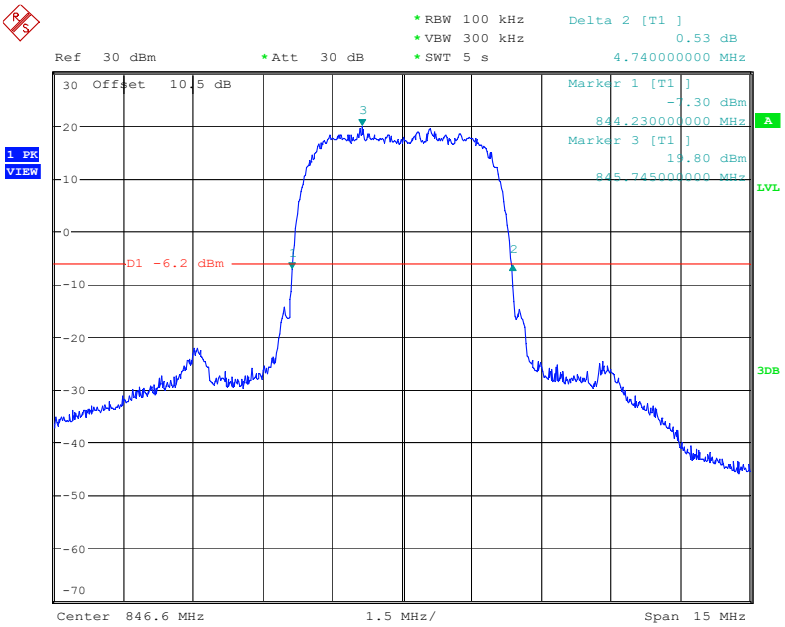
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode, High channel



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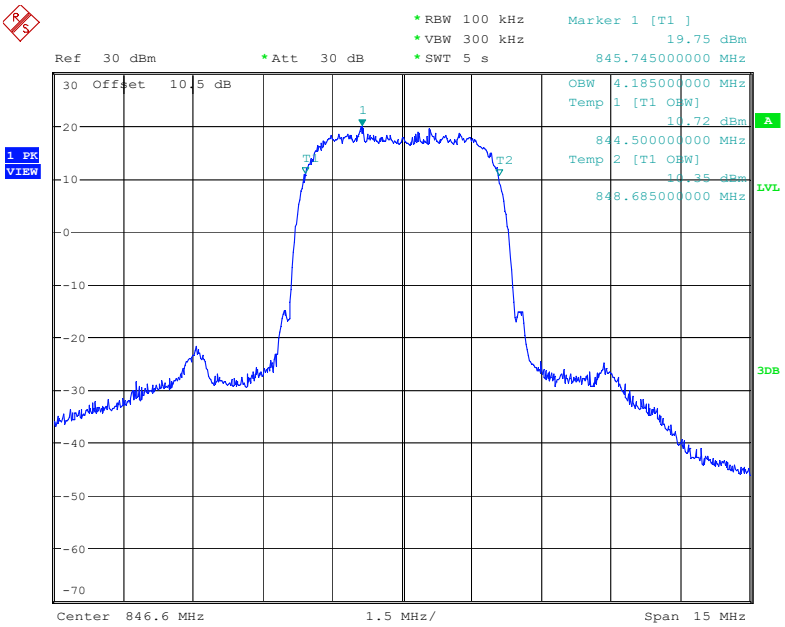

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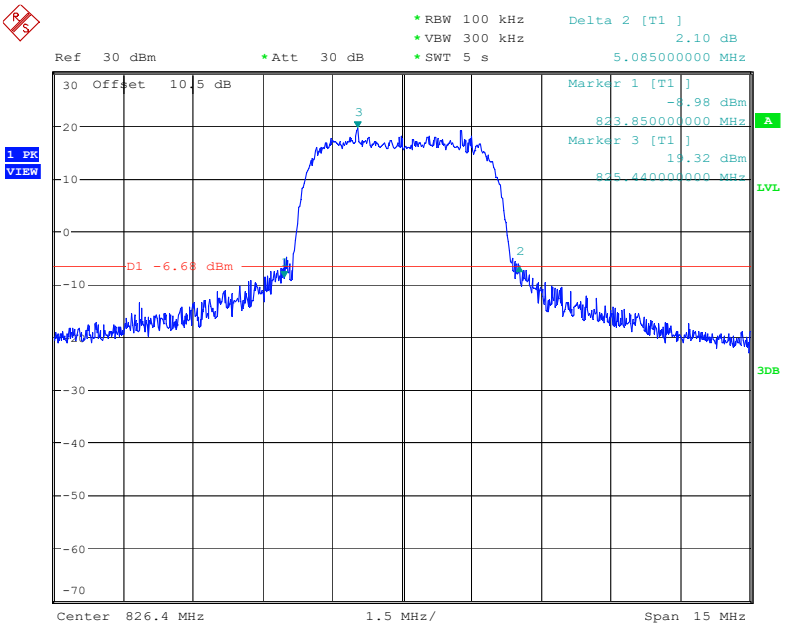
26 dB Emissions &99% Occupied Bandwidth for HSUPA (QPSK) Mode, Low channel



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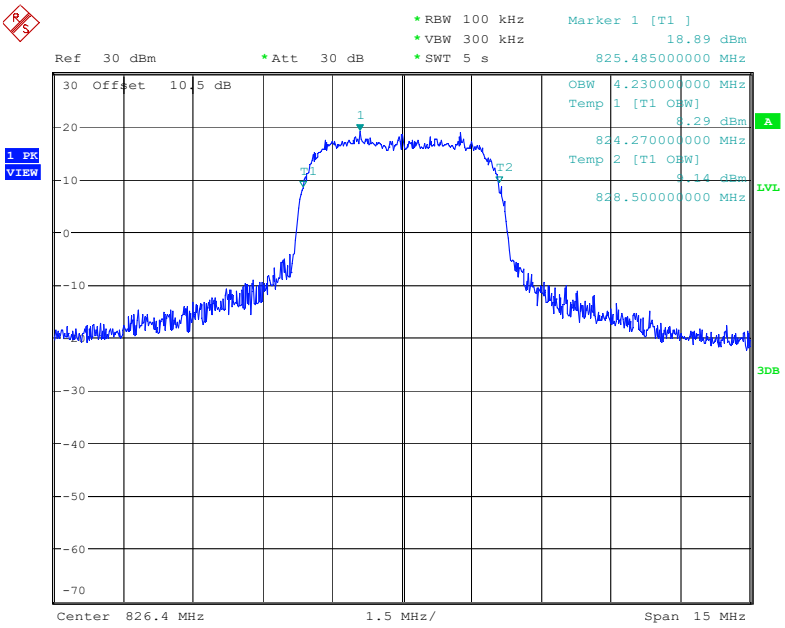
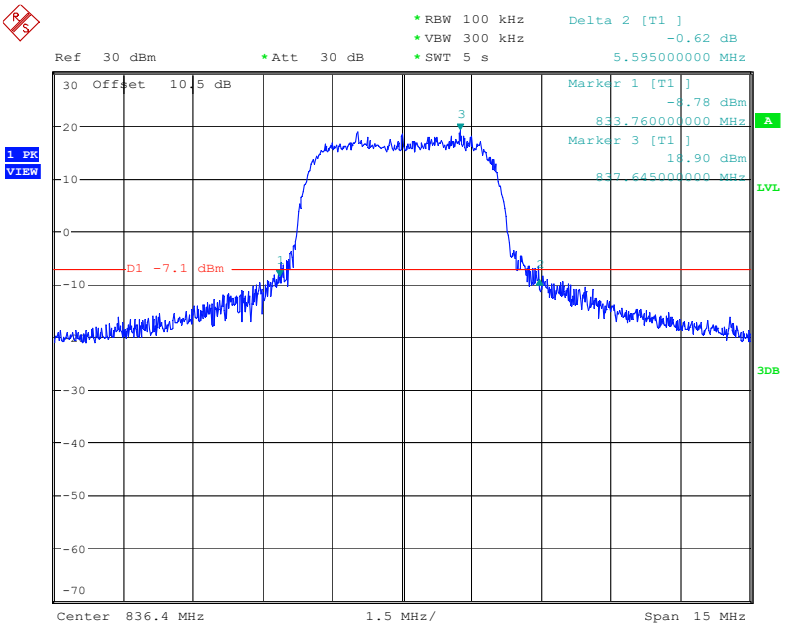
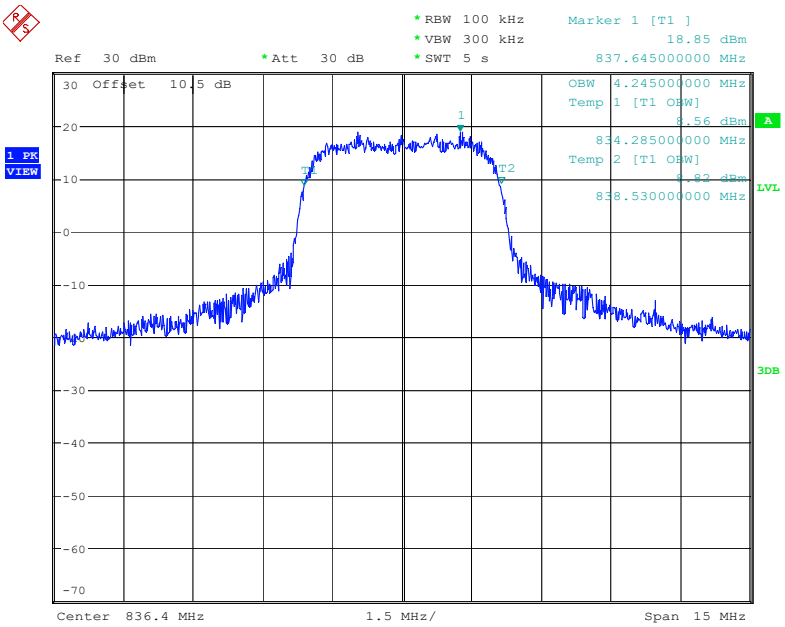


Date: 27.AUG.2022 18:51:22

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

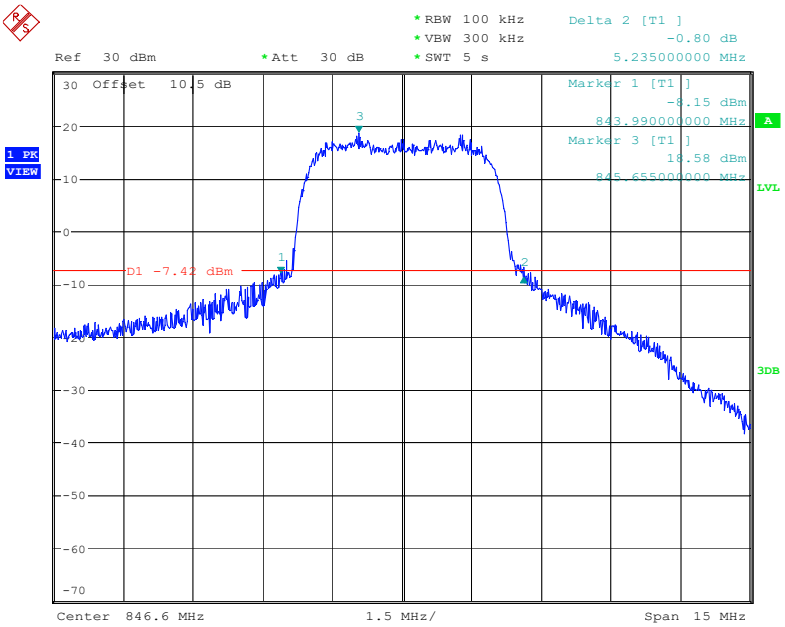


Date: 27.AUG.2022 18:56:34

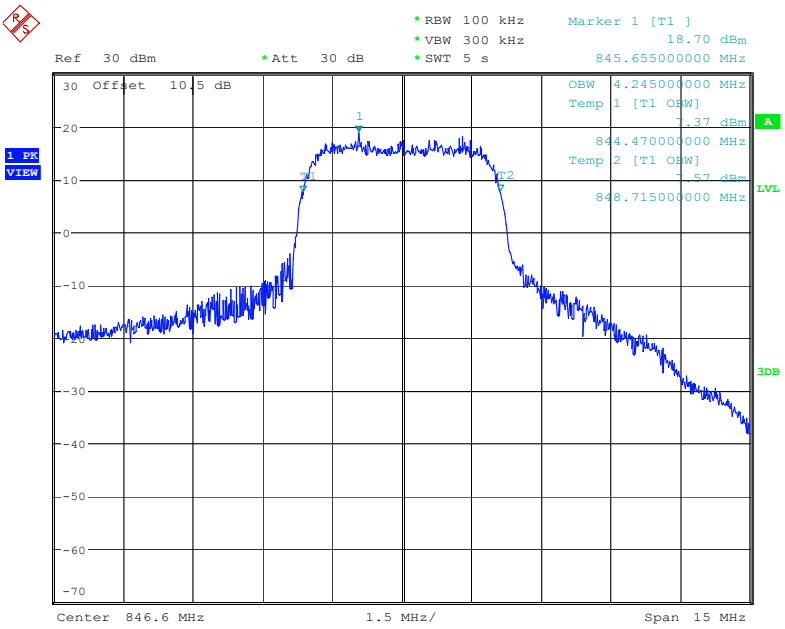


Date: 27.AUG.2022 18:55:56

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

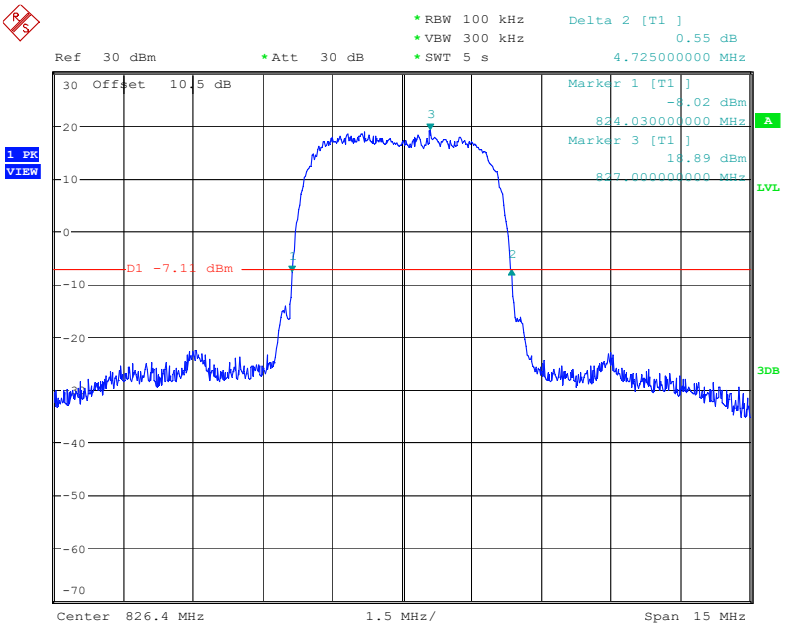


Date: 26.AUG.2022 16:44:52

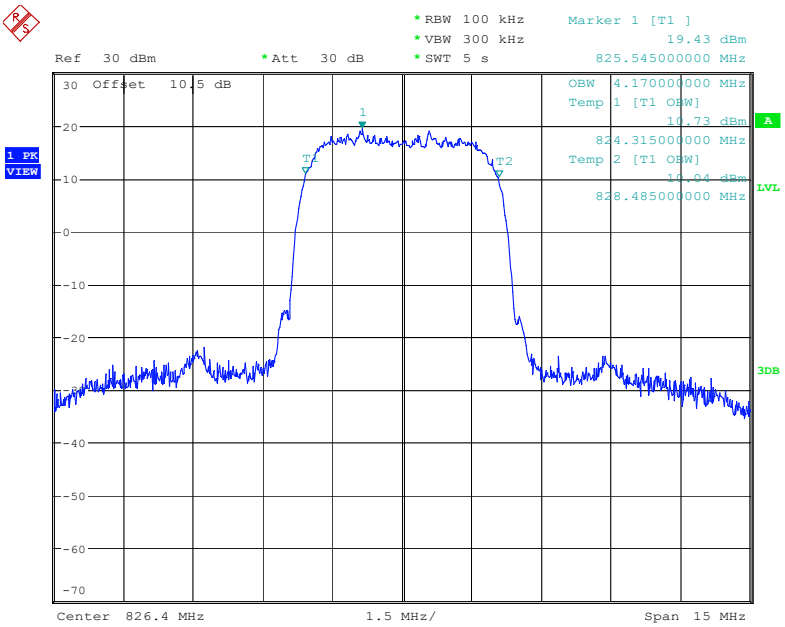


Date: 26.AUG.2022 16:44:14

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

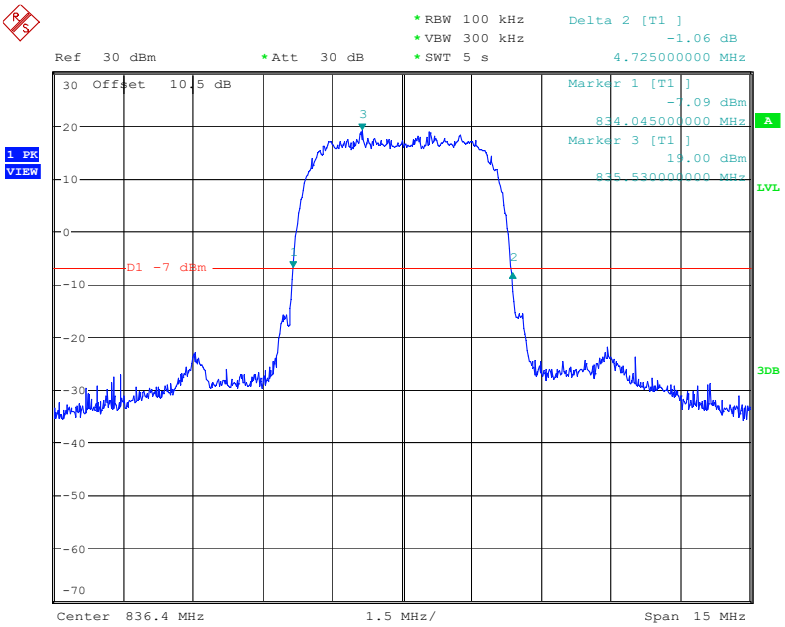


Date: 26.AUG.2022 16:00:05

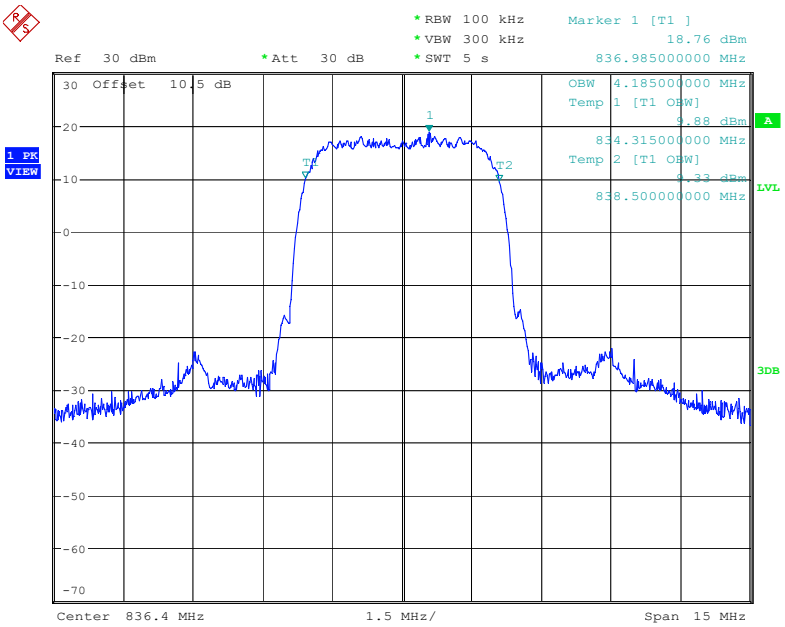


Date: 26.AUG.2022 15:59:28

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

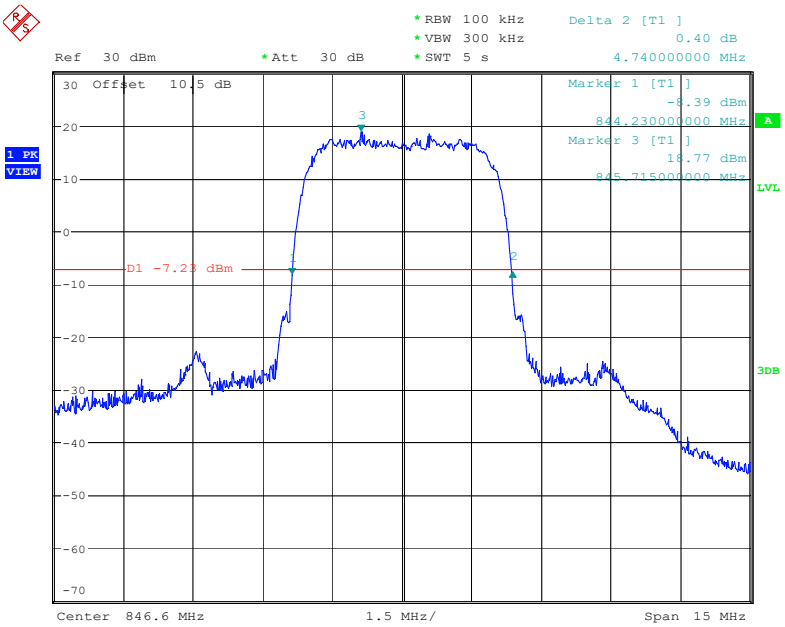


Date: 26.AUG.2022 16:03:28

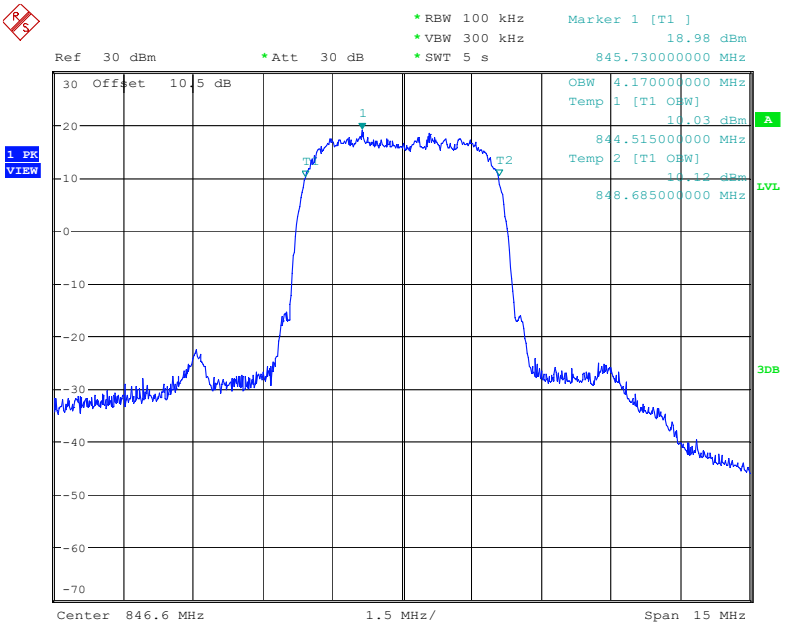


Date: 26.AUG.2022 16:02:51

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



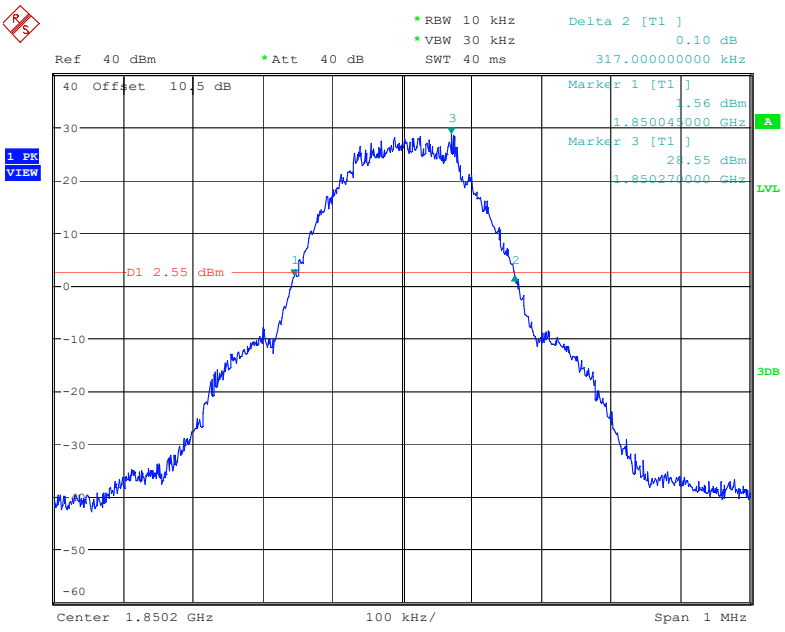
Date: 26.AUG.2022 16:06:18



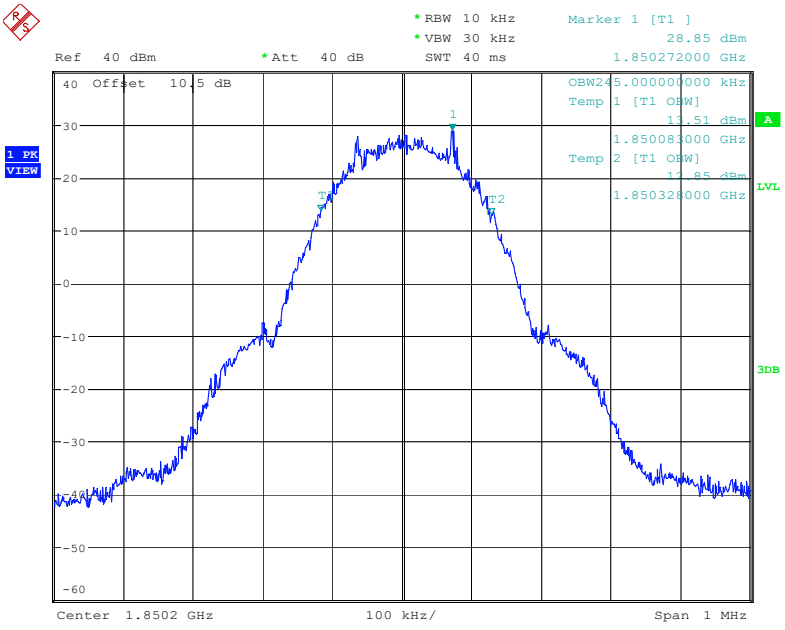
Date: 26.AUG.2022 16:05:39

PCS Band (Part 24E)

