



TESTREPORT

Applicant Name : Invengo Information Technology Co., Ltd.
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South 10th Road, Nanshan District, Shenzhen, China
Report Number : SZNS1220914-41680E-RF-00F
FCC ID: TQ4-XC2908

Test Standard (s)

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

Sample Description

Product Type: Portable reader
Model No.: XC2908
Multiple Model(s) No.: XC2908-A, XC2908-B, XC2908-C, XC2908-D, XC2908-E,
XC2908-F, XC2908-G, XC2908-H, XC2908-I, XC2908-J,
XC2908-K, XC2908-L, XC2908-M, XC2908-N, XC2908-BM,