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

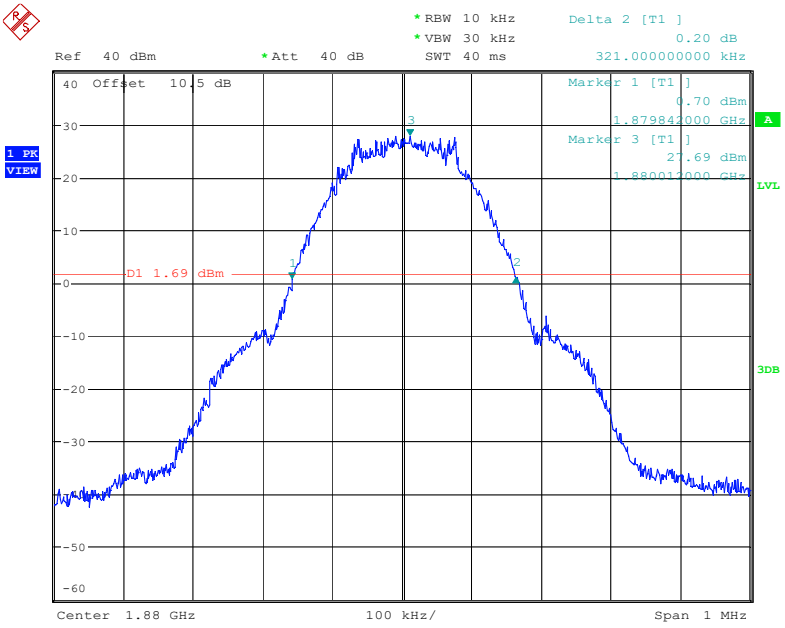


Date: 26.AUG.2022 13:26:18

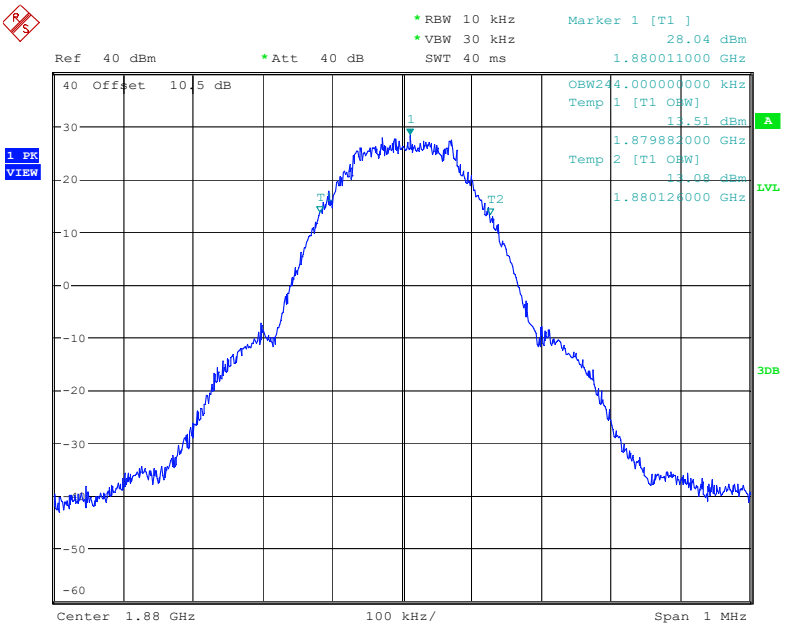


Date: 26.AUG.2022 13:25:41

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

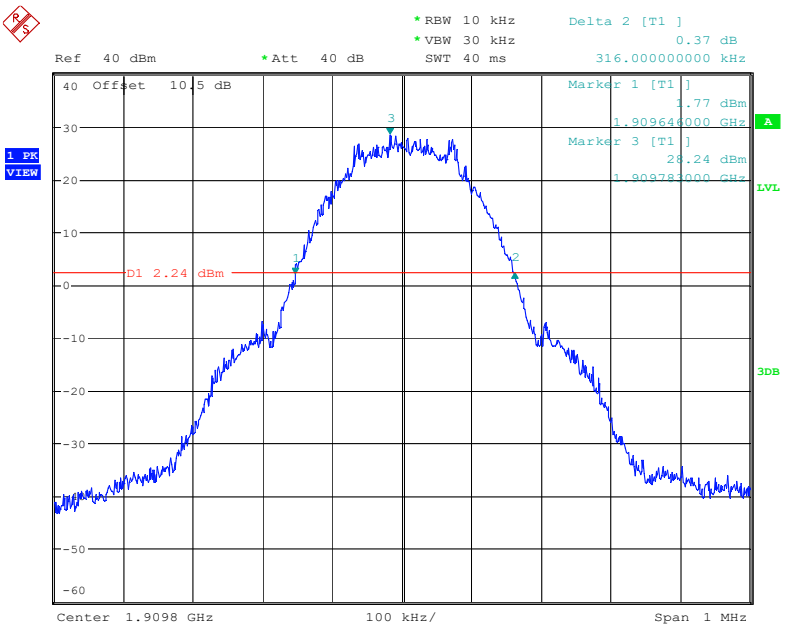


Date: 26.AUG.2022 13:37:30

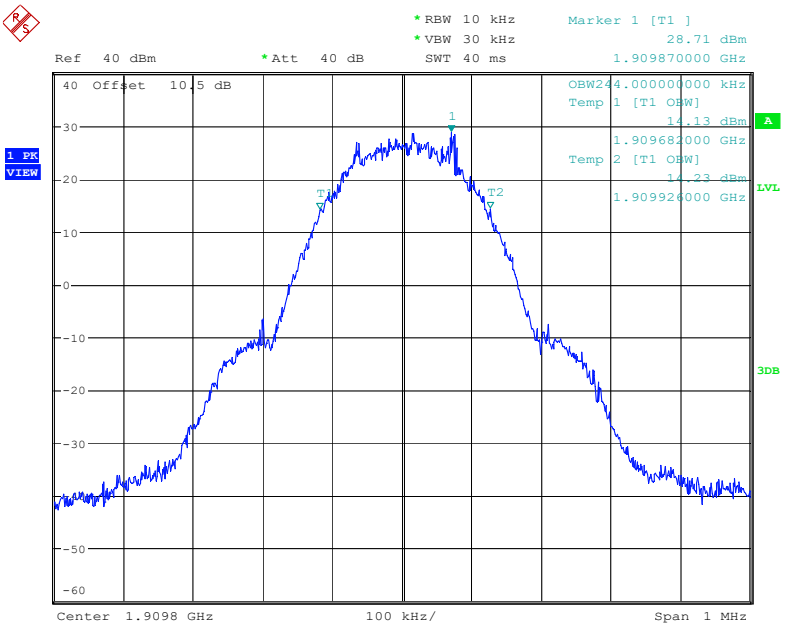


Date: 26.AUG.2022 13:36:50

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

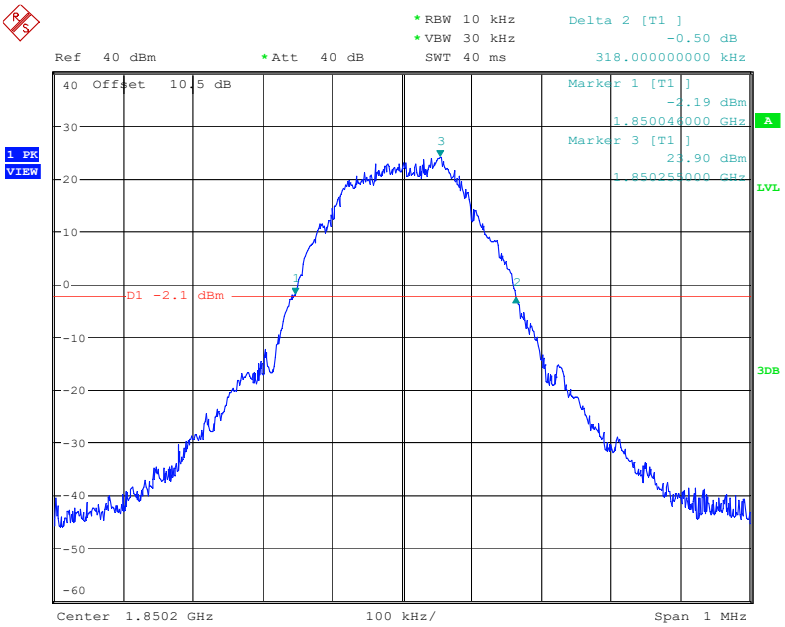


Date: 26.AUG.2022 13:41:57

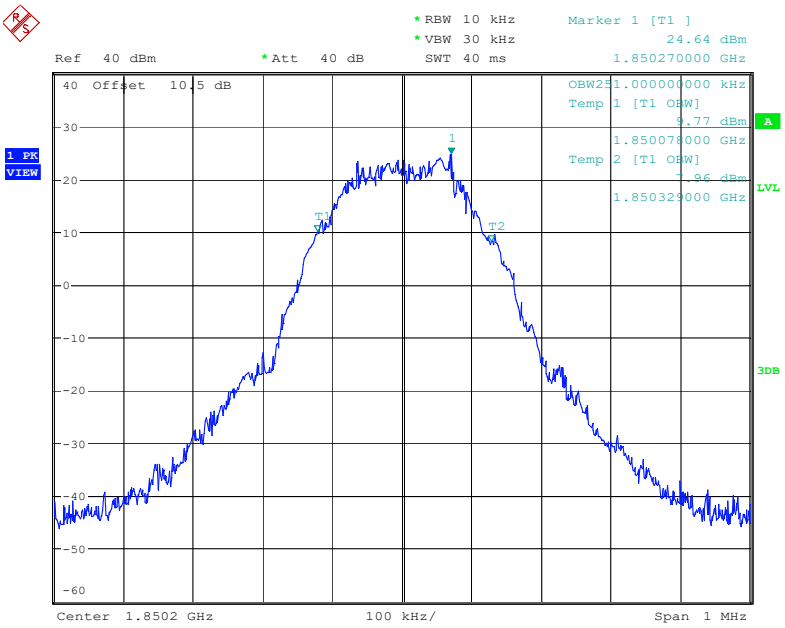


Date: 26.AUG.2022 13:41:19

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

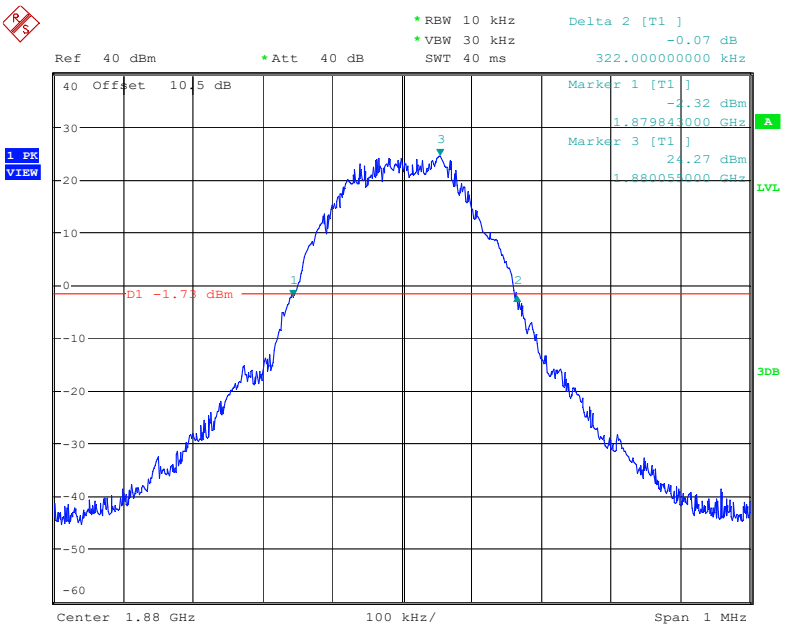


Date: 26.AUG.2022 14:08:02

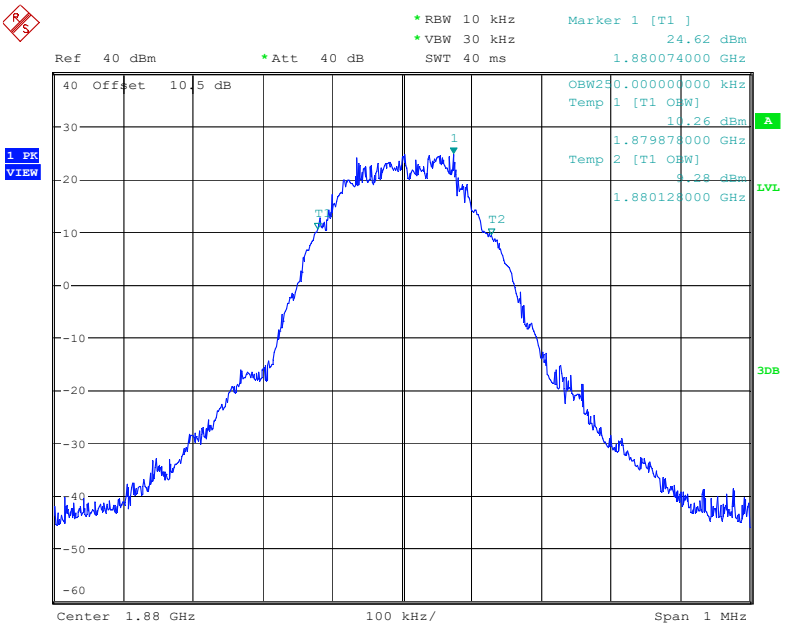


Date: 26.AUG.2022 14:07:24

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

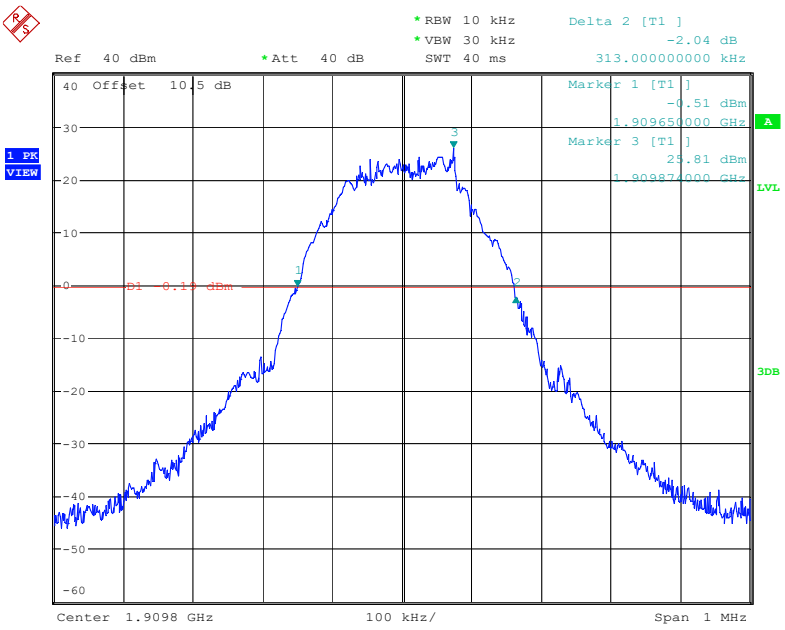


Date: 26.AUG.2022 14:14:44

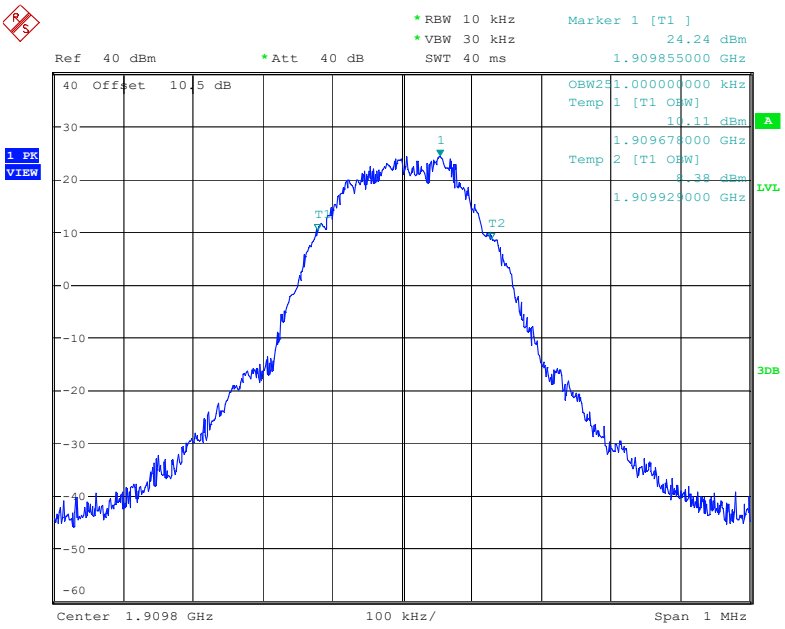


Date: 26.AUG.2022 14:14:07

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

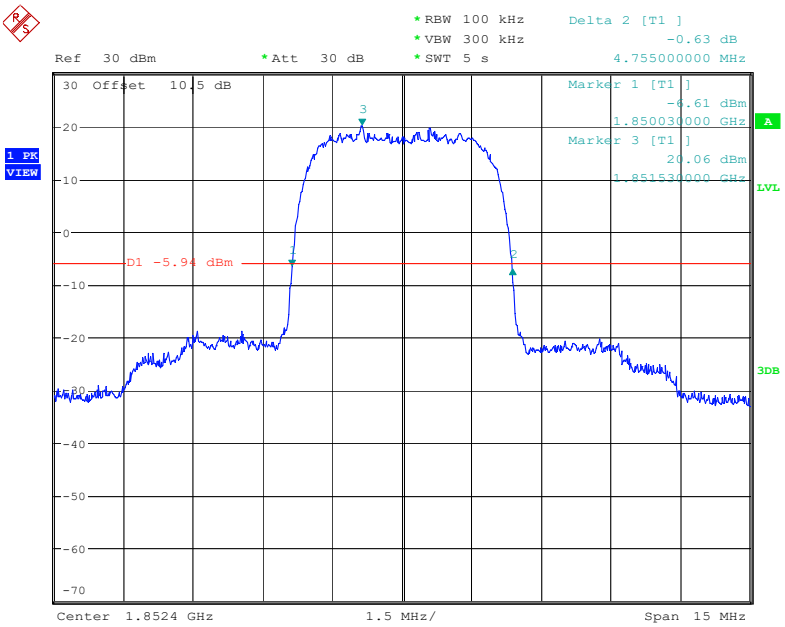


Date: 26.AUG.2022 14:20:02

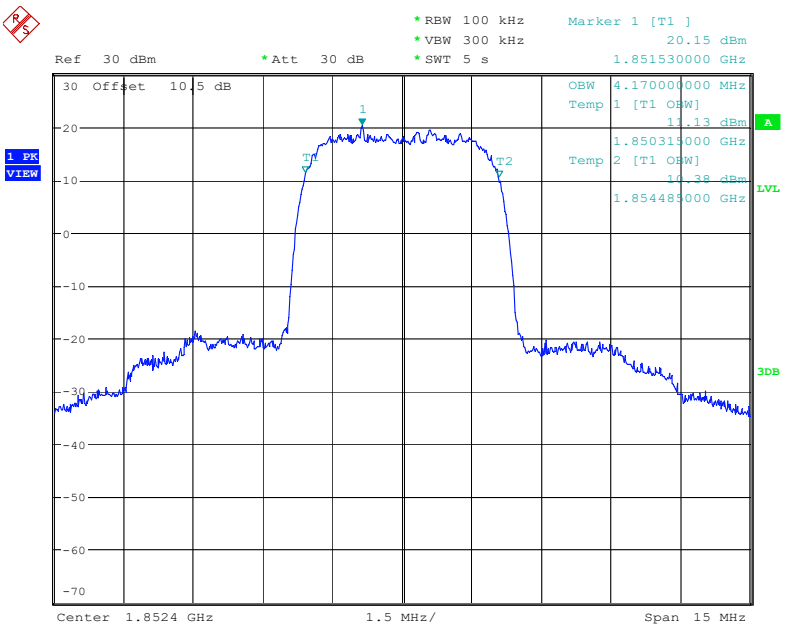


Date: 26.AUG.2022 14:19:25

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

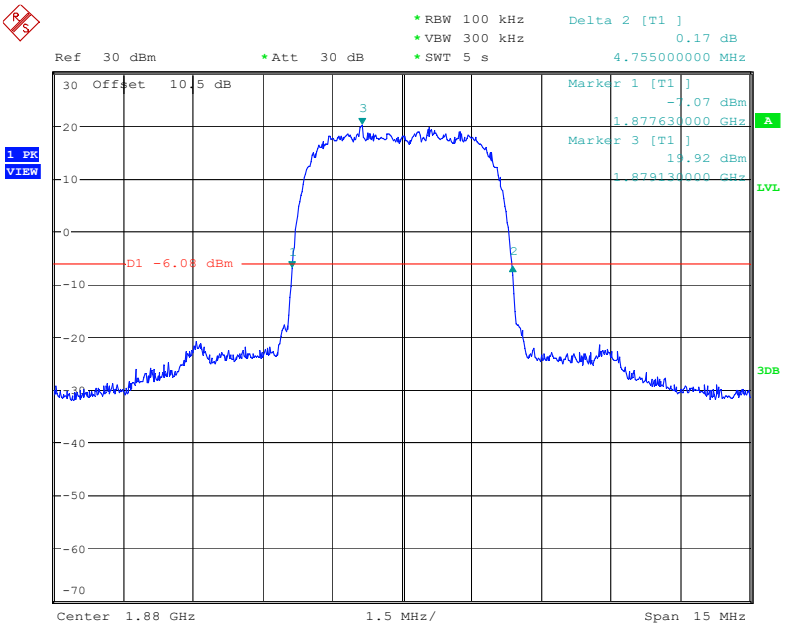


Date: 26.AUG.2022 14:34:09

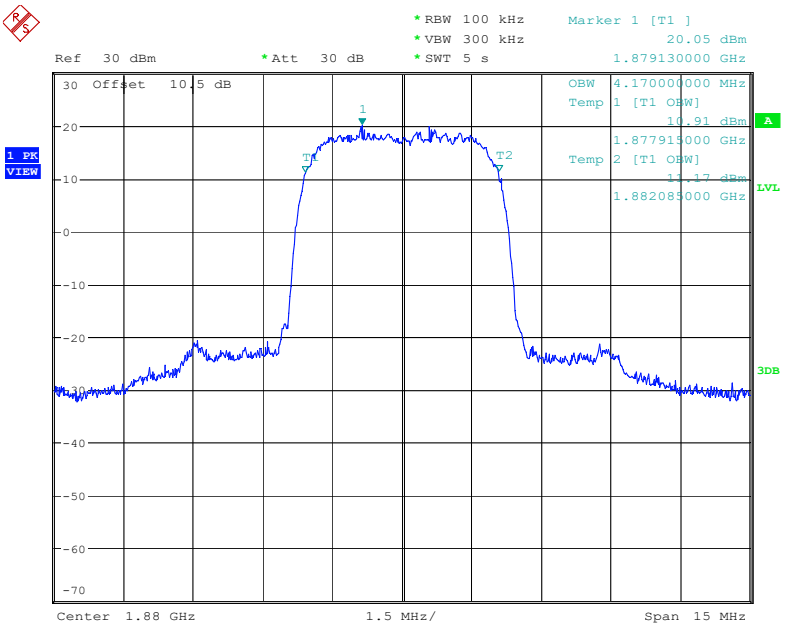


Date: 26.AUG.2022 14:33:32

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

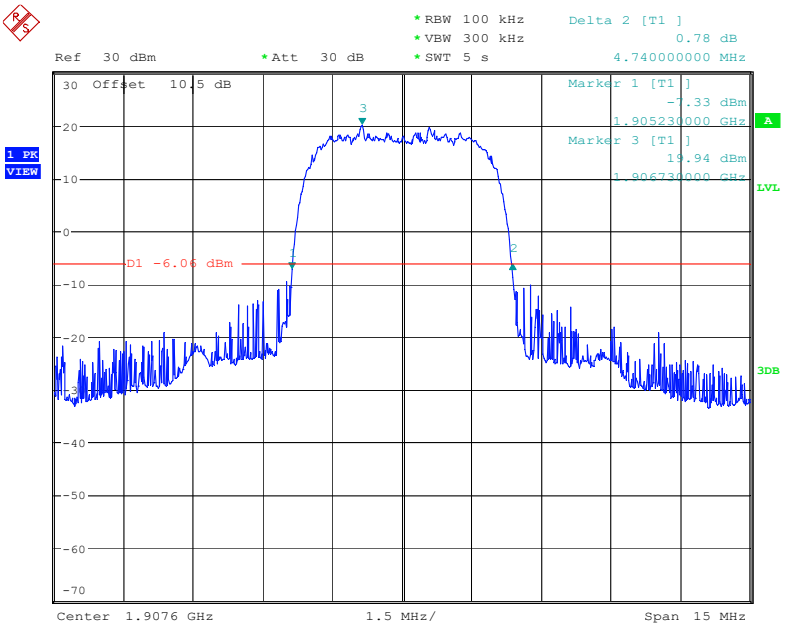


Date: 26.AUG.2022 14:38:10

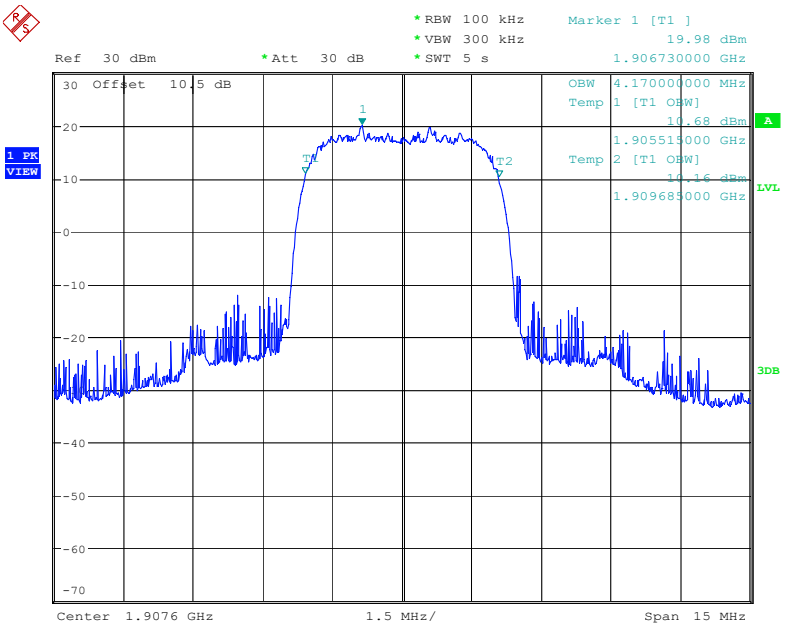


Date: 26.AUG.2022 14:37:32

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

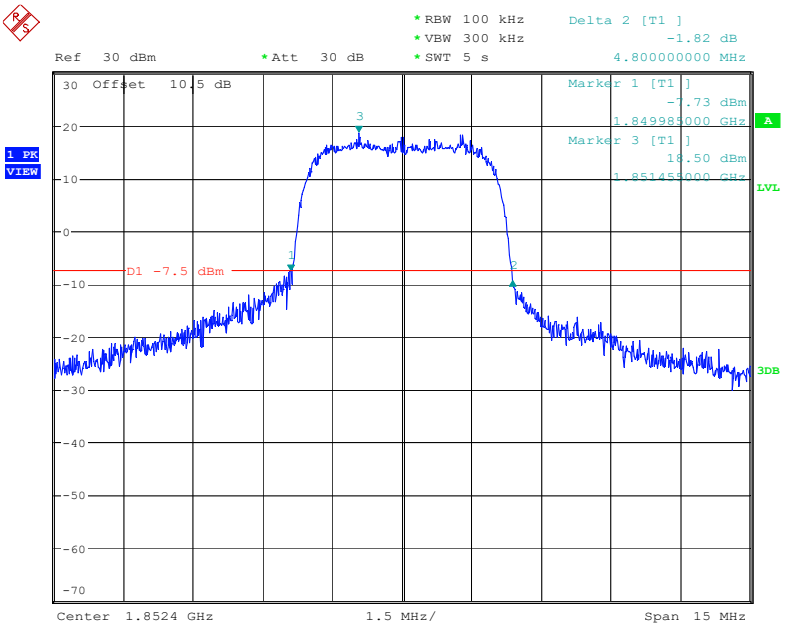


Date: 26.AUG.2022 14:42:11

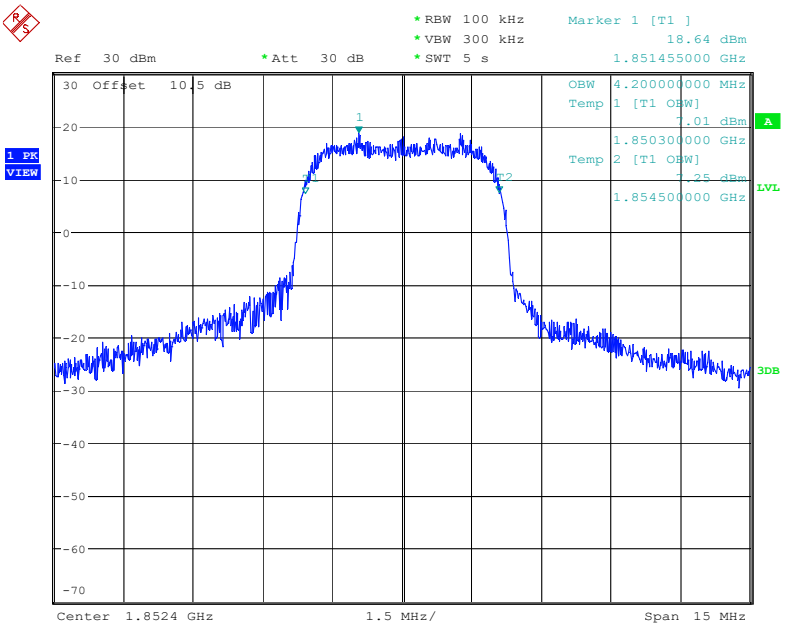


Date: 26.AUG.2022 14:41:33

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

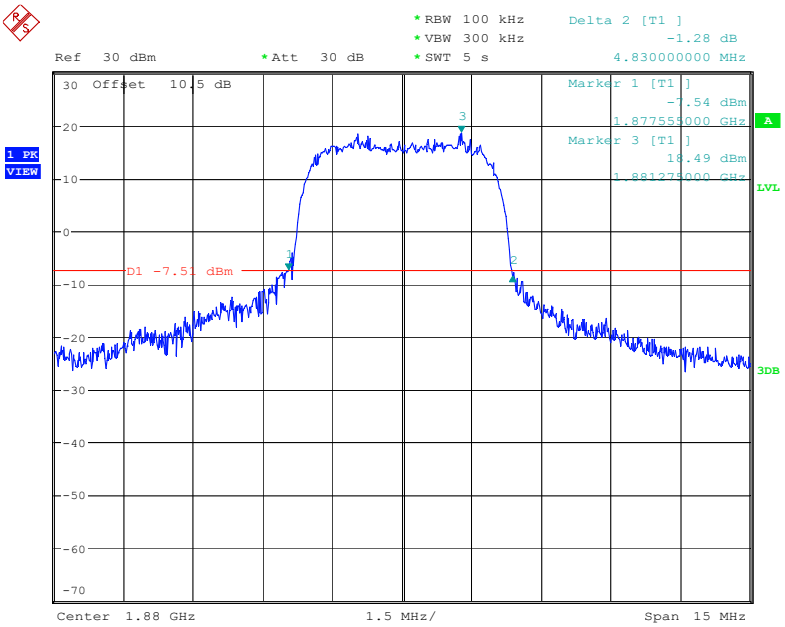


Date: 26.AUG.2022 16:11:51

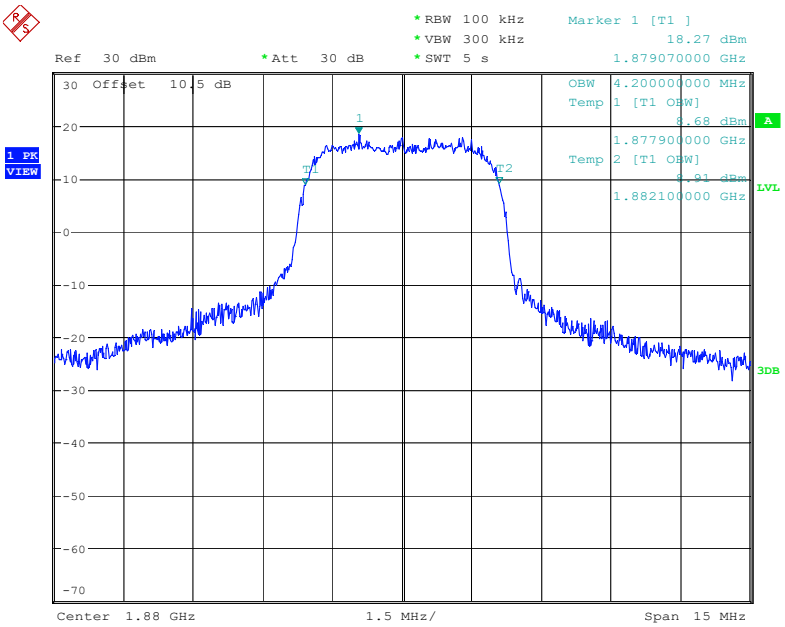


Date: 26.AUG.2022 16:11:14

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

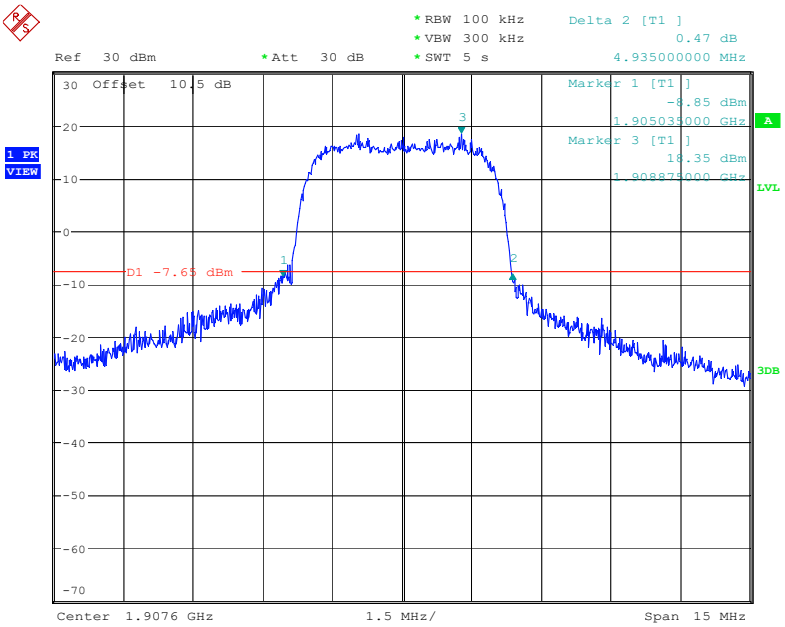


Date: 26.AUG.2022 16:17:31

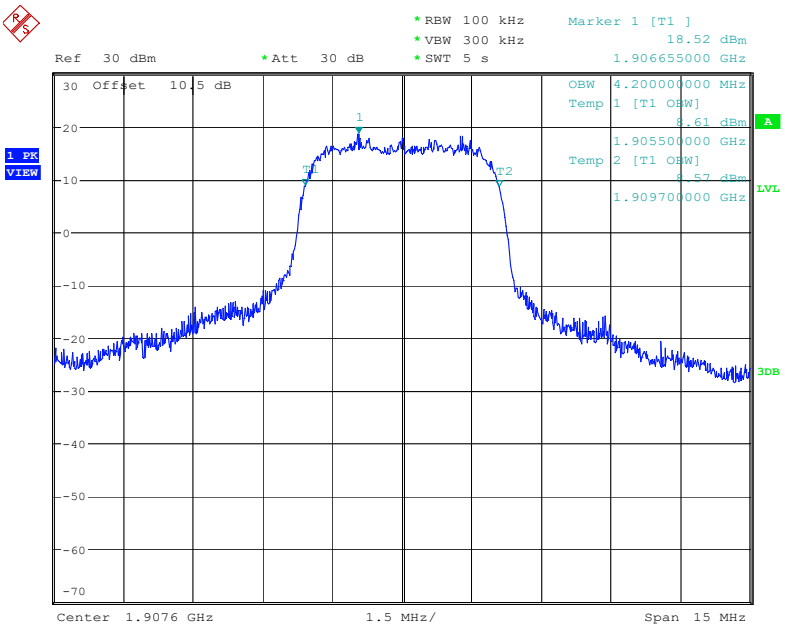


Date: 26.AUG.2022 16:16:52

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

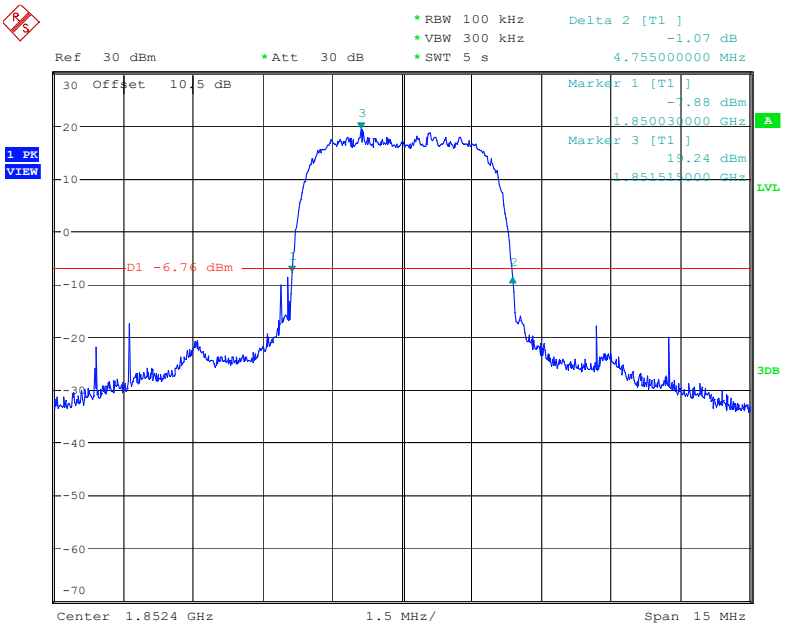


Date: 26.AUG.2022 16:21:11

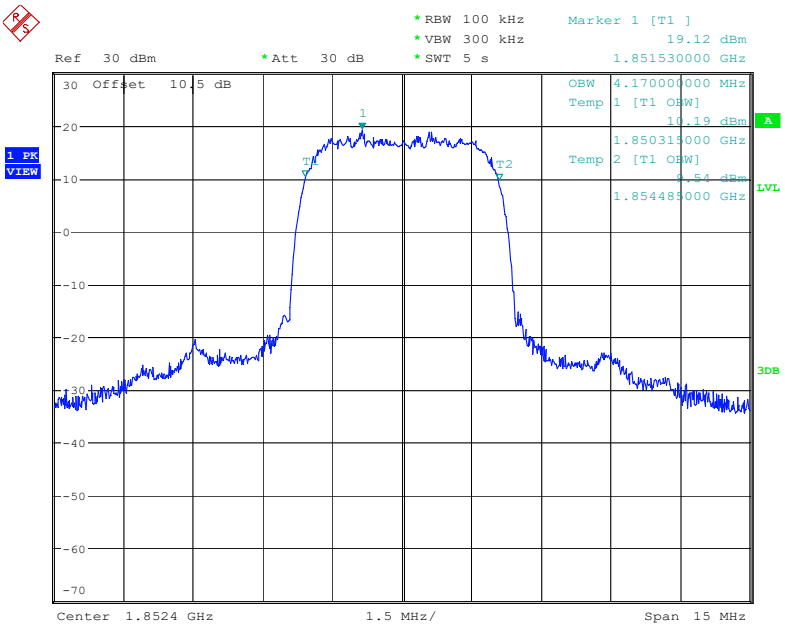


Date: 26.AUG.2022 16:20:33

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

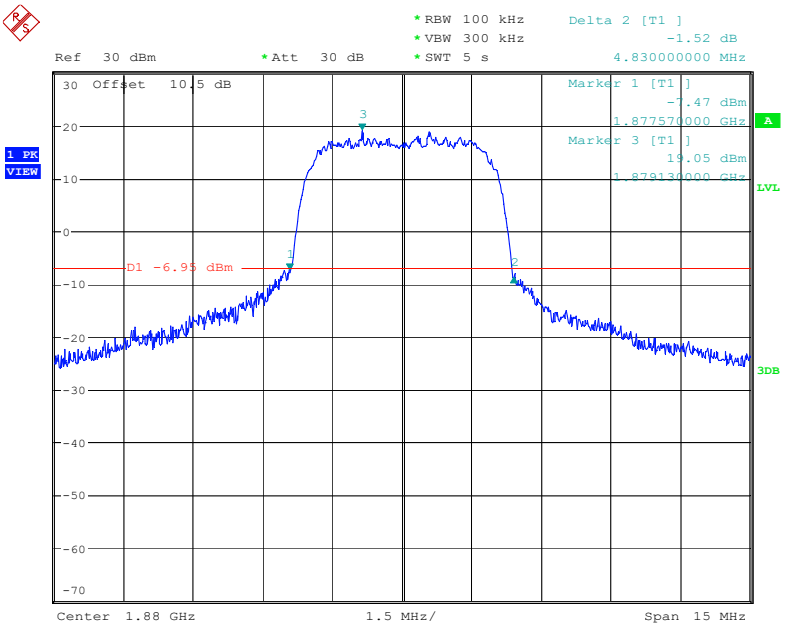


Date: 26.AUG.2022 15:35:35

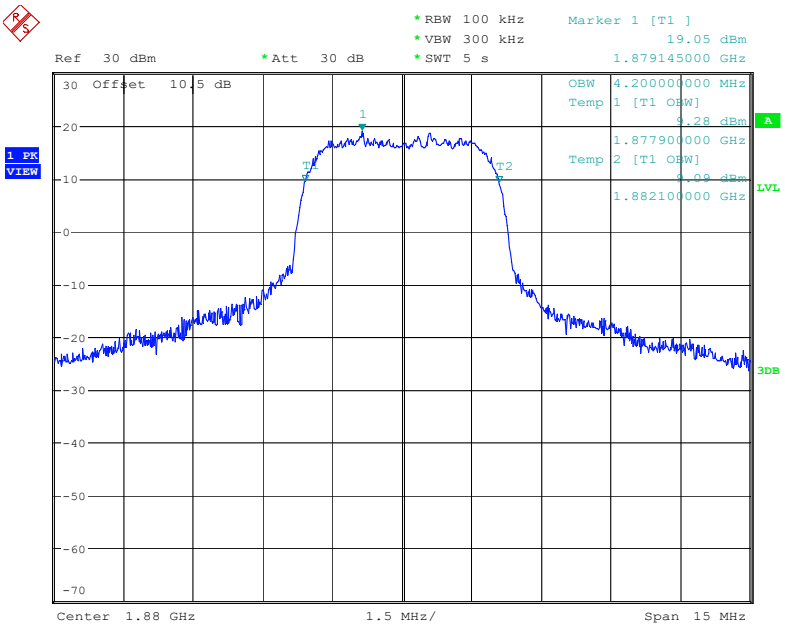


Date: 26.AUG.2022 15:34:56

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

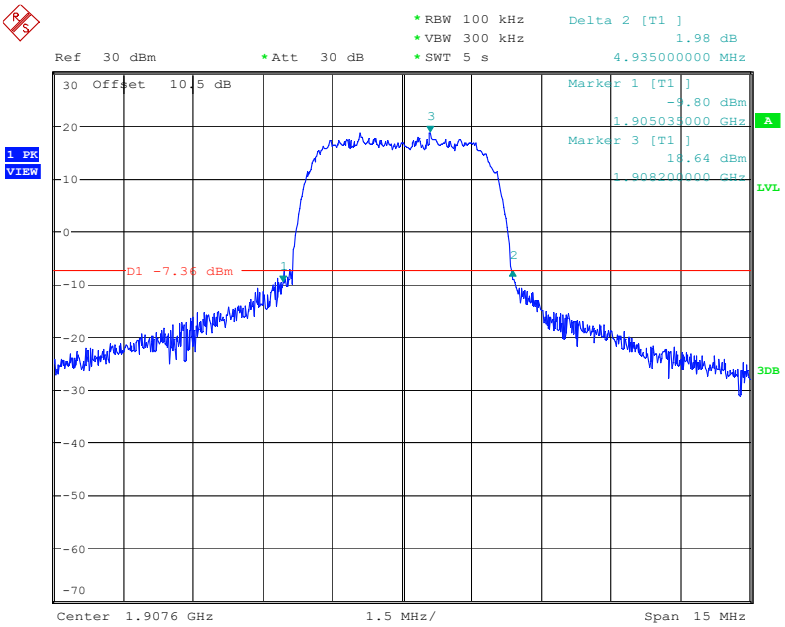


Date: 26.AUG.2022 15:41:16

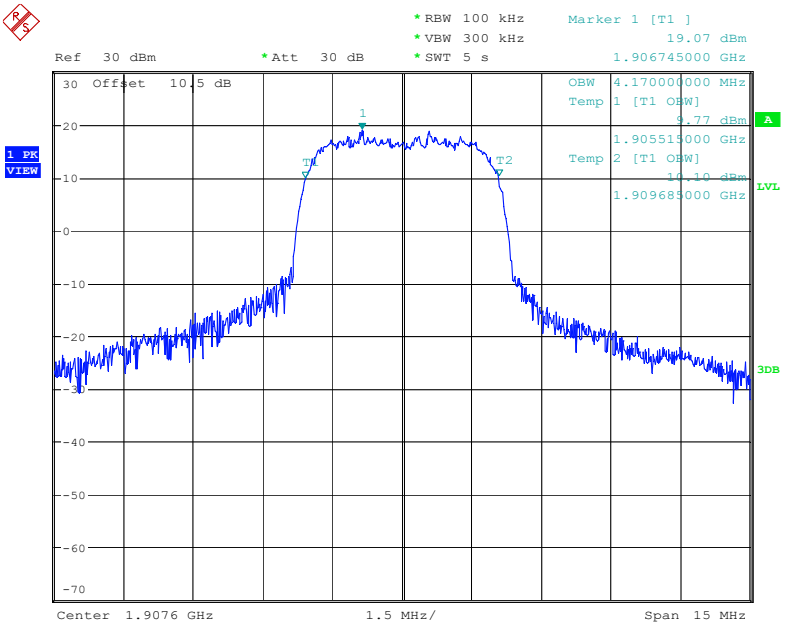


Date: 26.AUG.2022 15:40:38

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



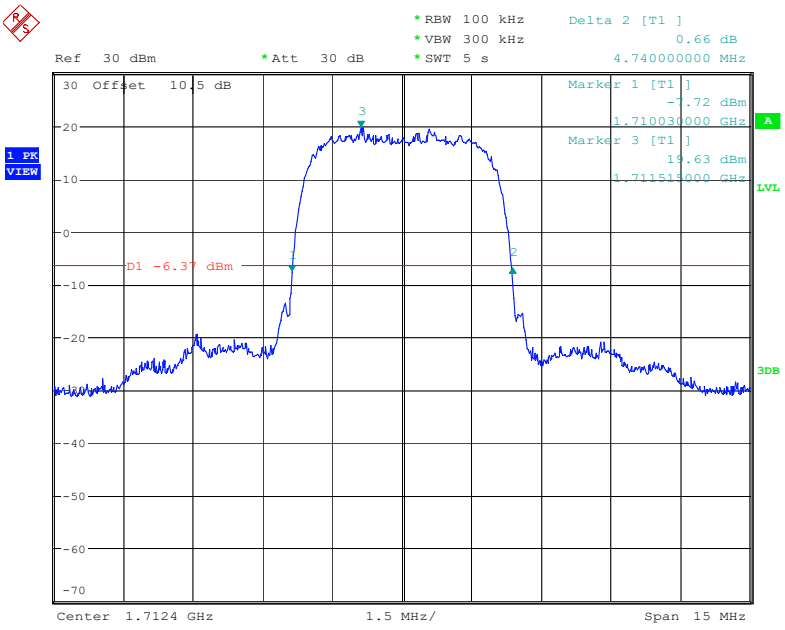
Date: 26.AUG.2022 15:44:23



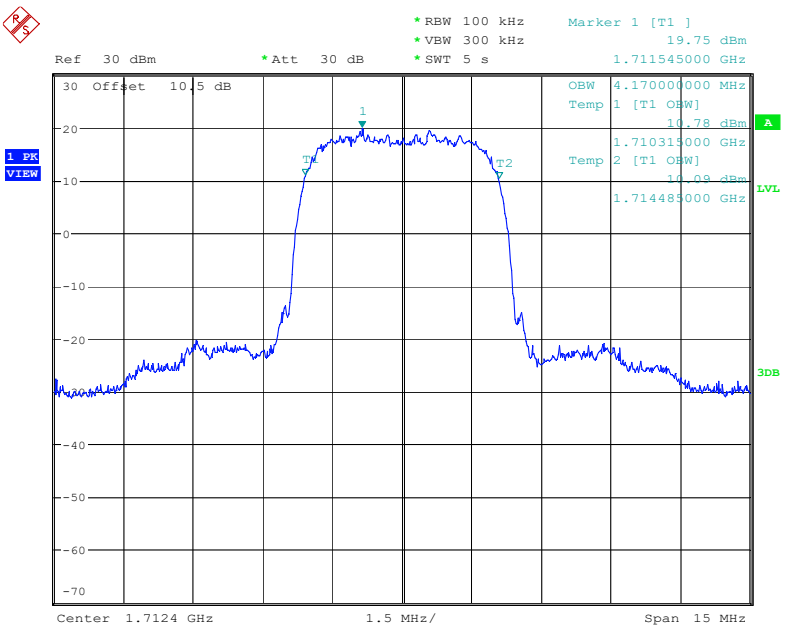
Date: 26.AUG.2022 15:43:45

AWS Band:

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

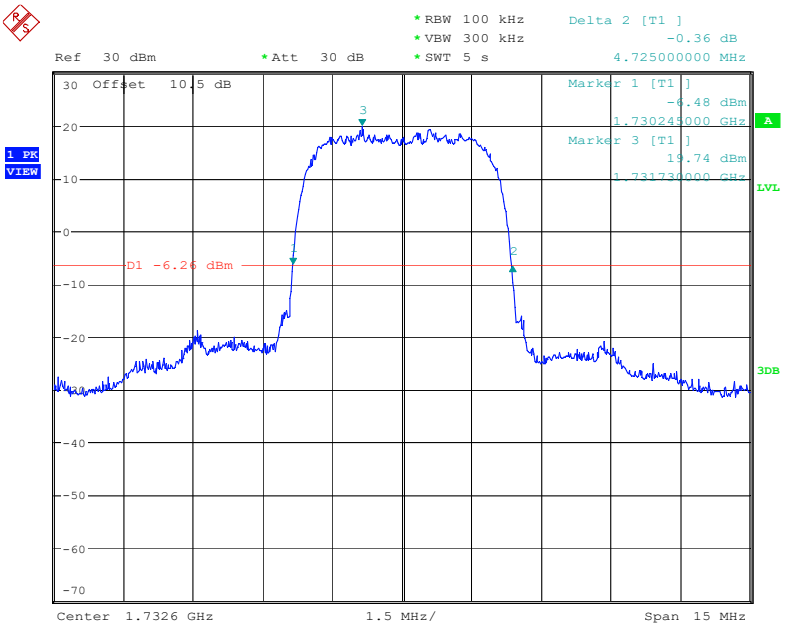


Date: 26.AUG.2022 14:47:05

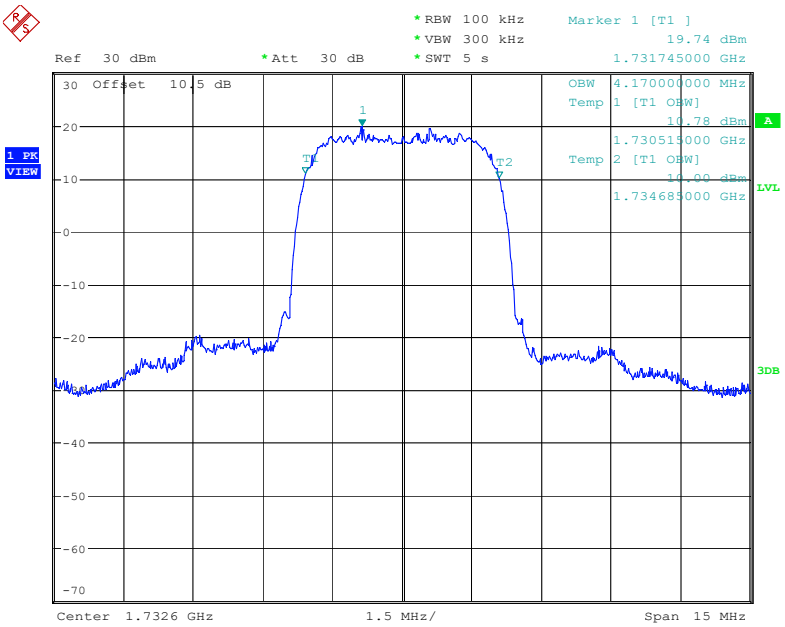


Date: 26.AUG.2022 14:46:27

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

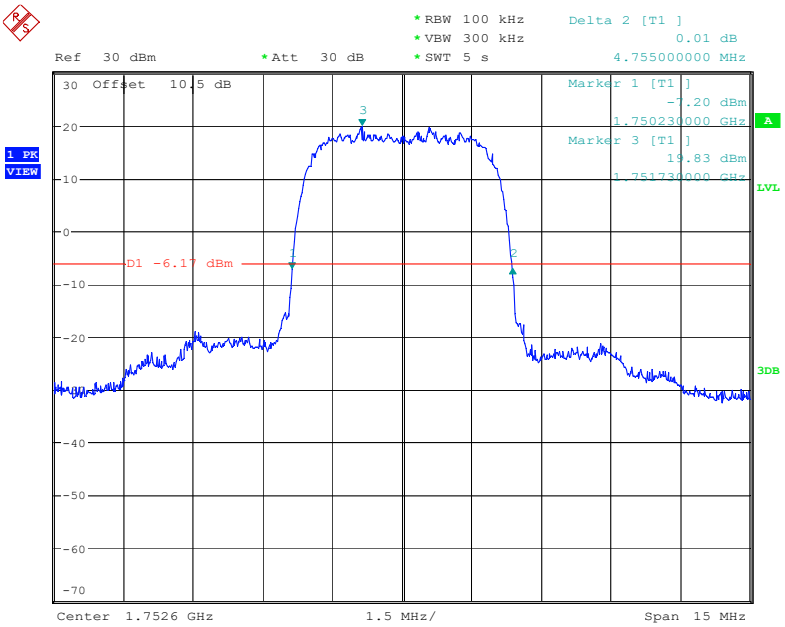


Date: 26.AUG.2022 14:51:12

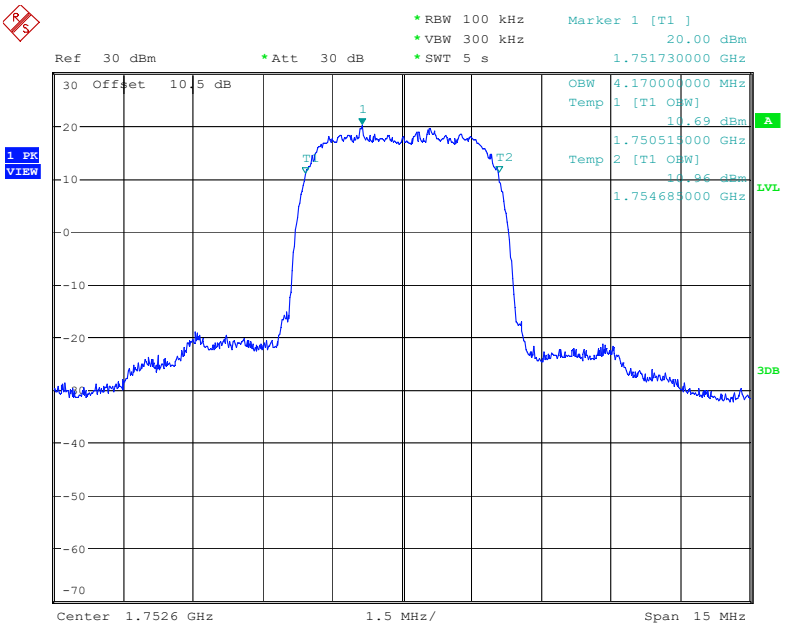


Date: 26.AUG.2022 14:50:35

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

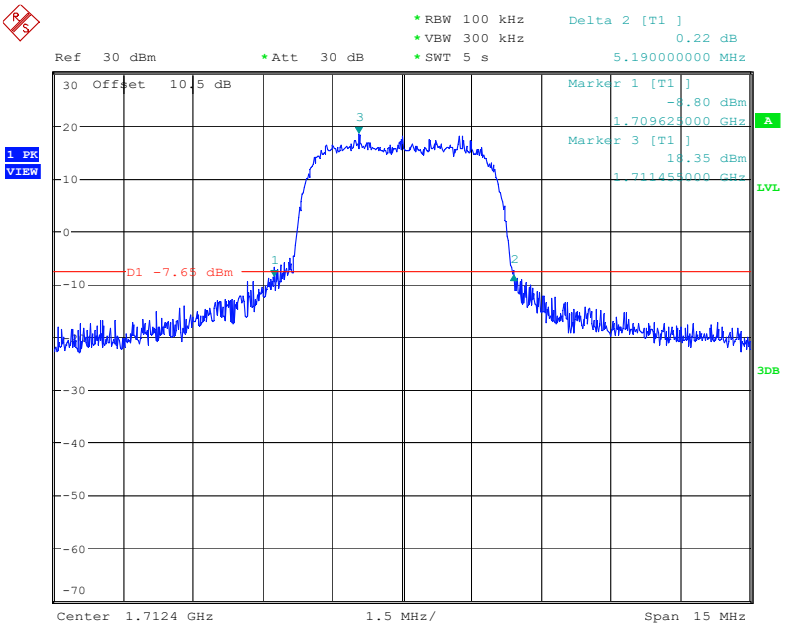


Date: 26.AUG.2022 14:54:41

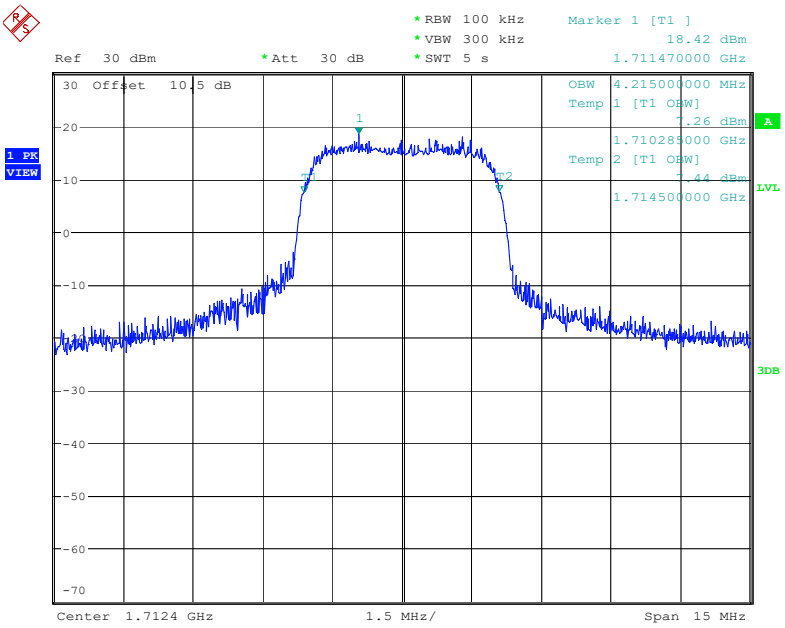


Date: 26.AUG.2022 14:54:04

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

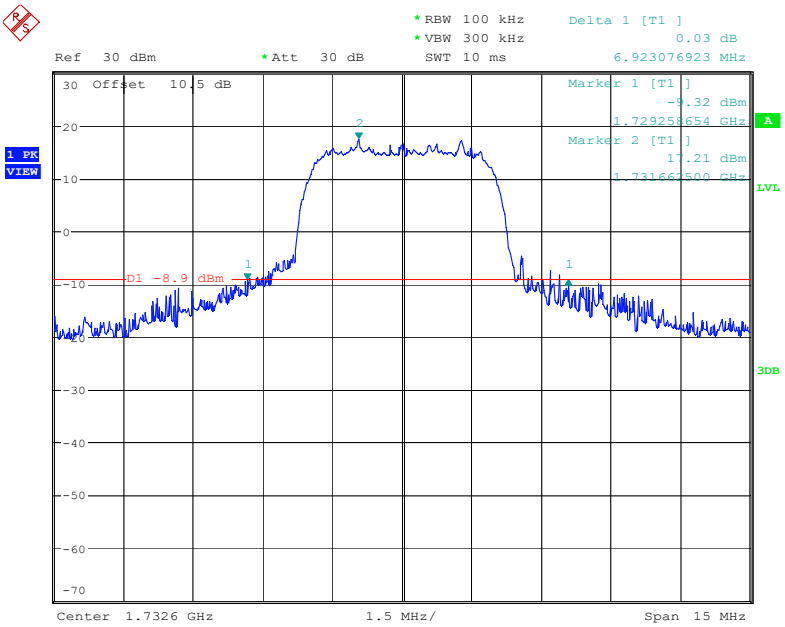


Date: 26.AUG.2022 16:25:32

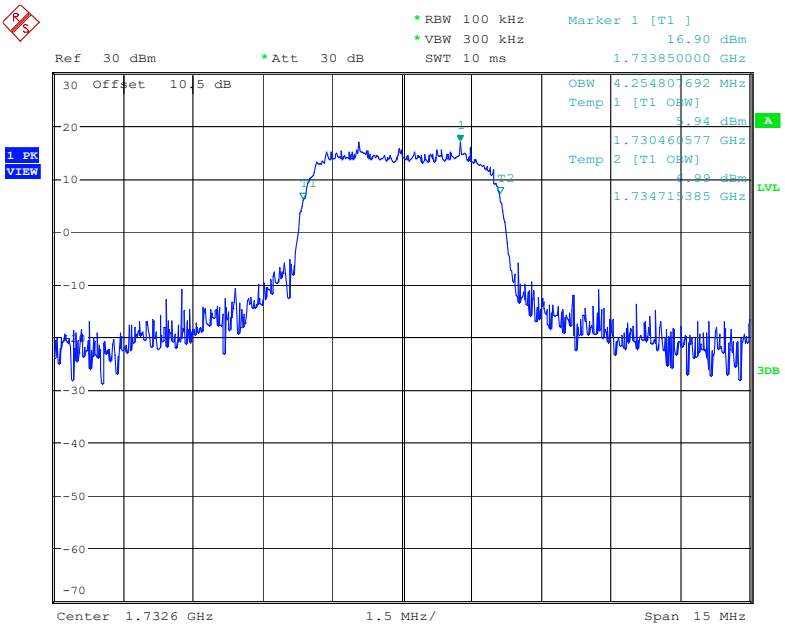


Date: 26.AUG.2022 16:24:54

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

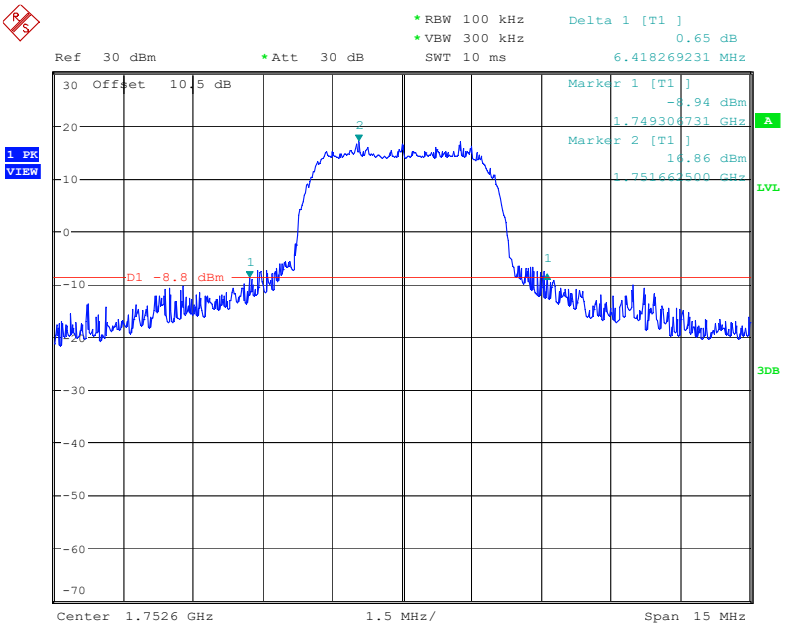


Date: 14.SEP.2022 20:14:35

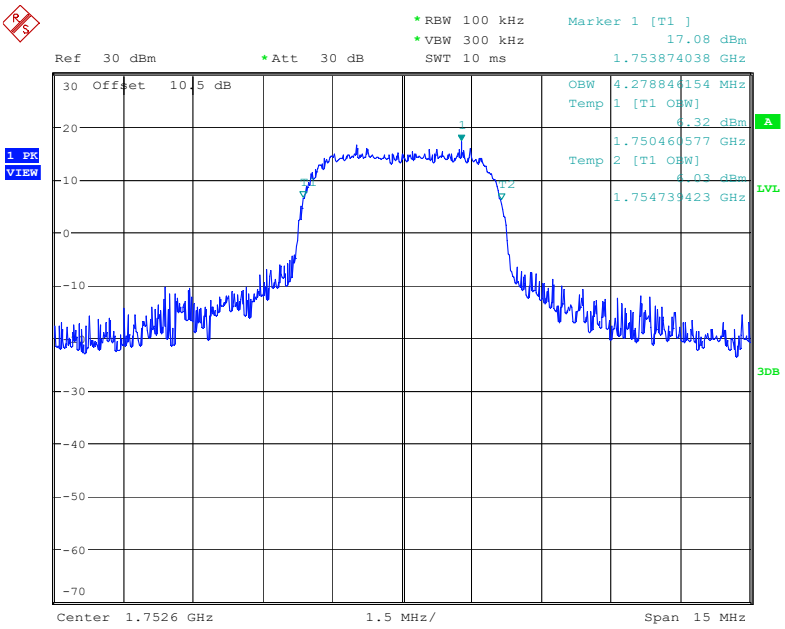


Date: 14.SEP.2022 20:16:25

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

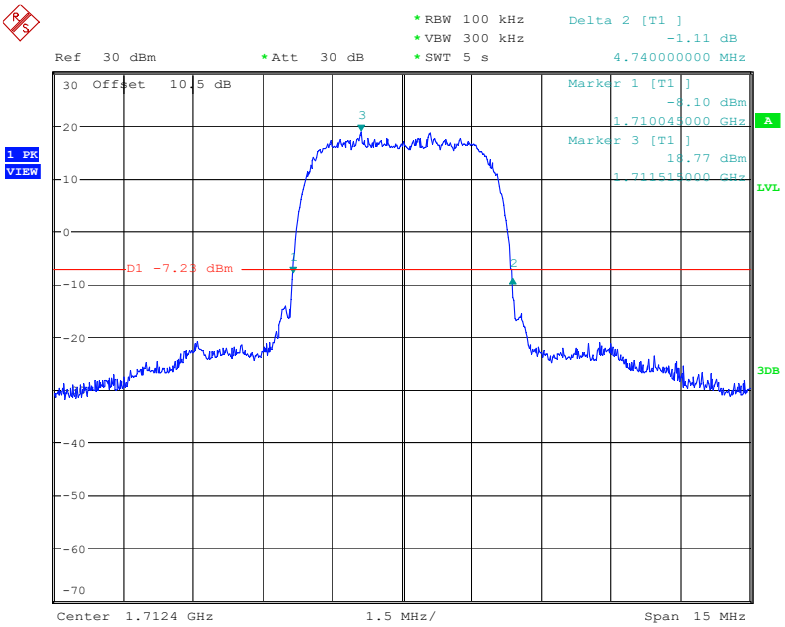


Date: 14.SEP.2022 20:22:17

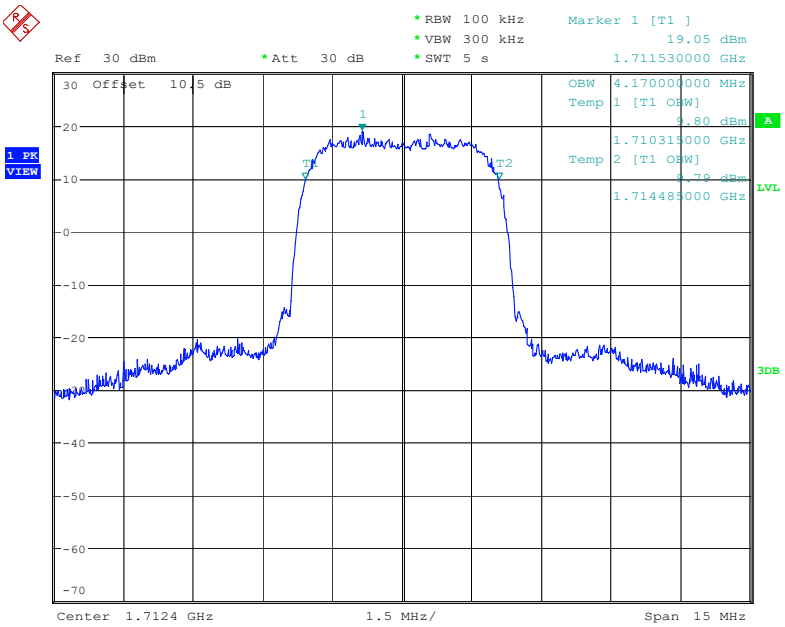


Date: 14.SEP.2022 20:19:36

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

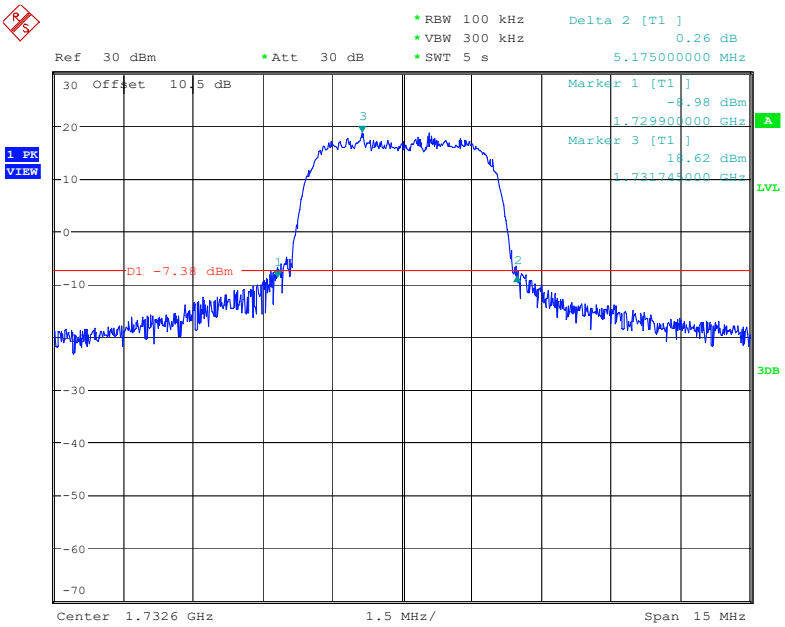


Date: 26.AUG.2022 15:48:44

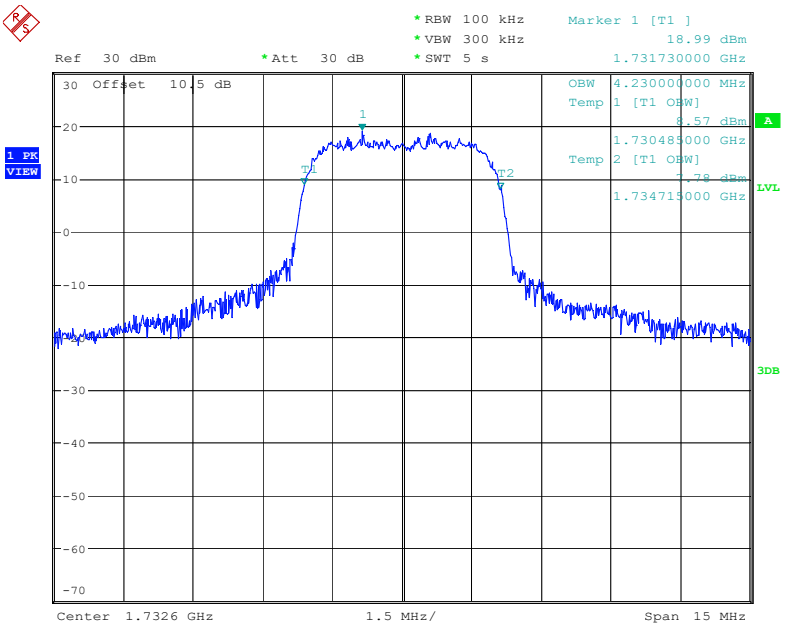


Date: 26.AUG.2022 15:48:06

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

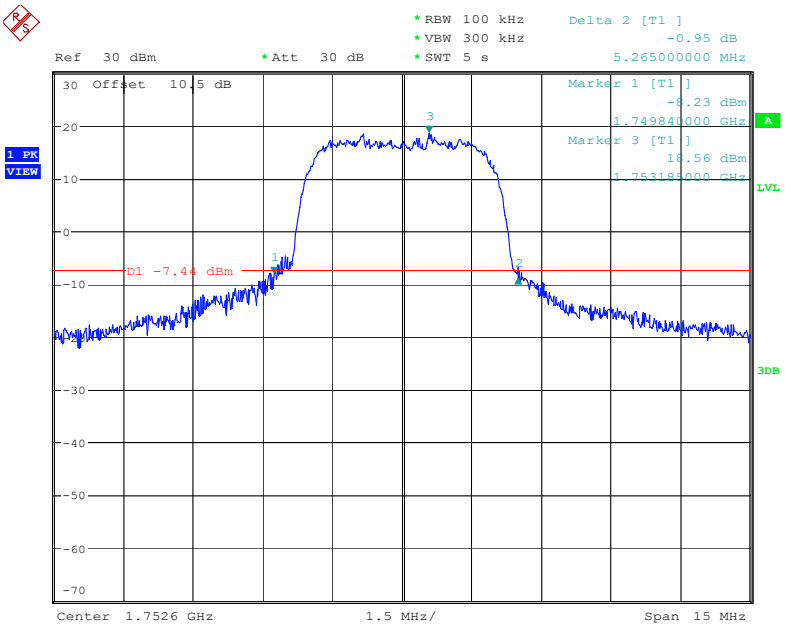


Date: 26.AUG.2022 15:52:46

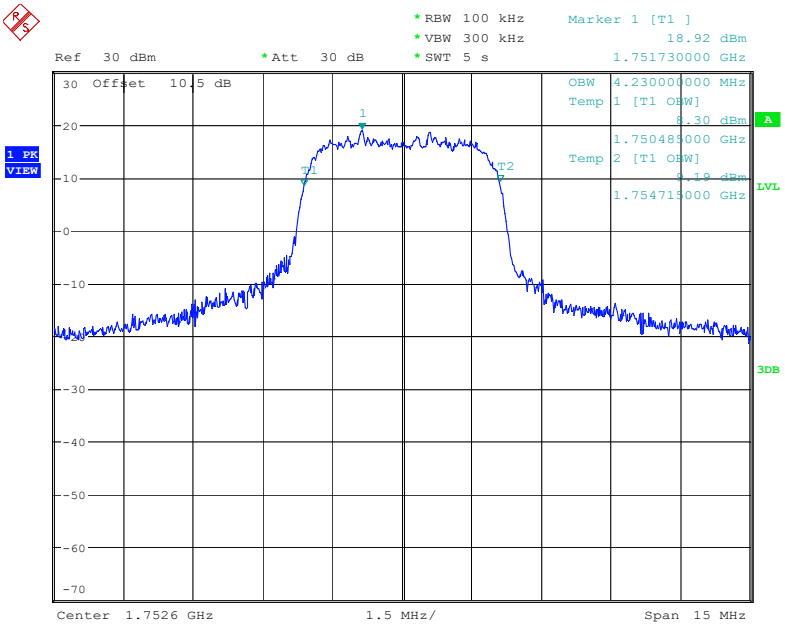


Date: 26.AUG.2022 15:52:08

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



Date: 26.AUG.2022 15:56:00



Date: 26.AUG.2022 15:55:22

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	1.290	1.098	1.308	1.098	1.314
	16QAM	1.098	1.290	1.104	1.320	1.092	1.290
3 MHz	QPSK	2.700	2.856	2.688	2.880	2.688	2.880
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.500	4.920	4.520	4.940	4.520	4.940
	16QAM	4.520	4.980	4.500	4.900	4.520	4.940
10 MHz	QPSK	9.000	9.560	8.960	9.560	8.960	9.640
	16QAM	9.000	9.680	8.960	9.600	8.920	9.520
15 MHz	QPSK	13.560	14.760	13.440	14.760	13.560	14.880
	16QAM	13.560	14.760	13.560	14.760	13.560	14.700
20 MHz	QPSK	18.000	19.280	17.920	19.280	18.000	19.440
	16QAM	17.920	19.360	18.000	19.360	18.000	19.520

LTE Band 4:

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	1.308	1.110	1.290	1.104	1.374
	16QAM	1.092	1.296	1.104	1.410	1.104	1.320
3 MHz	QPSK	2.688	2.880	2.700	2.880	2.700	2.880
	16QAM	2.688	2.868	2.700	3.132	2.688	2.880
5 MHz	QPSK	4.520	4.920	4.520	4.960	4.500	4.920
	16QAM	4.500	4.920	4.520	4.960	4.520	5.280
10 MHz	QPSK	8.960	9.680	8.960	9.600	8.960	9.600
	16QAM	8.960	9.520	8.960	9.600	8.960	9.560
15 MHz	QPSK	13.560	14.820	13.560	14.820	13.500	14.820
	16QAM	13.560	14.760	13.560	14.820	13.560	14.820
20 MHz	QPSK	18.080	19.360	18.000	19.440	18.000	19.280
	16QAM	18.000	19.280	17.920	19.360	17.920	19.360

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	1.302	1.098	1.290	1.098	1.296
	16QAM	1.092	1.290	1.098	1.302	1.098	1.320
3 MHz	QPSK	2.688	2.880	2.688	2.892	2.676	2.856
	16QAM	2.688	2.880	2.676	2.880	2.688	2.892
5 MHz	QPSK	4.500	4.920	4.500	4.920	4.520	4.960
	16QAM	4.500	5.000	4.500	4.920	4.520	4.960
10 MHz	QPSK	8.960	9.640	9.000	9.600	8.960	9.560
	16QAM	8.960	9.600	8.960	9.560	8.960	9.560

LTE Band 7:

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	4.500	4.940	4.520	4.940
	16QAM	4.520	4.960	4.500	4.940	4.500	4.960
10 MHz	QPSK	8.960	9.600	8.960	9.680	8.960	9.640
	16QAM	8.960	9.640	8.960	9.680	8.960	9.480
15 MHz	QPSK	13.510	14.808	13.510	14.856	13.440	14.760
	16QAM	13.560	14.820	13.558	14.808	13.500	14.760
20 MHz	QPSK	17.949	19.359	17.949	19.487	18.000	19.360
	16QAM	18.080	19.360	17.949	19.551	17.920	19.360

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	1.296	1.104	1.314	1.104	1.296
	16QAM	1.104	1.326	1.092	1.290	1.104	1.302
3 MHz	QPSK	2.688	2.880	2.688	2.868	2.688	2.892
	16QAM	2.688	2.880	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.560	5.220	4.520	5.180	4.540	5.180
	16QAM	4.540	5.240	4.540	5.180	4.560	5.260
10 MHz	QPSK	9.000	9.960	8.960	9.760	8.960	9.920
	16QAM	9.000	9.840	8.960	9.720	8.960	10.000

LTE Band 17:

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	5.160	4.520	5.160	4.560	5.220
	16QAM	4.520	5.160	4.560	5.220	4.540	5.160
10 MHz	QPSK	8.960	9.880	8.960	9.760	8.960	9.800
	16QAM	8.960	9.800	8.960	9.840	8.960	9.920

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

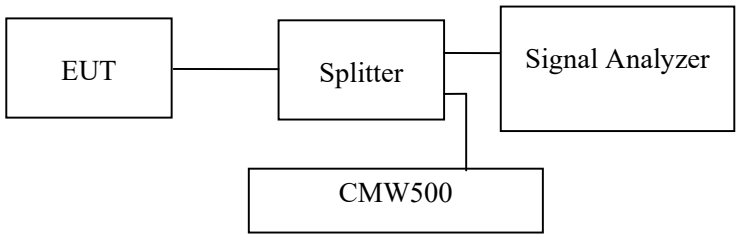
Applicable Standard

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^{th} 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:	27.2 ℃
Relative Humidity:	56.8 %
ATM Pressure:	101.0 kPa

The testing was performed by Cat Kang on 2022-08-26.

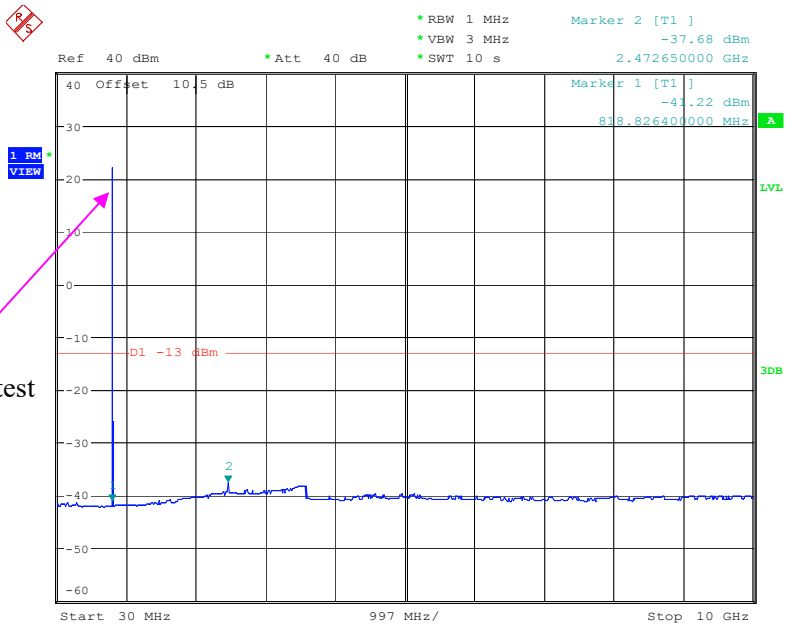
EUT operation mode: Transmitting

Test result: Pass

Please refer to the following plots.

Cellular Band
Low Channel:

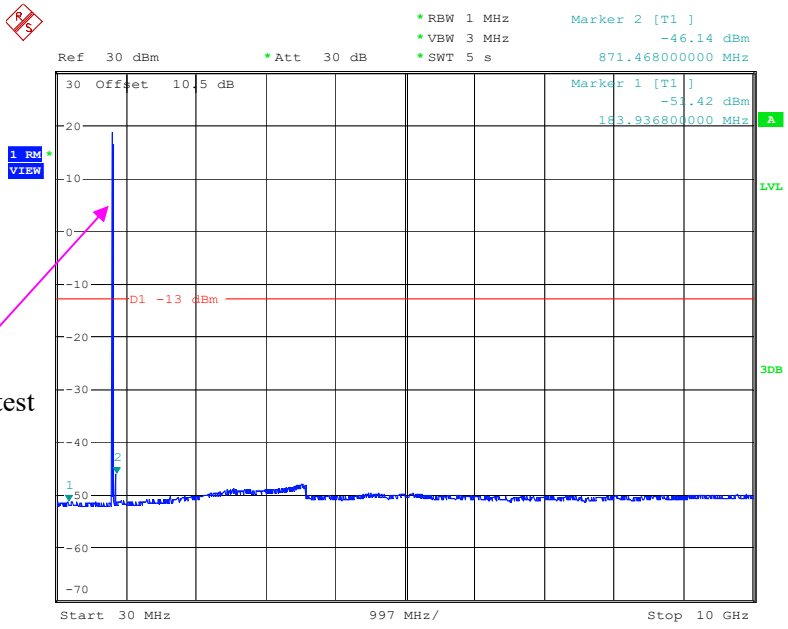
30 MHz – 10GHz (GSM Mode)



Fundamental test

Date: 26.AUG.2022 11:23:53

30 MHz – 1 GHz (WCDMA Mode)

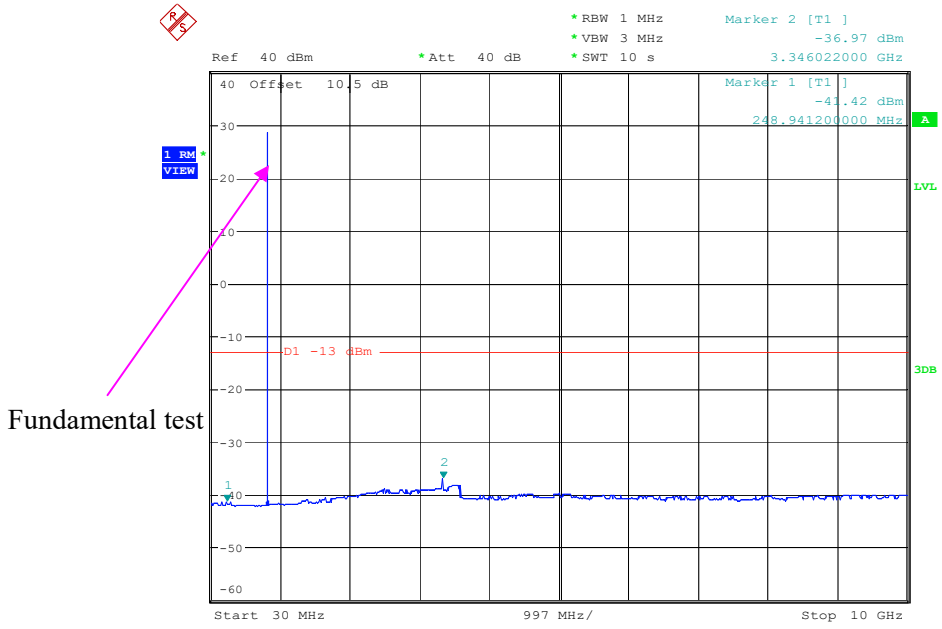


Fundamental test

Date: 26.AUG.2022 15:00:39

Middle Channel:

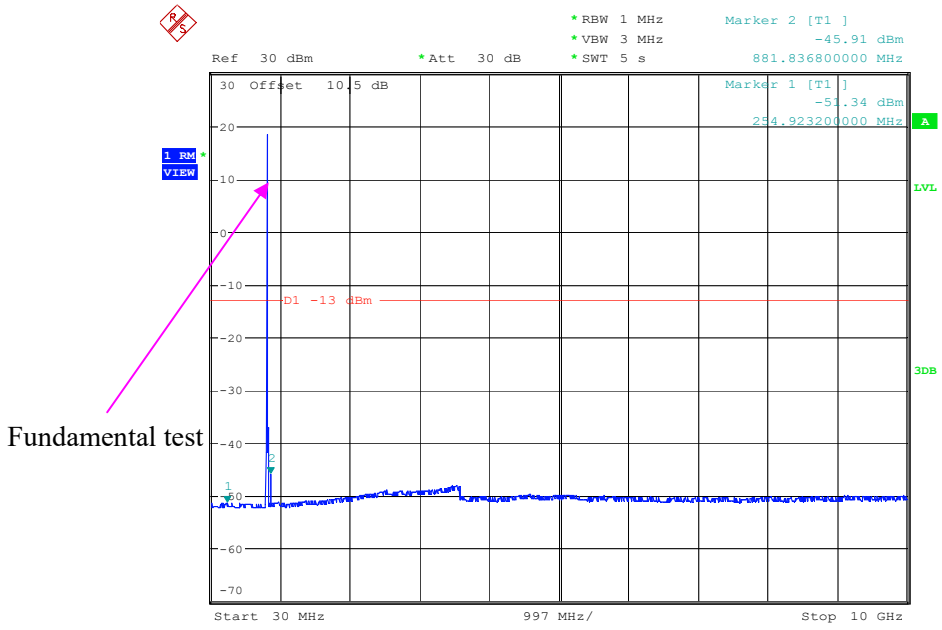
30 MHz – 10 GHz (GSM Mode)



Fundamental test

Date: 26.AUG.2022 11:27:55

30 MHz – 1 GHz (WCDMA Mode)

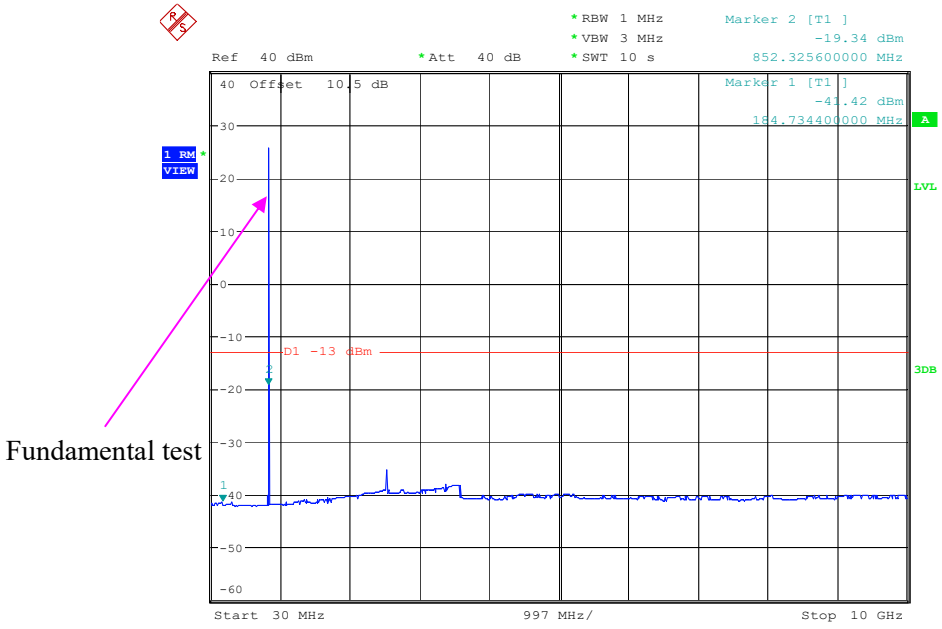


Fundamental test

Date: 26.AUG.2022 15:03:30

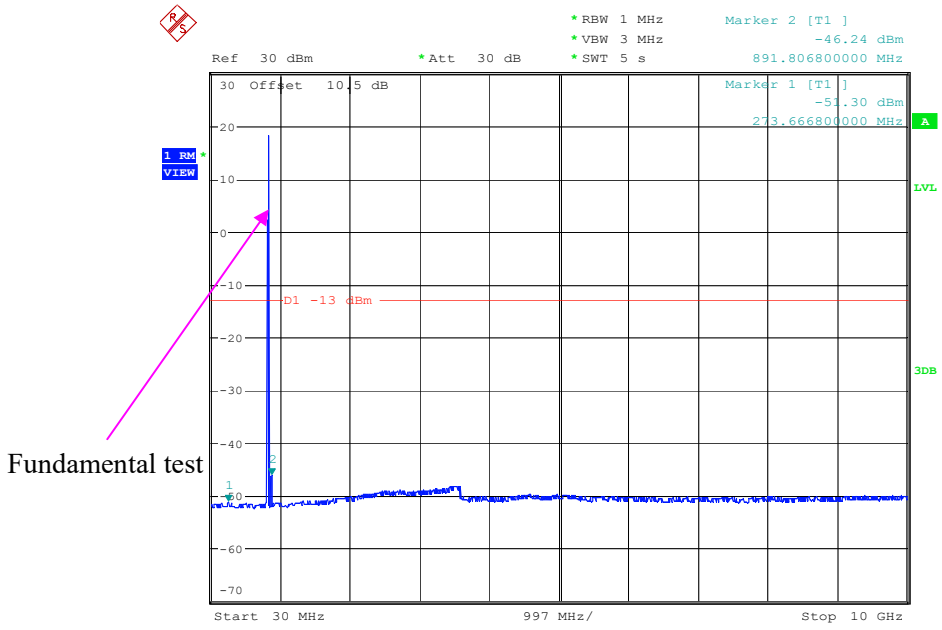
High Channel:

30 MHz – 1 GHz (GSM Mode)



Date: 26.AUG.2022 11:32:50

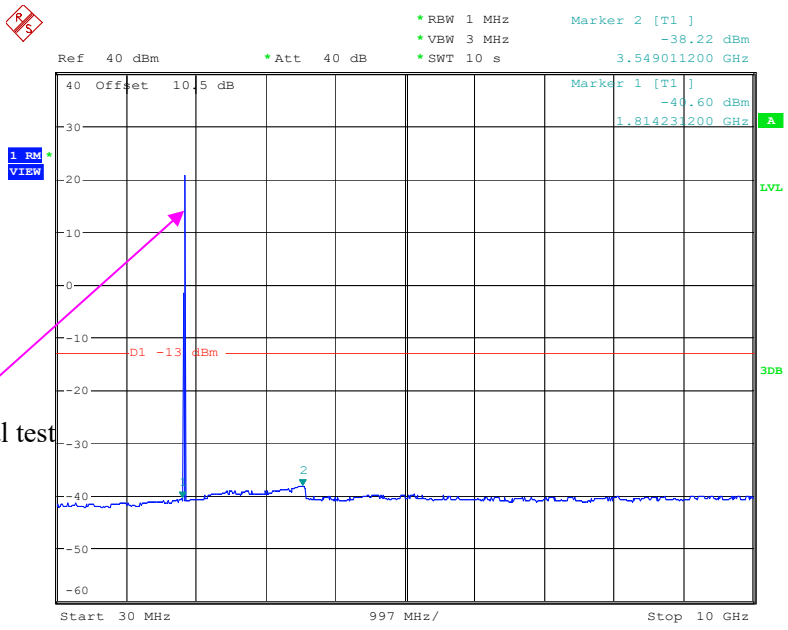
30 MHz – 1 GHz (WCDMA Mode)



Date: 26.AUG.2022 15:06:59

PCS Band
Low Channel:

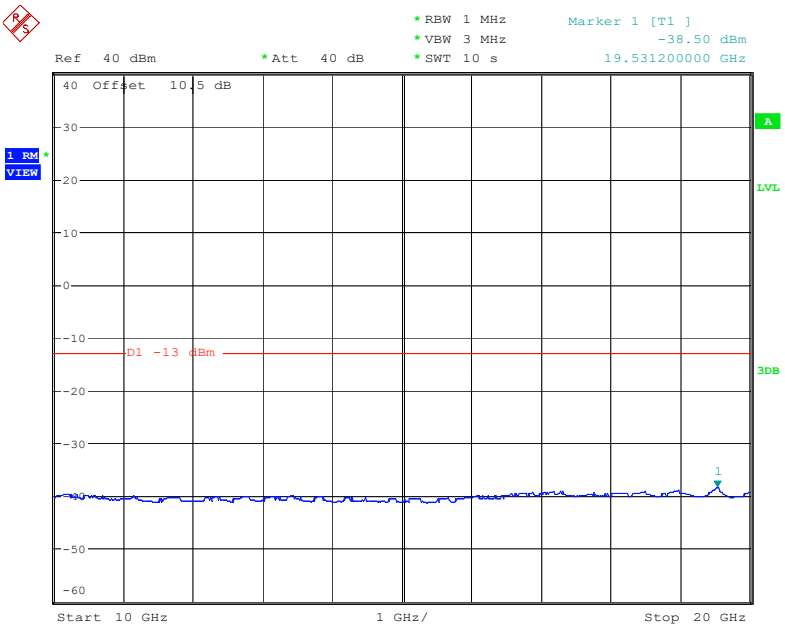
30 MHz – 10GHz (GSM Mode)



Fundamental test

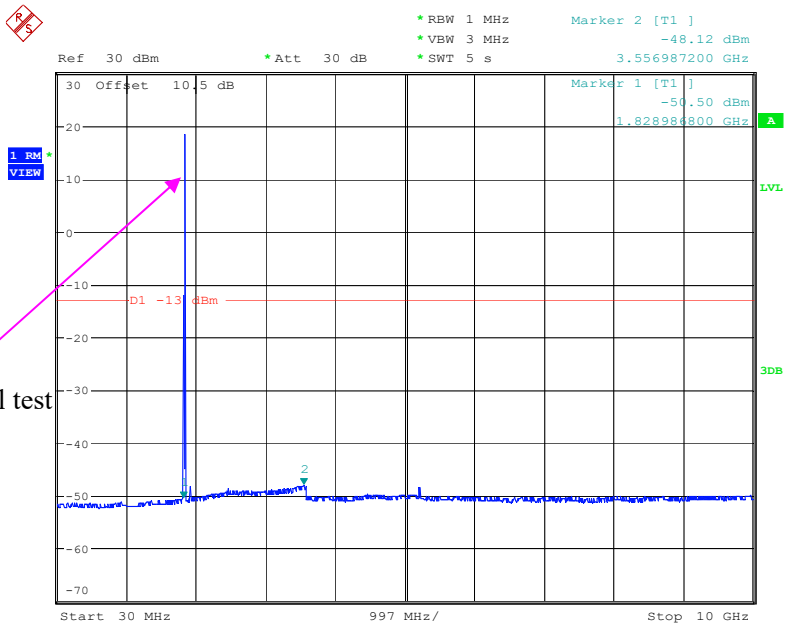
Date: 26.AUG.2022 13:28:57

10 GHz – 20 GHz (GSM Mode)



Date: 26.AUG.2022 13:30:08

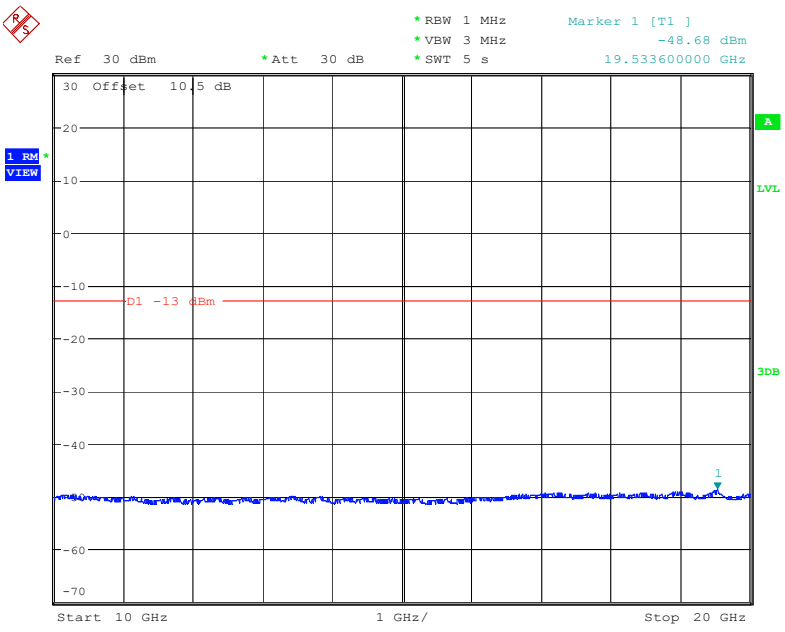
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:35:27

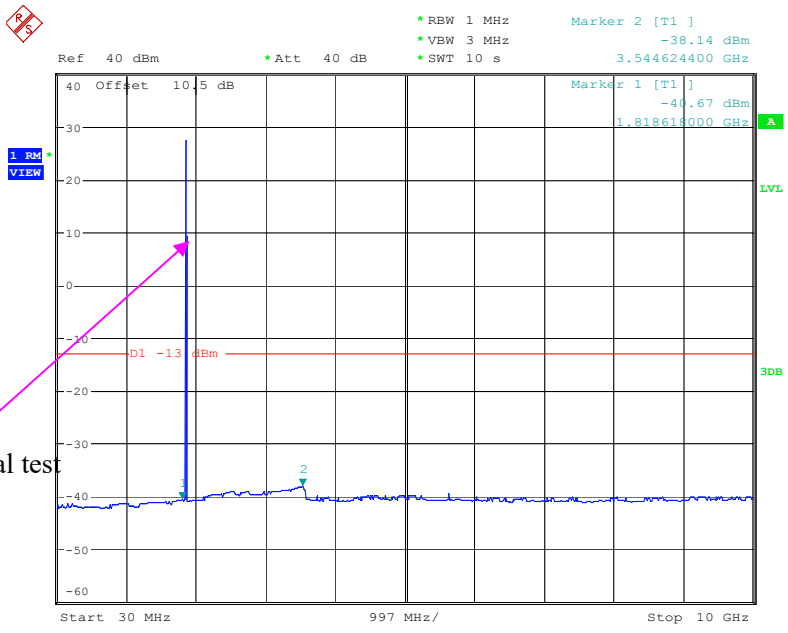
10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:36:06

Middle Channel:

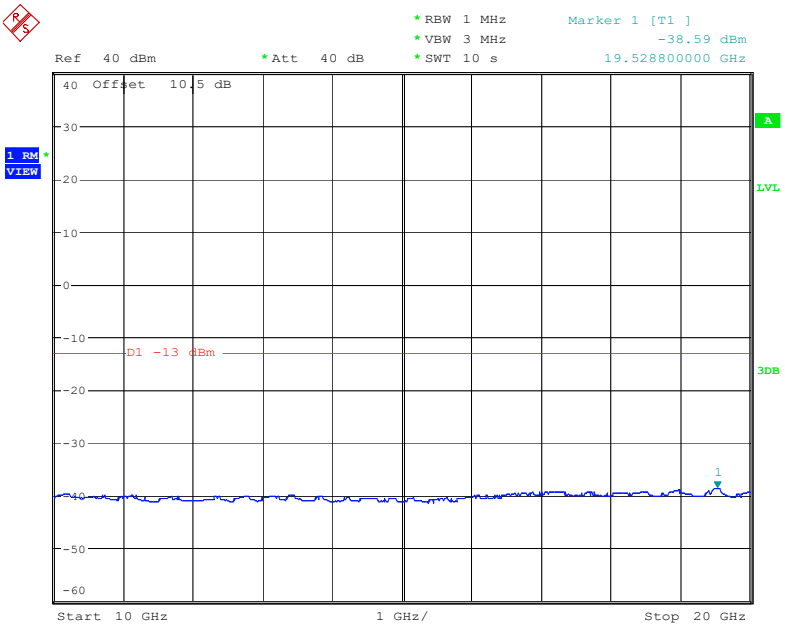
30 MHz – 10GHz (GSM Mode)



Fundamental test

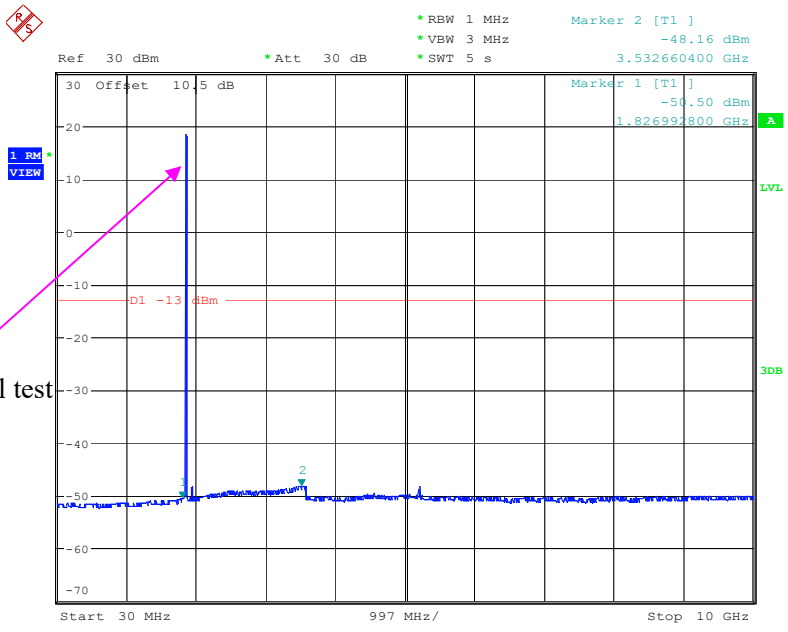
Date: 26.AUG.2022 13:38:39

10 GHz – 20 GHz (GSM Mode)



Date: 26.AUG.2022 13:39:48

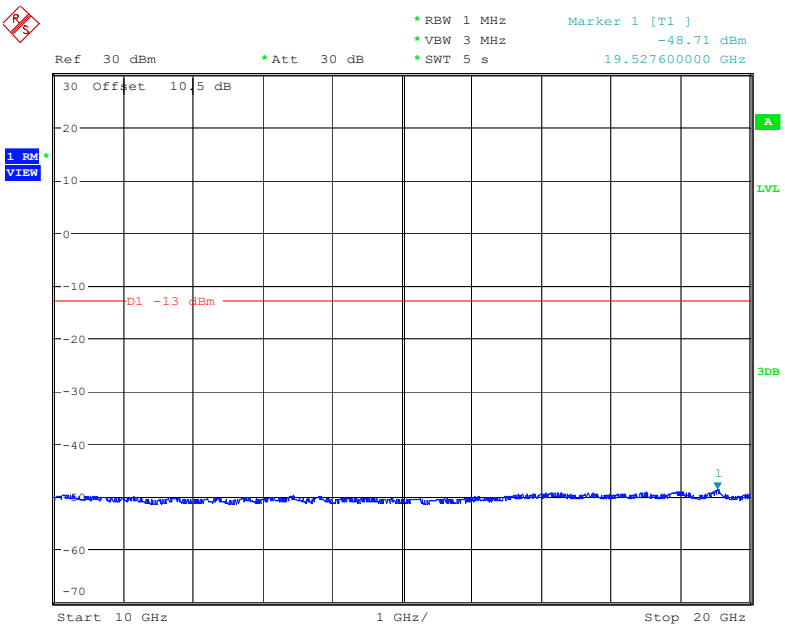
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:38:48

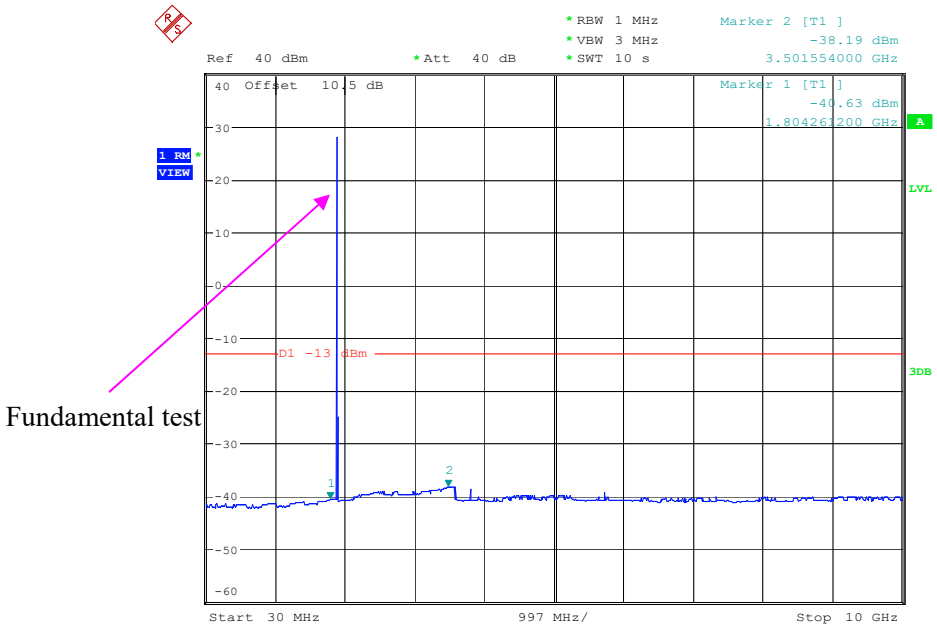
10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:39:28

High Channel:

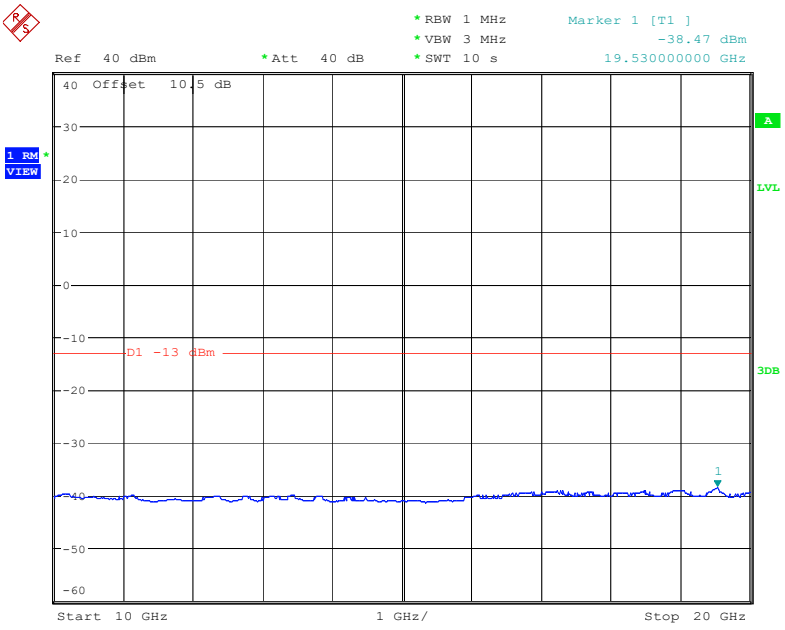
30 MHz – 10GHz (GSM Mode)



Fundamental test

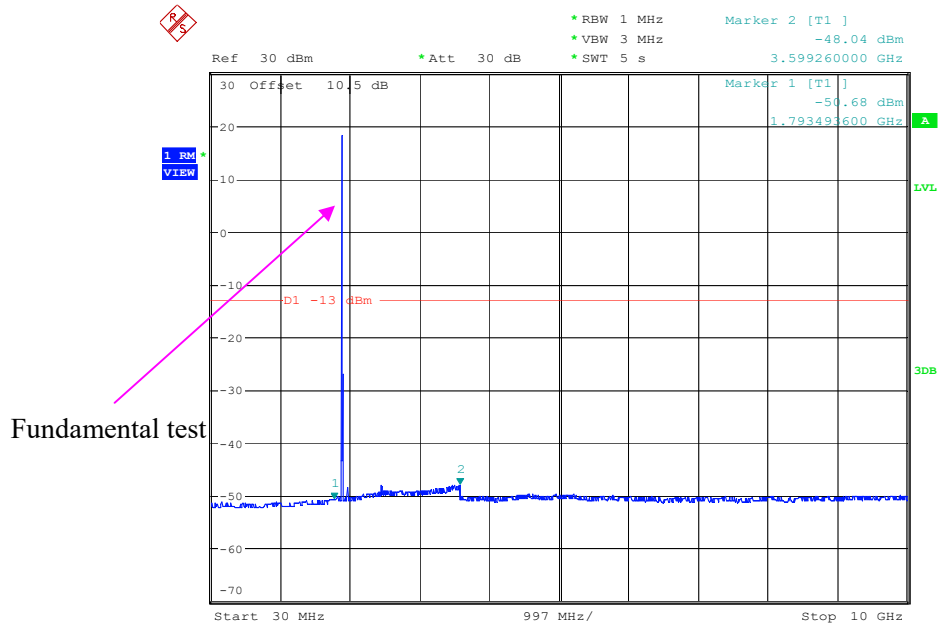
Date: 26.AUG.2022 13:44:35

10 GHz – 20 GHz (GSM Mode)



Date: 26.AUG.2022 13:45:44

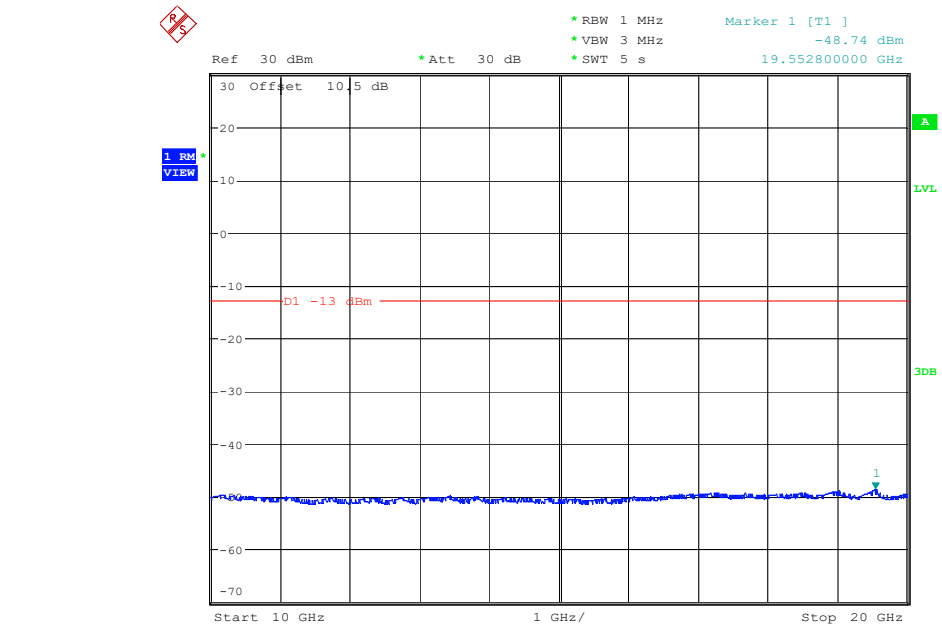
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:43:27

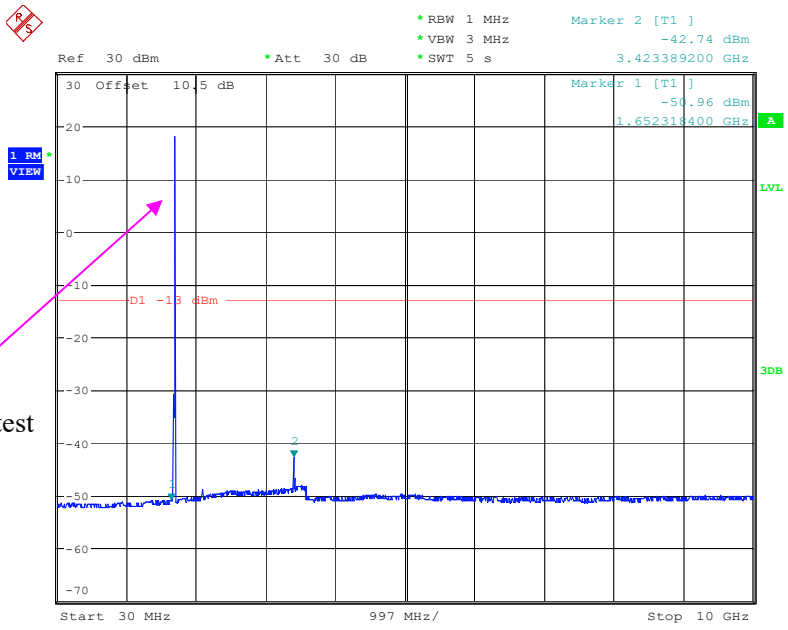
10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:44:07

AWS
Low Channel:

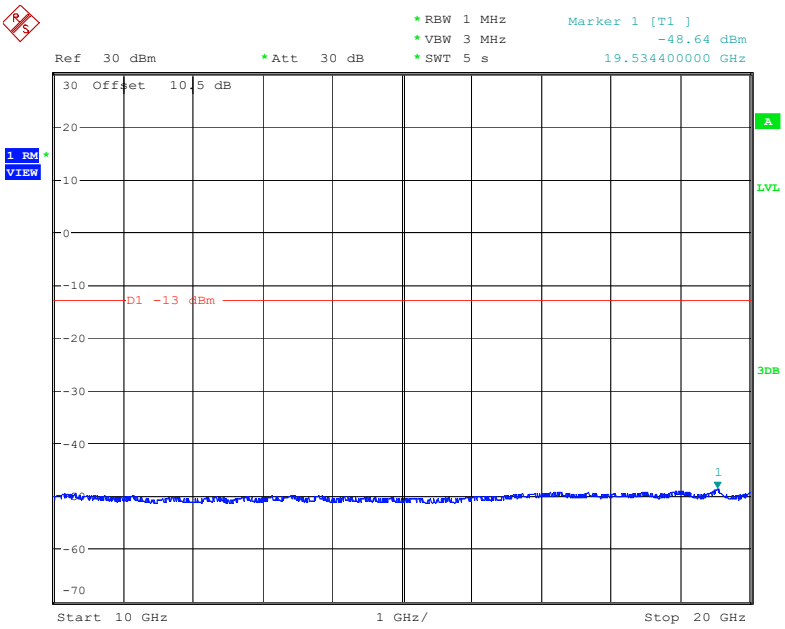
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:48:20

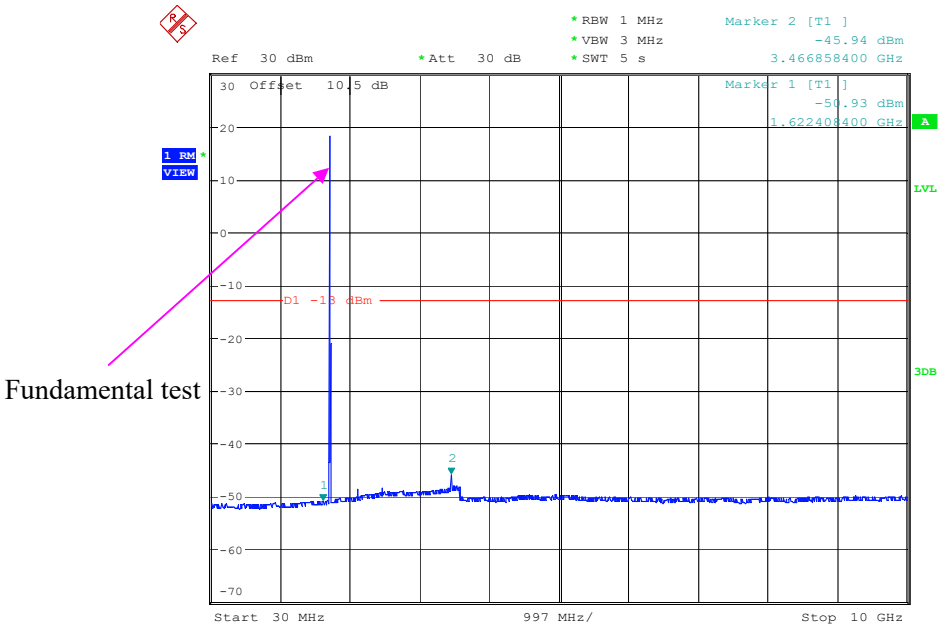
10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:49:00

Middle Channel:

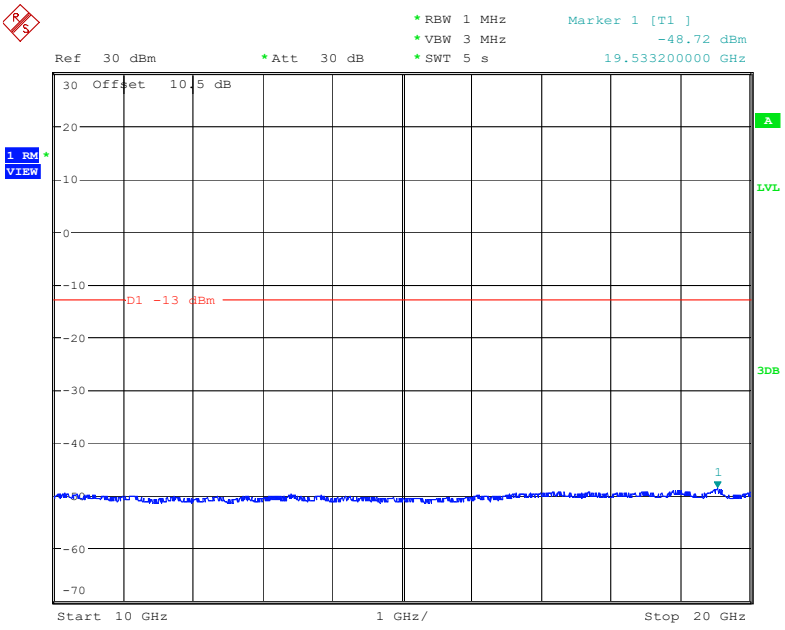
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:51:50

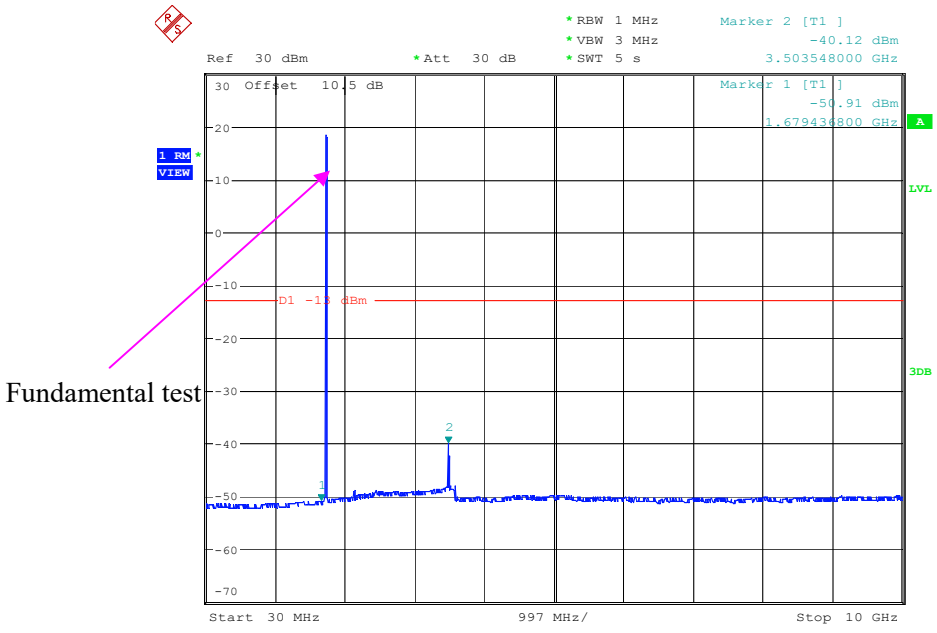
10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:52:29

High Channel:

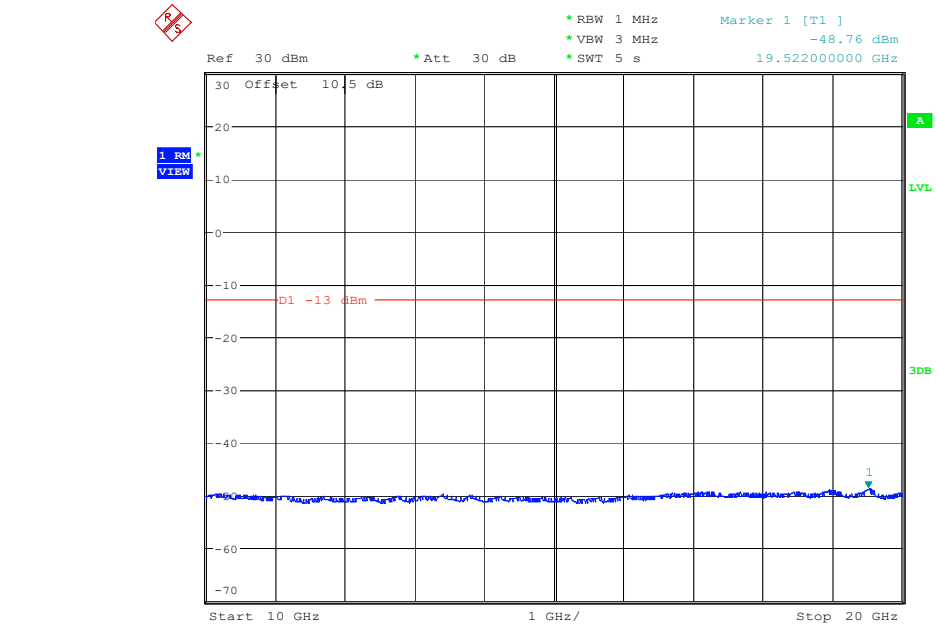
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

Date: 26.AUG.2022 14:55:58

10 GHz – 20 GHz (WCDMA Mode)



Date: 26.AUG.2022 14:56:38

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

Temperature:	26.8 ℃
Relative Humidity:	59 %
ATM Pressure:	101.0 kPa

The testing was performed by Level Li on 2022-08-11.

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)				
GSM850								
Test frequency range: 30MHz-10GHz								
Low channel								
950.80	-72.29	182	2.3	H	10.0	-62.29	-13	49.29
950.80	-76.77	221	1.9	V	11.7	-65.07	-13	52.07
1648.4	-50.2	269	2.2	H	3.5	-46.70	-13	33.7
1648.4	-48.5	314	1.0	V	3.1	-45.40	-13	32.4
2472.6	-42.6	255	2.1	H	6.6	-36.00	-13	23.0
2472.6	-44.4	65	1.4	V	5.8	-38.60	-13	25.6
3296.8	-52.7	52	2.0	H	6.4	-46.30	-13	33.3
3296.8	-51.5	116	1.0	V	5.7	-45.80	-13	32.8
Middle channel								
950.79	-70.22	253	2.1	H	10.0	-60.22	-13	47.22
950.79	-75.32	83	2.3	V	11.7	-63.62	-13	50.62
1673.2	-47.8	313	2.1	H	3.8	-44.00	-13	31.00
1673.2	-46.7	306	1.8	V	3.1	-43.58	-13	30.58
2509.8	-41.9	17	2.3	H	6.2	-35.70	-13	22.7
2509.8	-41.0	339	2.2	V	5.5	-35.50	-13	22.5
3346.4	-51.9	145	2.1	H	6.6	-45.30	-13	32.3
3346.4	-50.2	243	1.4	V	5.4	-44.80	-13	31.8
High channel								
952.25	-71.09	88	1.4	H	10.0	-61.09	-13	48.09
952.25	-76.90	229	1.3	V	11.7	-65.20	-13	52.20
1697.6	-49.4	212	2.0	H	4.1	-45.30	-13	32.3
1697.6	-46.9	92	1.9	V	3.1	-43.80	-13	30.8
2546.4	-41.8	55	1.8	H	6.1	-35.70	-13	22.7
2546.4	-40.0	337	1.0	V	5.8	-34.20	-13	21.2
3395.2	-50.2	165	1.5	H	6.2	-44.00	-13	31.0
3395.2	-48.5	250	1.9	V	5.4	-43.10	-13	30.1

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GSM1900								
Test frequency range: 30MHz-20GHz								
Low channel								
951.71	-72.96	254	1.6	H	10.0	-62.96	-13	49.96
951.71	-76.58	80	2.4	V	11.7	-64.88	-13	51.88
3700.4	-51.4	76	1.8	H	8.1	-43.30	-13	30.3
3700.4	-49.9	56	1.6	V	7.6	-42.30	-13	29.3
5550.6	-53.2	190	1.2	H	9.6	-43.60	-13	30.6
5550.6	-53.0	291	1.6	V	9.1	-43.90	-13	30.9
Middle channel								
952.30	-70.43	300	1.3	H	10.0	-60.43	-13	47.43
952.30	-76.13	63	2.0	V	11.7	-64.43	-13	51.43
3760	-52.0	209	2.3	H	8.8	-43.20	-13	30.2
3760	-51.6	33	2.5	V	8	-43.60	-13	30.6
5640	-52.6	63	1.5	H	10.2	-42.40	-13	29.4
5640	-52.3	179	2.2	V	9.5	-42.80	-13	29.8
High channel								
954.15	-72.13	106	2.3	H	10.0	-62.13	-13	49.13
954.15	-75.69	46	1.8	V	11.7	-63.99	-13	50.99
3819.6	-49.7	254	2.4	H	8.7	-41.00	-13	28.0
3819.6	-49.4	50	2.2	V	8	-41.40	-13	28.4
5729.4	-53.4	349	1.3	H	10.8	-42.60	-13	29.6
5729.4	-52.6	198	2.2	V	10.4	-42.20	-13	29.2

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 2								
Test frequency range: 30MHz-20GHz								
Low channel								
951.86	-70.16	22	1.2	H	10.0	-60.16	-13	47.16
951.86	-76.97	279	1.5	V	11.7	-65.27	-13	52.27
3704.8	-54.7	240	1.5	H	8.1	-46.60	-13	33.6
3704.8	-53.5	62	1.4	V	7.6	-45.90	-13	32.9
5557.2	-53.7	132	2.3	H	9.6	-44.10	-13	31.1
5557.2	-52.9	192	1.2	V	9.1	-43.80	-13	30.8
Middle channel								
950.95	-70.42	352	2.4	H	10.0	-60.42	-13	47.42
950.95	-75.25	22	1.3	V	11.7	-63.55	-13	50.55
3760	-56.8	330	1.6	H	8.8	-48.00	-13	35.0
3760	-55.1	32	1.9	V	8	-47.10	-13	34.1
5640	-55.3	116	1.2	H	10.2	-45.10	-13	32.1
5640	-54.5	220	1.7	V	9.5	-45.00	-13	32.0
High channel								
953.12	-70.58	320	2.2	H	10.0	-60.58	-13	47.58
953.12	-75.94	205	1.0	V	11.7	-64.24	-13	51.24
3815.2	-56.0	163	1.9	H	8.7	-47.30	-13	34.3
3815.2	-55.3	89	2.0	V	8	-47.30	-13	34.3
5722.8	-56.1	69	1.9	H	10.4	-45.70	-13	32.7
5722.8	-55.2	310	2.1	V	9.9	-45.30	-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)				
WCDMA Band 4								
Test frequency range: 30MHz-20GHz								
Low channel								
951.65	-72.70	304	2.1	H	10.0	-62.70	-13	49.70
951.65	-76.63	279	2.1	V	11.7	-64.93	-13	51.93
3424.8	-51.1	298	2.1	H	6.4	-44.70	-13	31.7
3424.8	-48.9	107	2.5	V	5.7	-43.20	-13	30.2
5137.2	-56.7	228	1.3	H	11.3	-45.40	-13	32.4
5137.2	-56.4	9	2.1	V	10.8	-45.60	-13	32.6
Middle channel								
951.36	-72.26	66	2.3	H	10.0	-62.26	-13	49.26
951.36	-75.86	306	1.8	V	11.7	-64.16	-13	51.16
3465.2	-50.9	60	1.6	H	7	-43.90	-13	30.9
3465.2	-50.0	227	1.4	V	6.2	-43.80	-13	30.8
5197.8	-55.4	239	1.6	H	10.4	-45.00	-13	32.0
5197.8	-54.2	55	2.0	V	9.8	-44.40	-13	31.4
High channel								
953.99	-72.35	319	2.2	H	10.0	-62.35	-13	49.35
953.99	-75.32	4	1.0	V	11.7	-63.62	-13	50.62
3505.2	-51.4	98	1.6	H	7.8	-43.60	-13	30.6
3505.2	-49.4	192	2.5	V	6.6	-42.80	-13	29.8
5257.8	-53.6	218	1.8	H	9.5	-44.10	-13	31.1
5257.8	-52.8	166	1.2	V	8.9	-43.90	-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)				
WCDMA Band 5								
Test frequency range: 30MHz-10GHz								
Low channel								
954.74	-71.22	98	1.8	H	10.0	-61.22	-13	48.22
954.74	-76.07	308	2.3	V	11.7	-64.37	-13	51.37
1652.8	-57.9	163	2.2	H	3.5	-54.40	-13	41.4
1652.8	-56.5	97	1.8	V	3.1	-53.40	-13	40.4
2479.2	-47.4	9	1.2	H	6.6	-40.80	-13	27.8
2479.2	-45.6	39	2.2	V	5.8	-39.80	-13	26.8
3305.6	-53.1	258	1.8	H	6.4	-46.70	-13	33.7
3305.6	-52.2	294	1.6	V	5.7	-46.50	-13	33.5
Middle channel								
952.58	-71.40	324	1.8	H	10.0	-61.40	-13	48.40
952.58	-74.87	327	1.4	V	11.7	-63.17	-13	50.17
1672.8	-55.8	330	1.2	H	3.9	-51.9	-13	38.9
1672.8	-55.5	150	1.5	V	3.1	-52.4	-13	39.4
2509.2	-48.8	327	2.5	H	6.2	-42.6	-13	29.6
2509.2	-48.2	107	1.7	V	5.6	-42.6	-13	29.6
3345.6	-53.0	299	2.4	H	6.6	-46.4	-13	33.4
3345.6	-51.6	32	1.2	V	5.4	-46.2	-13	33.2
High channel								
956.70	-71.49	151	1.4	H	10.0	-61.49	-13	48.49
956.70	-75.49	105	2.0	V	11.7	-63.79	-13	50.79
1693.2	-58.1	95	1.4	H	4.1	-54.00	-13	41.0
1693.2	-56.0	168	2.0	V	3.1	-52.90	-13	39.9
2539.8	-48.5	358	1.2	H	6.1	-42.40	-13	29.4
2539.8	-46.7	125	1.8	V	5.8	-40.90	-13	27.9
3386.4	-52.5	293	2.0	H	6.2	-46.30	-13	33.3
3386.4	-51.3	203	1.4	V	5.4	-45.90	-13	32.9

LTE Bands: (pre-scan all bandwidths and 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, Low channel								
956.77	-72.30	324	1.5	H	10.0	-62.30	-13	49.30
956.77	-77.24	223	2.0	V	11.7	-65.54	-13	52.54
3701.4	-55.3	0	1.8	H	8.1	-47.20	-13	34.2
3701.4	-54.0	345	1.1	V	7.6	-46.40	-13	33.4
5552.1	-52.6	193	1.5	H	9.6	-43.00	-13	30.0
5552.1	-52.4	69	1.6	V	9.1	-43.30	-13	30.3
QPSK, 1.4MHz, Middle channel								
950.87	-72.80	283	1.4	H	10.0	-62.80	-13	49.80
950.87	-77.00	101	1.6	V	11.7	-65.30	-13	52.30
3760	-56.7	32	1.0	H	8.8	-47.90	-13	34.9
3760	-55.3	303	1.7	V	8	-47.30	-13	34.3
5640	-53.8	329	2.1	H	10.2	-43.60	-13	30.6
5640	-53.5	83	1.8	V	9.5	-44.00	-13	31.0
QPSK, 1.4MHz, High channel								
955.86	-72.27	303	2.4	H	10.0	-62.27	-13	49.27
955.86	-75.09	315	2.2	V	11.7	-63.39	-13	50.39
3818.6	-54.9	61	2.2	H	8.7	-46.20	-13	33.2
3818.6	-54.2	359	2.4	V	8	-46.20	-13	33.2
5727.9	-55.6	139	2.4	H	10.6	-45.00	-13	32.0
5727.9	-53.2	7	1.0	V	10.2	-43.00	-13	30.0

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 4								
Test frequency range: 30MHz-20GHz								
QPSK, 1.4MHz, Low channel								
952.58	-71.07	349	2.1	H	10.0	-61.07	-13	48.07
952.58	-77.13	312	2.3	V	11.7	-65.43	-13	52.43
3421.4	-50.3	248	2.3	H	6.4	-43.90	-13	30.9
3421.4	-49.3	235	1.7	V	5.7	-43.60	-13	30.6
5132.1	-56.4	192	1.8	H	11.3	-45.10	-13	32.1
5132.1	-55.7	82	1.2	V	10.8	-44.90	-13	31.9
QPSK, 1.4MHz, Middle channel								
950.77	-72.26	342	1.4	H	10.0	-62.26	-13	49.26
950.77	-76.34	55	1.2	V	11.7	-64.64	-13	51.64
3465	-50.6	214	2.4	H	7	-43.60	-13	30.6
3465	-49.7	15	1.1	V	6.2	-43.50	-13	30.5
5197.5	-54.9	274	2.2	H	10.4	-44.50	-13	31.5
5197.5	-54.2	181	1.8	V	9.8	-44.40	-13	31.4
QPSK, 1.4MHz, High channel								
953.83	-72.10	231	1.0	H	10.0	-62.10	-13	49.10
953.83	-75.95	171	1.9	V	11.7	-64.25	-13	51.25
3508.6	-49.7	4	1.5	H	7.8	-41.90	-13	28.9
3508.6	-48.9	103	2.3	V	6.6	-42.30	-13	29.3
5262.9	-53.2	359	2.4	H	9.5	-43.70	-13	30.7
5262.9	-52.3	20	1.3	V	8.9	-43.40	-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, Low channel								
953.84	-72.17	177	2.3	H	10.0	-62.17	-13	49.17
953.84	-74.74	40	2.2	V	11.7	-63.04	-13	50.04
1649.4	-57.0	143	1.4	H	3.5	-53.50	-13	40.5
1649.4	-57.5	209	2.1	V	3.1	-54.40	-13	41.4
2474.1	-42.6	277	1.9	H	6.6	-36.00	-13	23.0
2474.1	-42.4	67	1.9	V	5.8	-36.60	-13	23.6
3298.8	-52.7	198	2.4	H	6.4	-46.30	-13	33.3
3298.8	-52.2	153	1.8	V	5.7	-46.50	-13	33.5
QPSK, 1.4MHz, Middle channel								
953.39	-70.04	255	1.6	H	10.0	-60.04	-13	47.04
953.39	-75.97	17	2.5	V	11.7	-64.27	-13	51.27
1673	-53.1	30	1.5	H	3.8	-49.30	-13	36.3
1673	-54.1	3	2.2	V	3.1	-51.00	-13	38.0
2509.5	-42.5	53	1.4	H	6.2	-36.30	-13	23.3
2509.5	-40.9	322	1.9	V	5.5	-35.40	-13	22.4
3346	-52.8	351	1.6	H	6.6	-46.20	-13	33.2
3346	-51.5	63	2.2	V	5.4	-46.10	-13	33.1
QPSK, 1.4MHz, High channel								
952.79	-71.17	59	2.0	H	10.0	-61.17	-13	48.17
952.79	-76.10	350	1.3	V	11.7	-64.40	-13	51.40
1696.6	-55.3	6	1.4	H	4.1	-51.20	-13	38.2
1696.6	-55.3	298	1.5	V	3.1	-52.20	-13	39.2
2544.9	-44.4	240	1.8	H	6.1	-38.30	-13	25.3
2544.9	-41.3	234	1.7	V	5.8	-35.50	-13	22.5
3393.2	-52.6	81	1.6	H	6.2	-46.40	-13	33.4
3393.2	-51.0	131	1.6	V	5.4	-45.60	-13	32.6

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 7								
Test frequency range: 30MHz-26.5GHz								
QPSK, 5MHz, Low channel								
954.28	-70.09	148	1.1	H	10.0	-60.09	-25	35.09
954.28	-76.16	124	2.1	V	11.7	-64.46	-25	39.46
5005	-54.4	132	1.5	H	10.8	-43.60	-25	18.6
5005	-53.1	195	2.5	V	10.2	-42.90	-25	17.9
7507.5	-53.7	196	2.0	H	20.3	-33.40	-25	8.4
7507.5	-49.3	312	1.6	V	20.1	-29.20	-25	4.2
QPSK, 5MHz, Middle channel								
951.13	-69.91	205	1.4	H	9.8	-60.11	-25	35.11
951.13	-75.87	110	1.8	V	11.7	-64.17	-25	39.17
5070	-54.3	31	1.7	H	11.1	-43.20	-25	18.2
5070	-52.8	90	1.6	V	10.8	-42.00	-25	17.0
7605	-58.2	5	1.9	H	21.2	-37.00	-25	12.0
7605	-54.4	277	1.5	V	20.1	-34.30	-25	9.3
QPSK,5MHz, High channel								
956.27	-72.40	66	1.0	H	10.0	-62.40	-25	37.40
956.27	-74.76	194	1.4	V	11.7	-63.06	-25	38.06
5135	-55.0	115	1.5	H	11.3	-43.70	-25	18.7
5135	-53.8	68	1.6	V	10.8	-43.00	-25	18.0
7702.5	-60.4	39	1.9	H	21.2	-39.20	-25	14.2
7702.5	-59.2	308	2.3	V	21	-38.20	-25	13.2

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, Low channel								
953.84	-62.62	23	1.6	H	-0.2	-62.82	-13.00	49.82
953.84	-68.38	350	1.8	V	3.1	-65.28	-13.00	52.28
1399.4	-56.1	236	1.5	H	5.9	-50.2	-13.00	37.2
1399.4	-58.7	350	1.2	V	5.9	-52.8	-13.00	39.8
2099.1	-41.4	43	1.6	H	6.3	-35.1	-13.00	22.1
2099.1	-40.4	187	1.6	V	5.1	-35.3	-13.00	22.3
QPSK, 1.4MHz, Middle channel								
953.47	-60.96	276	2.0	H	-0.2	-61.16	-13.00	48.16
953.47	-70.85	67	1.4	V	3.1	-67.75	-13.00	54.75
1415	-60.0	194	1.6	H	5.7	-54.3	-13.00	41.3
1415	-61.3	217	1.5	V	5.4	-55.9	-13.00	42.9
2122.5	-38.1	114	1.1	H	6.7	-31.4	-13.00	18.4
2122.5	-39.4	264	1.3	V	5.8	-33.6	-13.00	20.6
QPSK, 1.4MHz, High channel								
951.52	-62.98	36	2.2	H	-0.2	-63.18	-13.00	50.18
951.52	-68.52	87	1.9	V	3.1	-65.42	-13.00	52.42
1430.6	-60.2	180	1.9	H	5.4	-54.8	-13.00	41.8
1430.6	-60.2	70	2.2	V	4.8	-55.4	-13.00	42.4
2145.9	-38.5	102	1.7	H	7	-31.5	-13.00	18.5
2145.9	-41.2	270	2.2	V	6.6	-34.6	-13.00	21.6

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 17								
Test frequency range: 30MHz-10GHz								
QPSK, 5MHz, Low channel								
956.33	-70.03	235	2.1	H	10.0	-60.03	-13	47.03
956.33	-75.43	352	1.2	V	11.7	-63.73	-13	50.73
1413	-59.5	267	2.1	H	5.7	-53.80	-13	40.8
1413	-60.3	130	1.7	V	5.4	-54.90	-13	41.9
2119.5	-34.4	28	1.9	H	6.6	-27.80	-13	14.8
2119.5	-36.1	204	1.3	V	5.7	-30.40	-13	17.4
QPSK, 5MHz, Middle channel								
956.25	-71.35	173	1.2	H	10.0	-61.35	-13	48.35
956.25	-77.48	196	1.8	V	11.7	-65.78	-13	52.78
1420	-60.9	122	1.6	H	5.6	-55.30	-13	42.3
1420	-60.6	280	1.1	V	5.2	-55.40	-13	42.4
2130	-38.5	350	1.6	H	6.8	-31.70	-13	18.7
2130	-40.0	272	2.1	V	6.1	-33.90	-13	20.9
QPSK, 5MHz, High channel								
951.56	-70.53	185	1.4	H	10.0	-60.53	-13	47.53
951.56	-77.33	142	1.4	V	11.7	-65.63	-13	52.63
1427	-60.0	157	1.8	H	5.5	-54.50	-13	41.5
1427	-59.4	349	2.2	V	4.9	-54.50	-13	41.5
2140.5	-35.2	344	1.8	H	7	-28.20	-13	15.2
2140.5	-36.7	277	1.4	V	6.4	-30.30	-13	17.3

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); §27.538 (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.

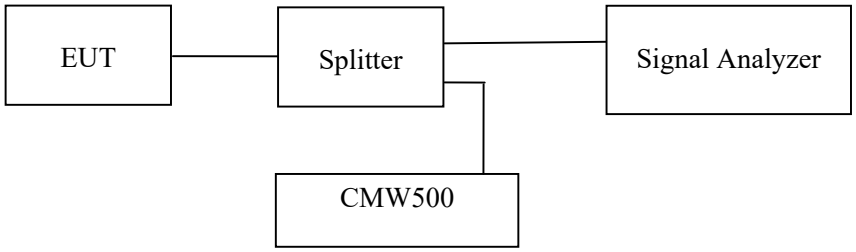
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to FCC §27.53 (h)(m), 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

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

Temperature:	27.2 ℃
Relative Humidity:	56.8 %
ATM Pressure:	101.0 kPa

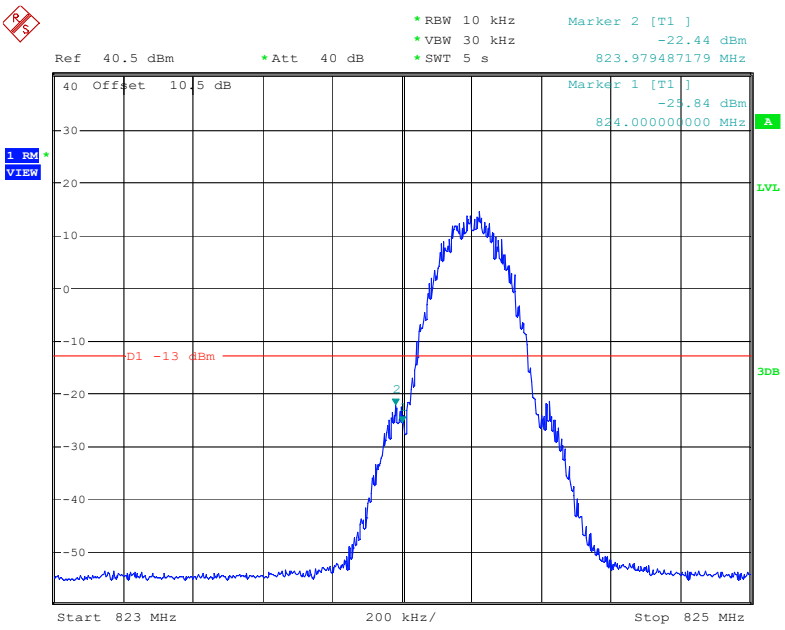
The testing was performed by Cat Kang from 2022-08-26 to 2022-09-30

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

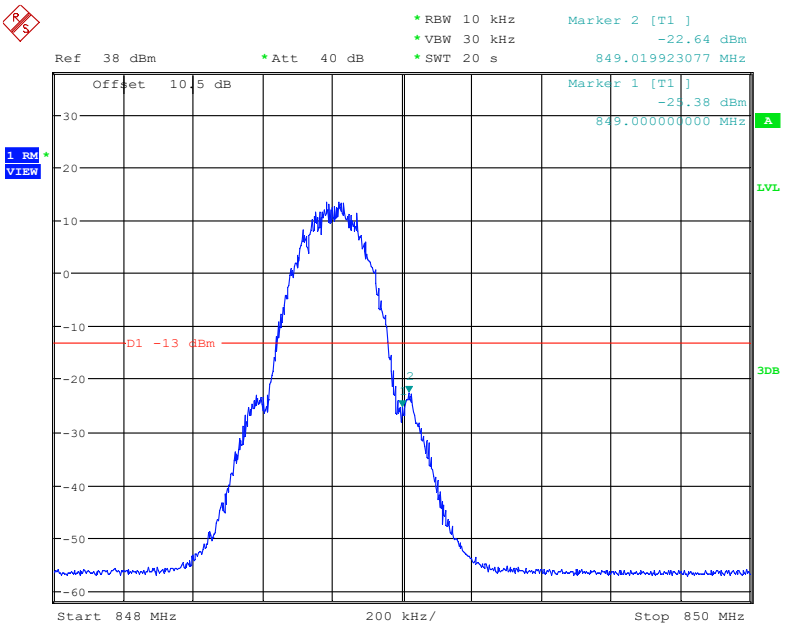
Please refer to the following plots.

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



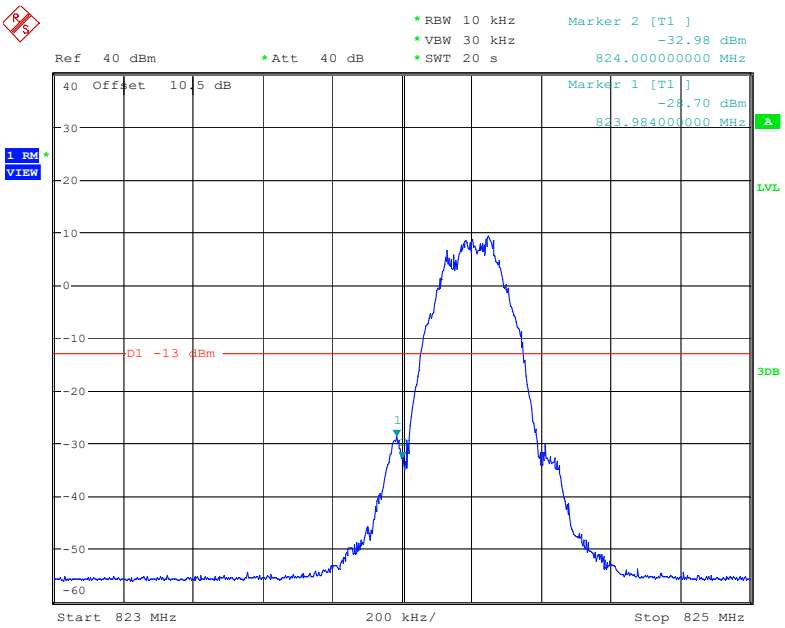
Date: 16.SEP.2022 09:31:23

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



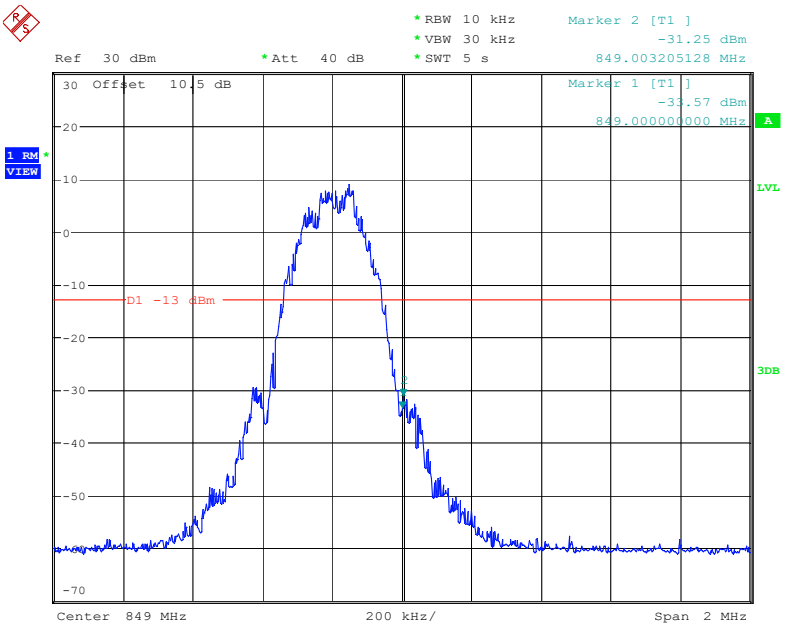
Date: 19.SEP.2022 16:31:57

Cellular Band, Left Band Edge for EGPRS (8PSK) Mode



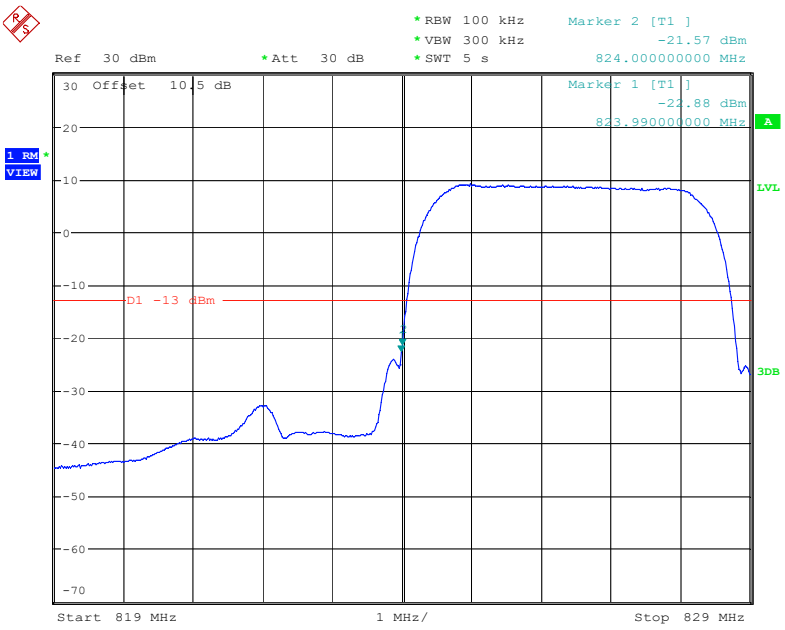
Date: 26.AUG.2022 13:11:20

Cellular Band, Right Band Edge for EGPRS (8PSK) Mode



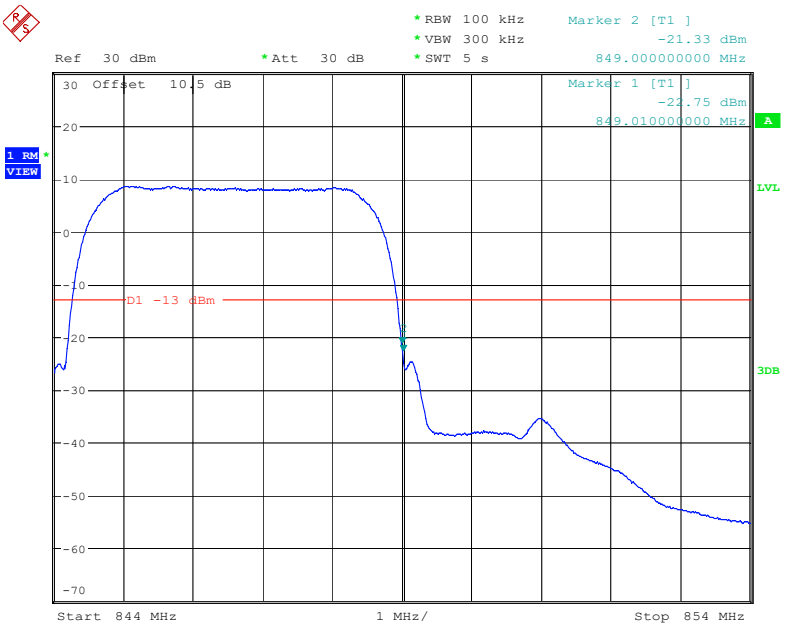
Date: 16.SEP.2022 09:36:06

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



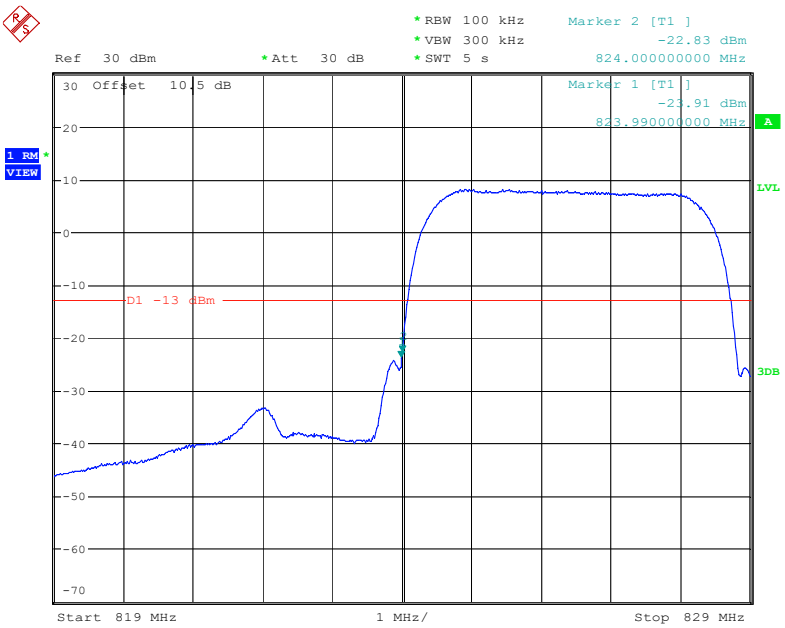
Date: 26.AUG.2022 15:00:01

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



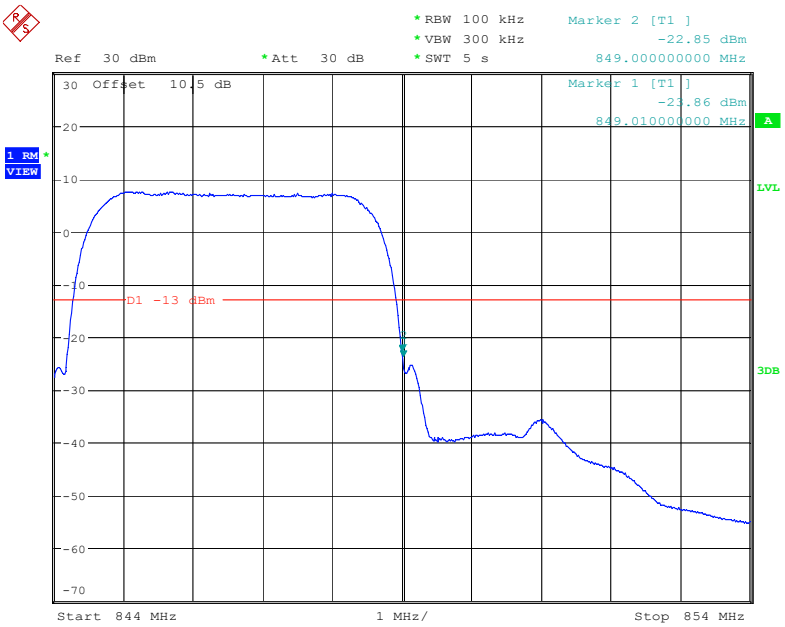
Date: 26.AUG.2022 15:06:20

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



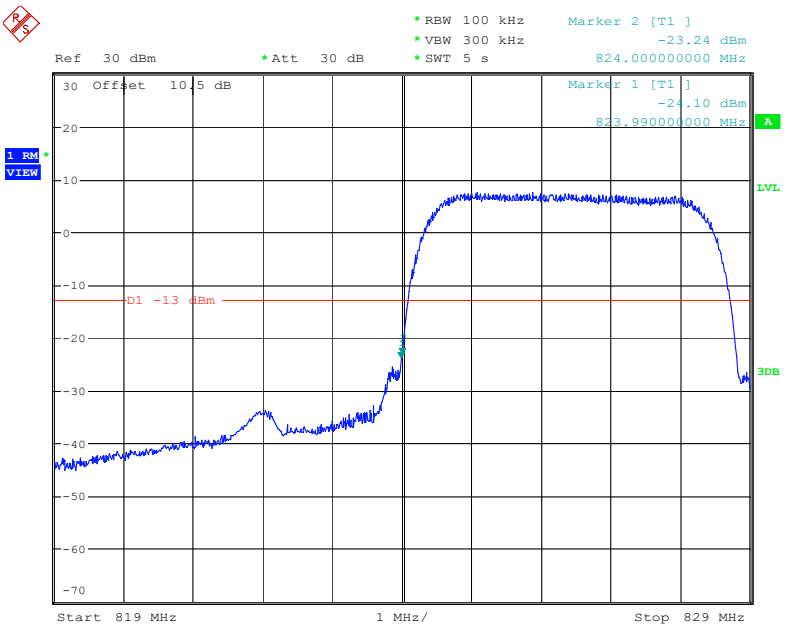
Date: 26.AUG.2022 16:00:44

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



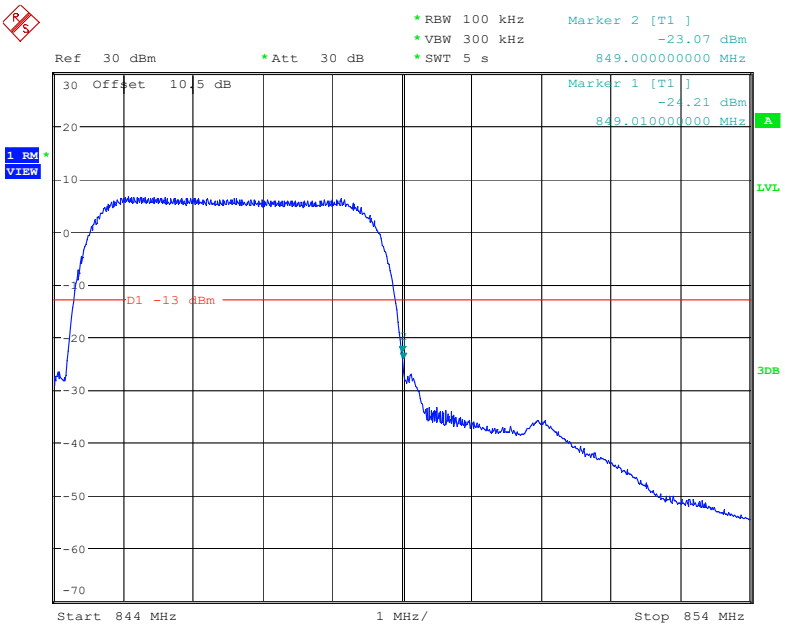
Date: 26.AUG.2022 16:06:56

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



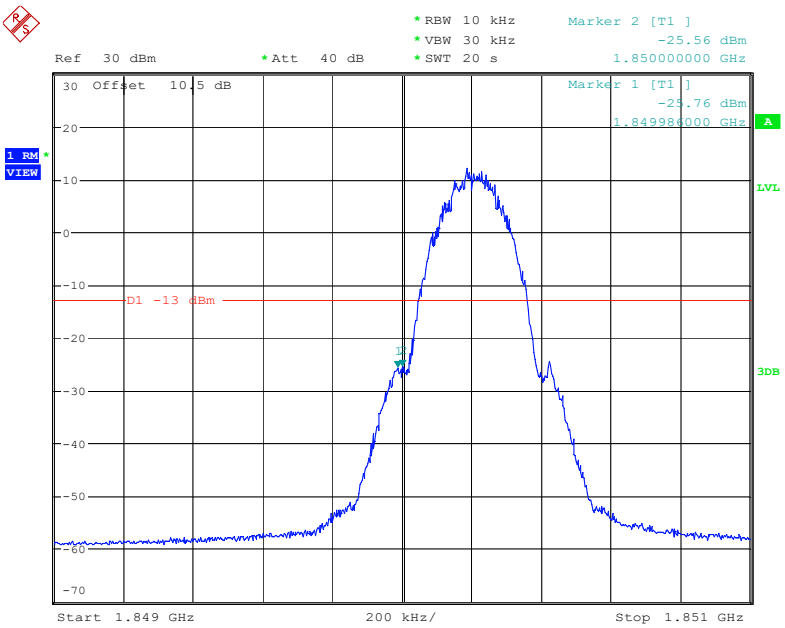
Date: 27.AUG.2022 18:52:39

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



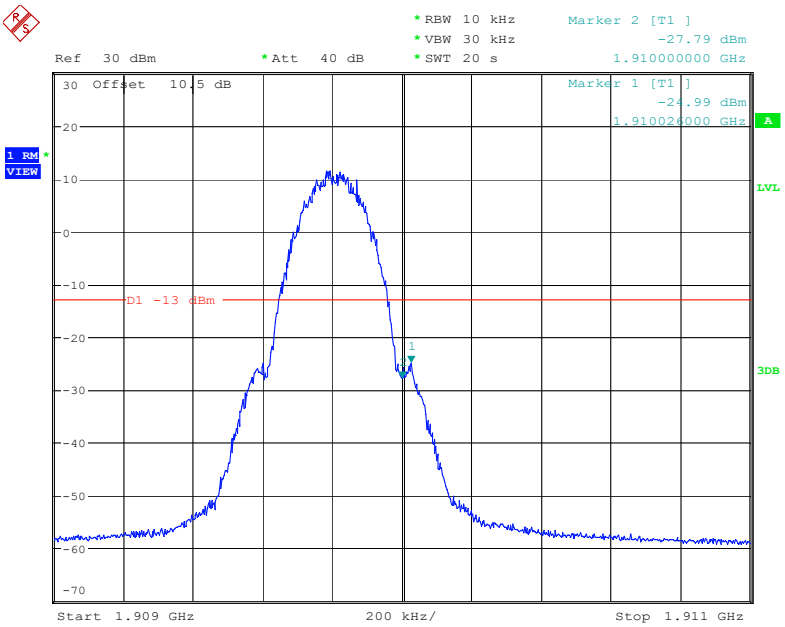
Date: 26.AUG.2022 16:45:29

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



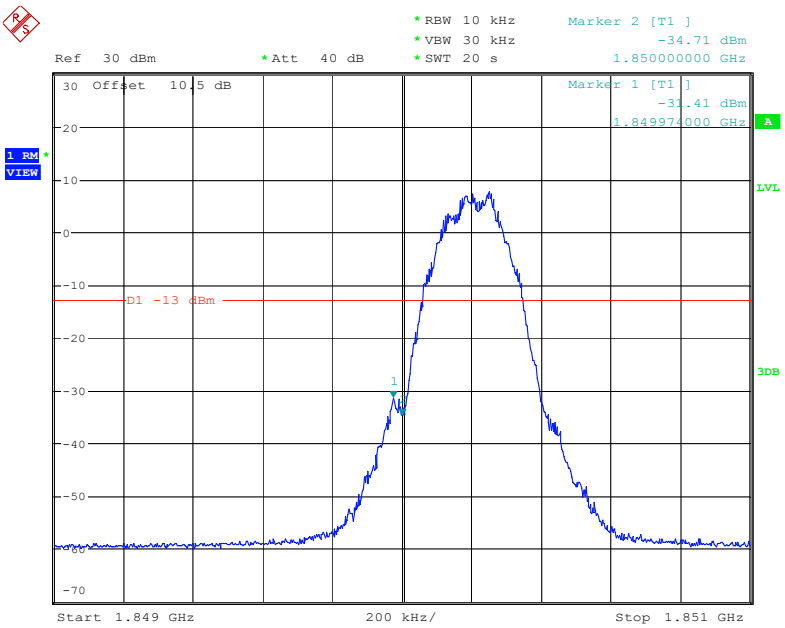
Date: 26.AUG.2022 13:27:48

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



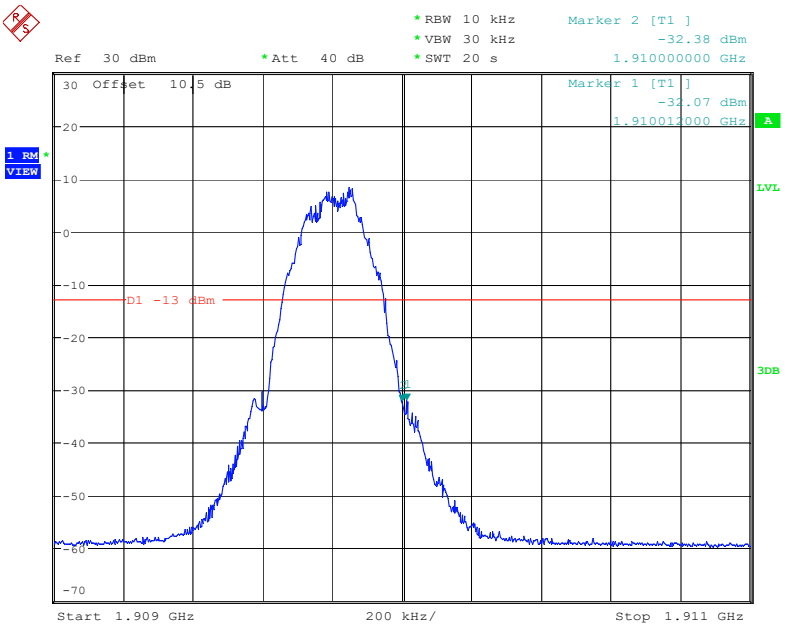
Date: 26.AUG.2022 13:43:26

PCS Band, Left Band Edge for EGPRS (8PSK) Mode



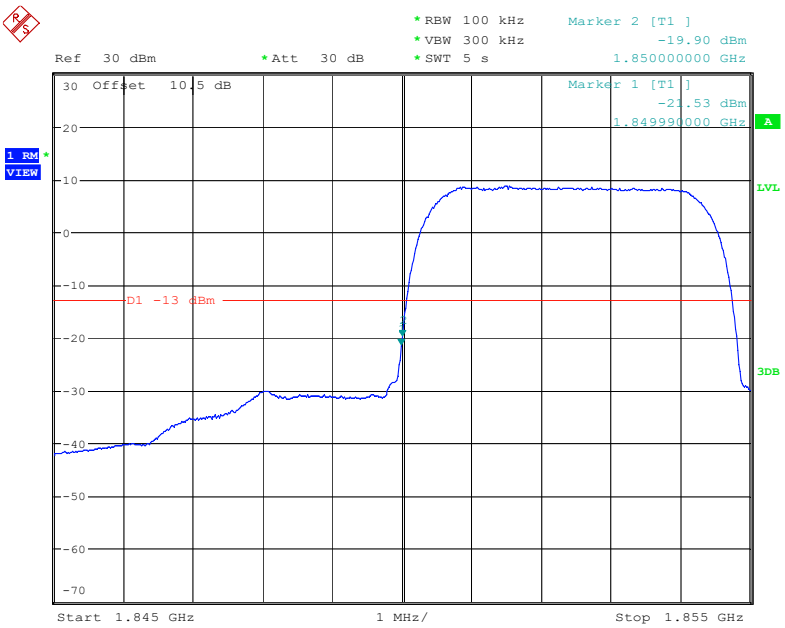
Date: 26.AUG.2022 14:09:32

PCS Band, Right Band Edge for EGPRS (8PSK) Mode



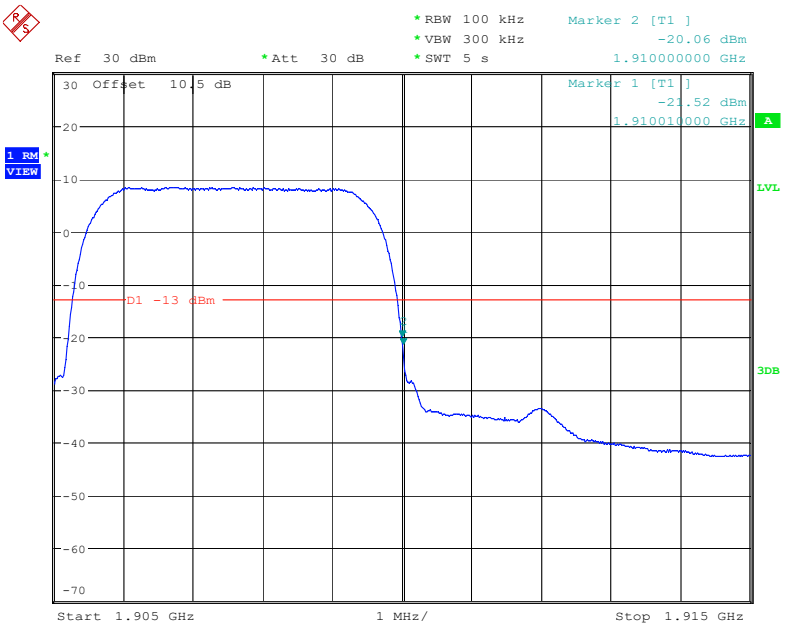
Date: 26.AUG.2022 14:21:32

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



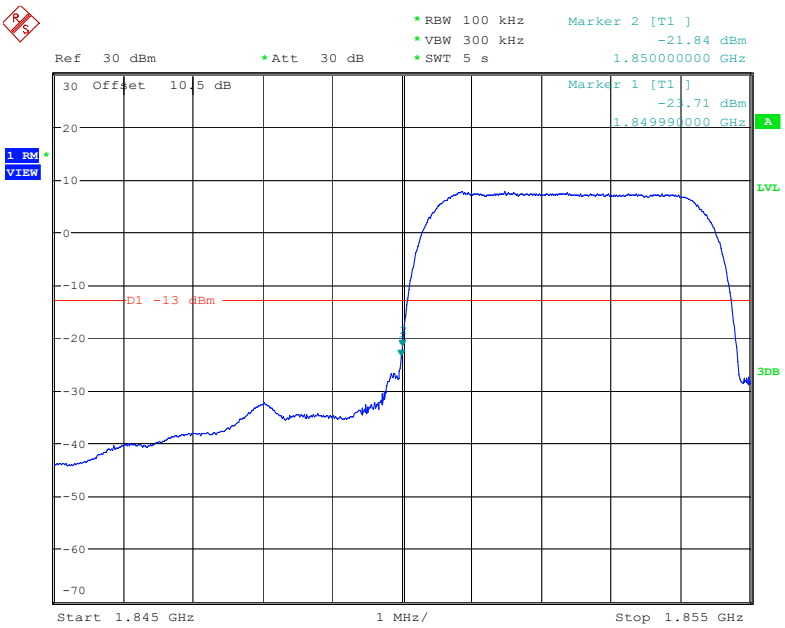
Date: 26.AUG.2022 14:34:47

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



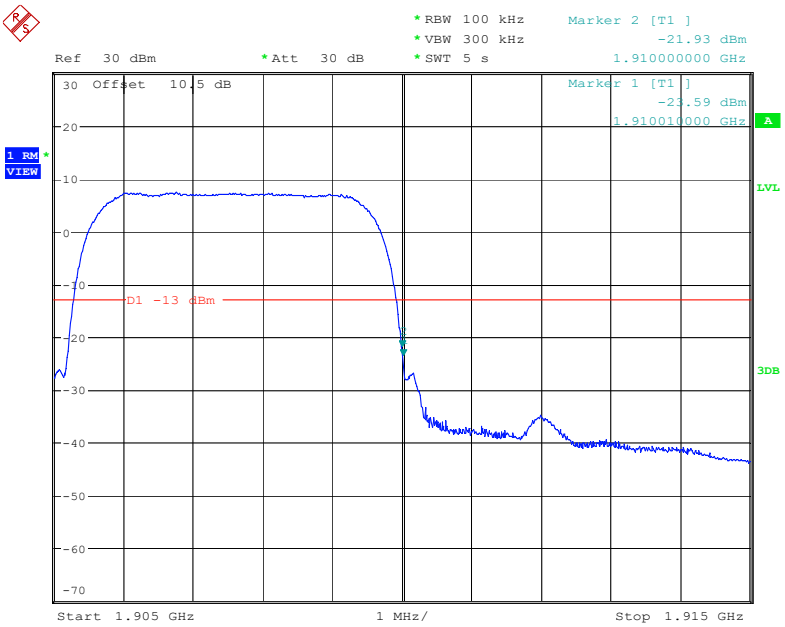
Date: 26.AUG.2022 14:42:49

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



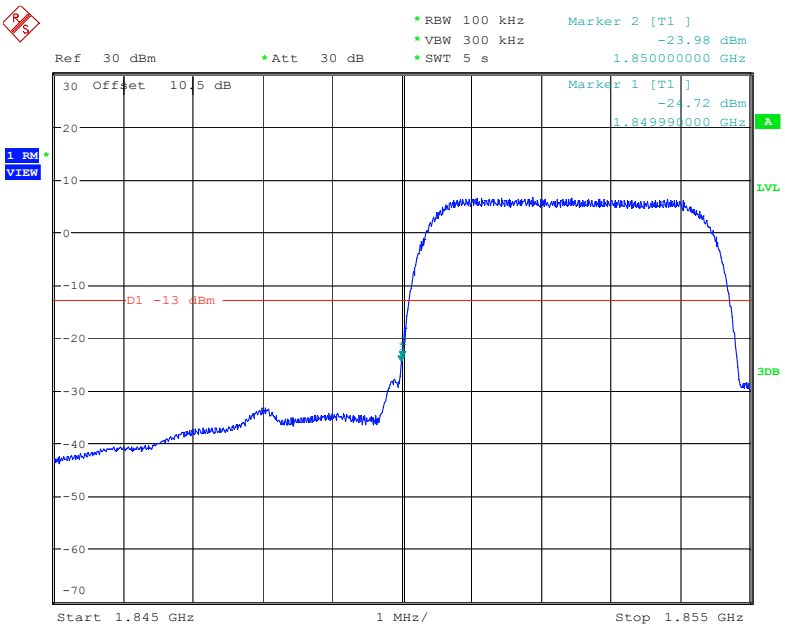
Date: 26.AUG.2022 15:36:14

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



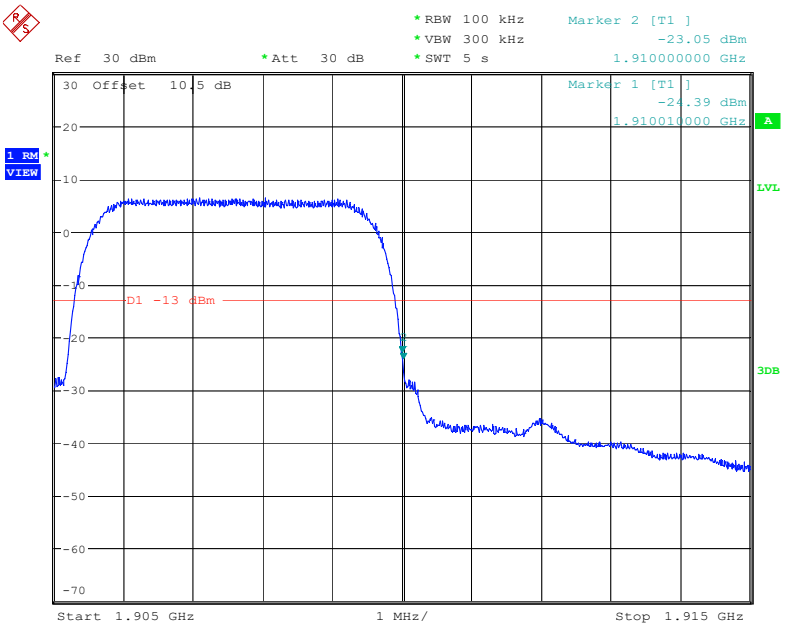
Date: 26.AUG.2022 15:45:01

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



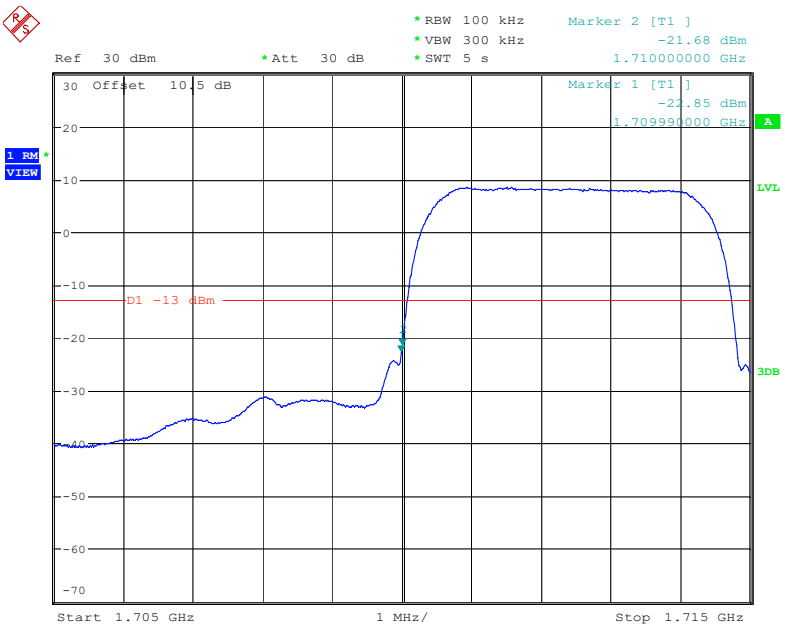
Date: 26.AUG.2022 16:12:29

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



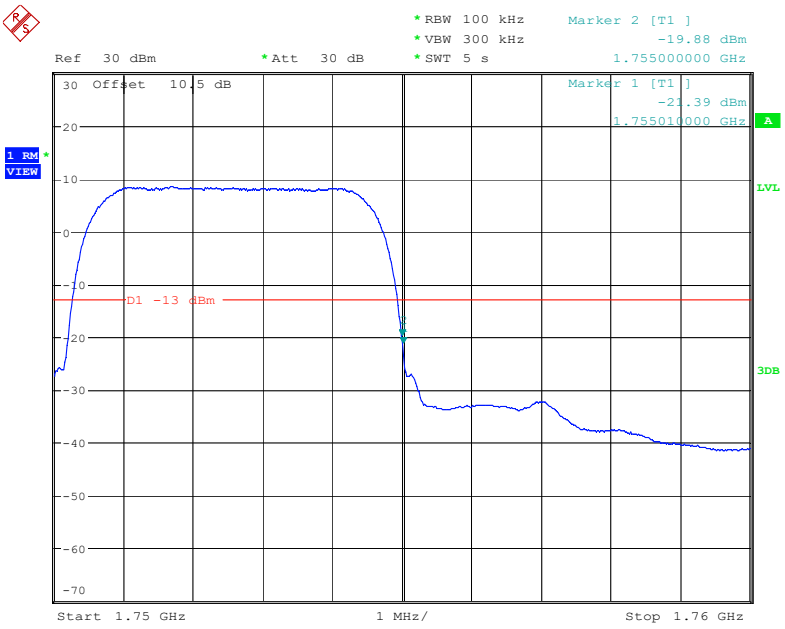
Date: 26.AUG.2022 16:21:49

AWS Band, Left Band Edge for RMC (BPSK) Mode



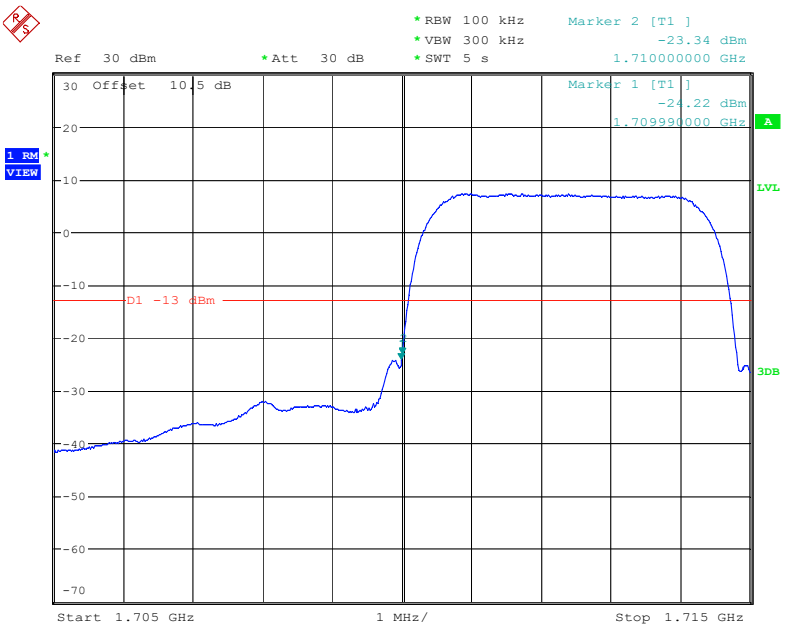
Date: 26.AUG.2022 14:47:42

AWS Band, Right Band Edge for RMC (BPSK) Mode



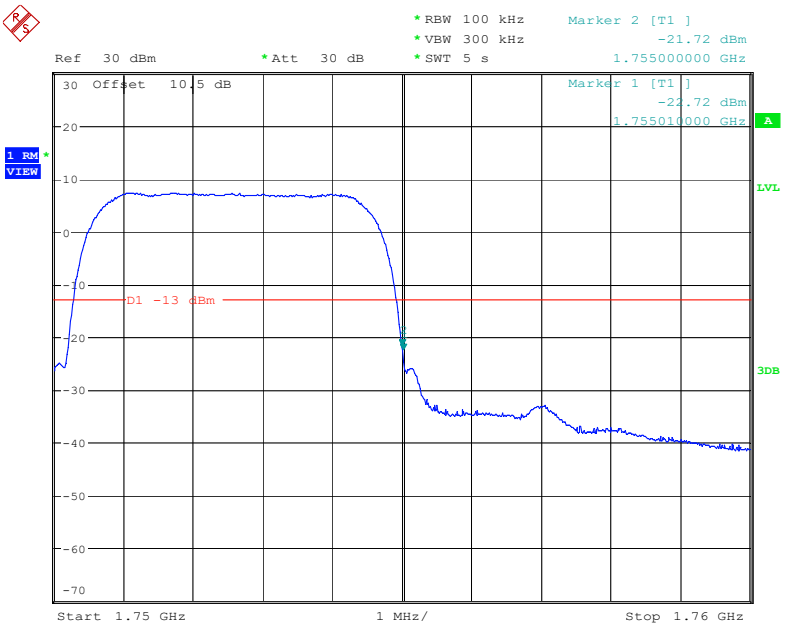
Date: 26.AUG.2022 14:55:19

AWS Band, Left Band Edge for HSDPA(16QAM) Mode



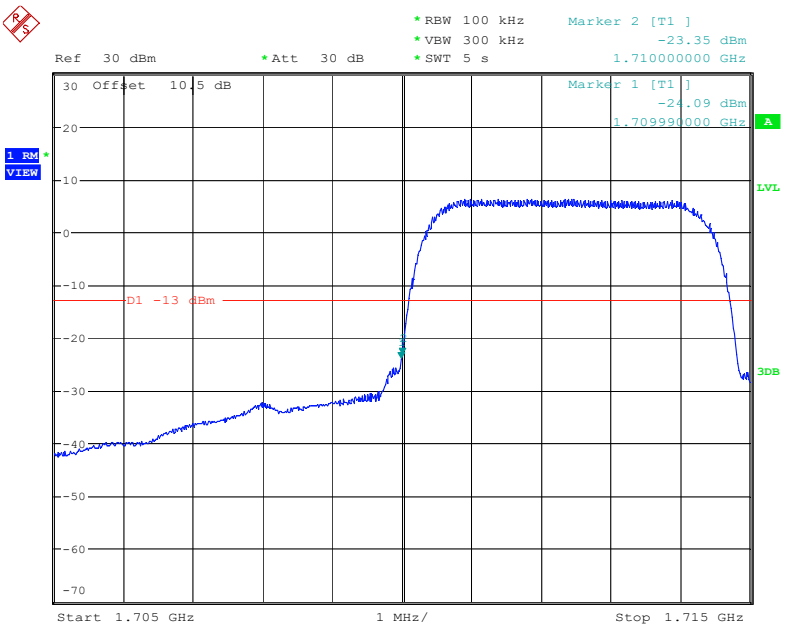
Date: 26.AUG.2022 15:49:22

AWS Band, Right Band Edge for HSDPA (16QAM) Mode



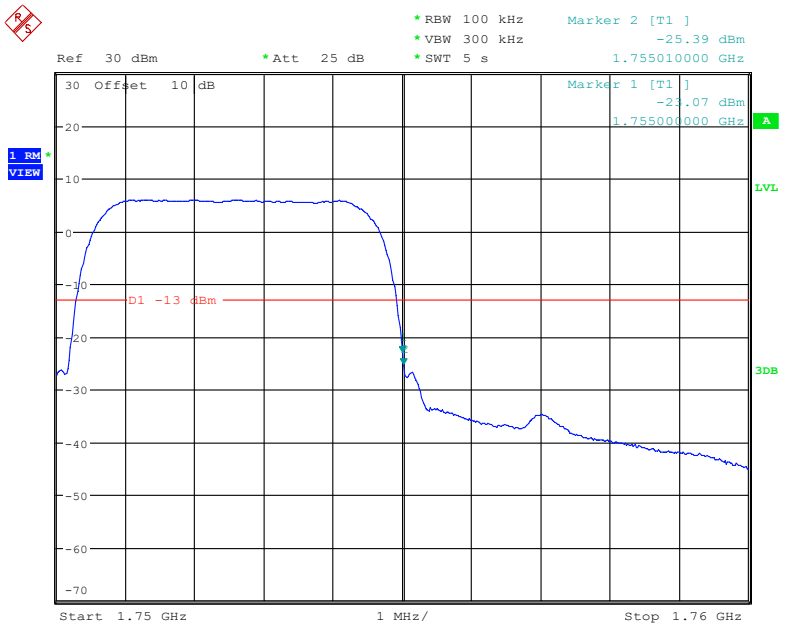
Date: 26.AUG.2022 15:56:38

AWS Band, Left Band Edge for HSUPA (QPSK) Mode



Date: 26.AUG.2022 16:26:10

AWS Band, Right Band Edge for HSUPA (QPSK) Mode



Date: 30.SEP.2022 17:33:20

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

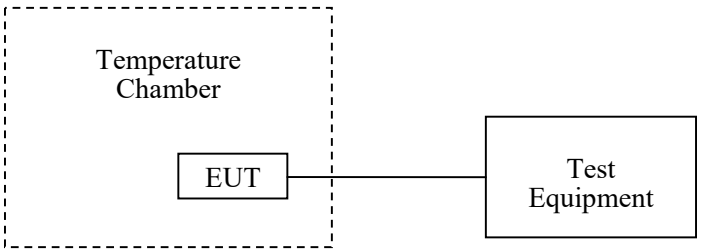
According to §24.235&§27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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

Temperature:	27.2 ℃
Relative Humidity:	56.8 %
ATM Pressure:	101.0 kPa

The testing was performed by Cat Kang from 2022-08-25 to 2022-08-27.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	1	0.0012	2.5
-20		4	0.0048	2.5
-10		3	0.0036	2.5
0		2	0.0024	2.5
10		6	0.0072	2.5
20		9	0.0108	2.5
30		3	0.0036	2.5
40		4	0.0048	2.5
50		3	0.0036	2.5
20	L.V.	2	0.0024	2.5
	H.V.	5	0.0060	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	1.36	0.0016	2.5
-20		1.54	0.0018	2.5
-10		1.62	0.0019	2.5
0		1.45	0.0017	2.5
10		1.28	0.0015	2.5
20		1.30	0.0016	2.5
30		1.28	0.0015	2.5
40		1.55	0.0019	2.5
50		1.41	0.0017	2.5
20	L.V.	1.33	0.0016	2.5
	H.V.	1.26	0.0015	2.5

WCDMA Mode

Middle Channel, f_o =836.4MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	1.11	0.0013	2.5
-20		1.25	0.0015	2.5
-10		1.31	0.0016	2.5
0		1.24	0.0015	2.5
10		1.41	0.0017	2.5
20		1.18	0.0014	2.5
30		1.22	0.0015	2.5
40		1.26	0.0015	2.5
50		1.54	0.0018	2.5
20	L.V.	1.39	0.0017	2.5
	H.V.	1.44	0.0017	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	8	0.0043	pass
-20		9	0.0048	pass
-10		16	0.0085	pass
0		14	0.0074	pass
10		11	0.0059	pass
20		12	0.0064	pass
30		6	0.0032	pass
40		10	0.0053	pass
50		9	0.0048	pass
20	L.V.	13	0.0069	pass
	H.V.	11	0.0059	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	2.48	0.0013	pass
-20		2.35	0.0013	pass
-10		2.41	0.0013	pass
0		2.55	0.0014	pass
10		2.69	0.0014	pass
20		3.30	0.0018	pass
30		2.56	0.0014	pass
40		2.38	0.0013	pass
50		2.55	0.0014	pass
20	L.V.	2.34	0.0012	pass
	H.V.	2.17	0.0012	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	1.49	0.0008	pass
-20		1.55	0.0008	pass
-10		1.34	0.0007	pass
0		1.64	0.0009	pass
10		1.28	0.0007	pass
20		1.01	0.0006	pass
30		1.26	0.0007	pass
40		1.37	0.0007	pass
50		1.42	0.0008	pass
20	L.V.	1.36	0.0007	pass
	H.V.	1.54	0.0008	pass

AWS Band (Part 27)

Temperature (℃)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	N.V.	1710.0162	1754.9733	1710	1755
-20		1710.0158	1754.9722	1710	1755
-10		1710.0154	1754.9715	1710	1755
0		1710.0143	1754.9733	1710	1755
10		1710.0137	1754.9745	1710	1755
20		1710.0125	1754.9722	1710	1755
30		1710.0134	1754.9725	1710	1755
40		1710.0123	1754.9736	1710	1755
50		1710.0114	1754.9731	1710	1755
20	L.V.	1710.0135	1754.9724	1710	1755
	H.V.	1710.0146	1754.9732	1710	1755

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-4.01	-0.0021	pass
-20		-5.58	-0.0030	pass
-10		9.57	0.0051	pass
0		7.61	0.0040	pass
10		-6.57	-0.0035	pass
20		-9.37	-0.0050	pass
30		-6.82	-0.0036	pass
40		7.18	0.0038	pass
50		8.04	0.0043	pass
20	L.V.	6.21	0.0033	pass
	H.V.	9.78	0.0052	pass

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	1710.1164	1754.8734	1710	1755
-20		1710.1153	1754.8736	1710	1755
-10		1710.1191	1754.8724	1710	1755
0		1710.1152	1754.8731	1710	1755
10		1710.1143	1754.8752	1710	1755
20		1710.1152	1754.8745	1710	1755
30		1710.1134	1754.8755	1710	1755
40		1710.1121	1754.8734	1710	1755
50		1710.1125	1754.8746	1710	1755
20	L.V.	1710.1132	1754.8735	1710	1755
	H.V.	1710.1045	1754.8746	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o=836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	-7.41	-0.0089	2.5
-20		-9.66	-0.0115	2.5
-10		-5.21	-0.0062	2.5
0		-9.19	-0.0110	2.5
10		-6.79	-0.0081	2.5
20		9.04	0.0108	2.5
30		6.47	0.0077	2.5
40		5.98	0.0071	2.5
50		9.33	0.0112	2.5
20	L.V.	-8.03	-0.0096	2.5
	H.V.	9.69	0.0116	2.5

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	2500.8756	2569.9851	2500	2570
-20		2500.8742	2569.9942	2500	2570
-10		2500.8752	2569.9854	2500	2570
0		2500.8784	2569.9762	2500	2570
10		2500.7937	2569.9825	2500	2570
20		2500.7872	2569.9421	2500	2570
30		2500.7753	2569.9331	2500	2570
40		2500.7654	2569.9922	2500	2570
50		2500.7541	2569.9872	2500	2570
20	L.V.	2500.7526	2569.9834	2500	2570
	H.V.	2500.7432	2569.9745	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	699.9636	715.8862	699	716
-20		699.9642	715.7724	699	716
-10		699.4525	715.7454	699	716
0		699.4422	715.7631	699	716
10		699.3233	715.5412	699	716
20		699.4421	715.5241	699	716
30		699.2284	715.6324	699	716
40		699.3343	715.6316	699	716
50		699.4242	715.5455	699	716
20	L.V.	699.3376	715.5671	699	716
	H.V.	699.3345	715.5547	699	716

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	704.3348	715.8824	704	716
-20		704.3156	715.8762	704	716
-10		704.2557	715.8424	704	716
0		704.2612	715.8515	704	716
10		704.5143	715.4683	704	716
20		704.5028	715.4524	704	716
30		704.4561	715.3342	704	716
40		704.3565	715.3626	704	716
50		704.3324	715.2834	704	716
20	L.V.	704.2956	715.2642	704	716
	H.V.	704.3114	715.3315	704	716

16QAM:

Band 2:

10.0 MHz Middle Channel, f_o=1880MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	-9.23	-0.0049	pass
-20		6.32	0.0034	pass
-10		8.51	0.0045	pass
0		5.64	0.0030	pass
10		9.09	0.0048	pass
20		5.35	0.0028	pass
30		-9.71	-0.0052	pass
40		-9.01	-0.0048	pass
50		7.23	0.0038	pass
20	L.V.	8.05	0.0043	pass
	H.V.	-9.69	-0.0052	pass

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	1710.2936	1754.7671	1710	1755
-20		1710.2952	1754.7562	1710	1755
-10		1710.2751	1754.7672	1710	1755
0		1710.2654	1754.7456	1710	1755
10		1710.2632	1754.7432	1710	1755
20		1710.2646	1754.7625	1710	1755
30		1710.2572	1754.7624	1710	1755
40		1710.2654	1754.7657	1710	1755
50		1710.2613	1754.7752	1710	1755
20	L.V.	1710.2625	1754.7536	1710	1755
	H.V.	1710.2712	1754.7527	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o=836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	-4.06	-0.0049	2.5
-20		8.52	0.0102	2.5
-10		-7.50	-0.0090	2.5
0		-8.03	-0.0096	2.5
10		6.95	0.0083	2.5
20		-9.22	-0.0110	2.5
30		-9.87	-0.0118	2.5
40		-6.29	-0.0075	2.5
50		-8.98	-0.0107	2.5
20	L.V.	5.98	0.0071	2.5
	H.V.	6.19	0.0074	2.5

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	2500.8459	2569.8373	2500	2570
-20		2500.8421	2569.8555	2500	2570
-10		2500.7642	2569.8421	2500	2570
0		2500.7254	2569.8534	2500	2570
10		2500.6326	2569.8283	2500	2570
20		2500.6231	2569.7824	2500	2570
30		2500.6352	2569.7833	2500	2570
40		2500.6226	2569.8425	2500	2570
50		2500.6224	2569.8456	2500	2570
20	L.V.	2500.6235	2569.8352	2500	2570
	H.V.	2500.6143	2569.8231	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	699.3123	715.7364	699	716
-20		699.3133	715.6223	699	716
-10		699.3012	715.5952	699	716
0		699.2911	715.6127	699	716
10		699.1724	715.3903	699	716
20		699.2914	715.3771	699	716
30		699.0785	715.4812	699	716
40		699.1836	715.3914	699	716
50		699.2734	715.3943	699	716
20	L.V.	699.1853	715.4161	699	716

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	704.3364	715.8872	704	716
-20		704.5985	715.7656	704	716
-10		704.2983	715.6984	704	716
0		704.2684	715.6434	704	716
10		704.3321	715.4987	704	716
20		704.3592	715.4586	704	716
30		704.6236	715.5932	704	716
40		704.5684	715.5537	704	716
50		704.2692	715.4932	704	716
20	L.V.	704.2851	715.5863	704	716
	H.V.	704.3327	715.5322	704	716

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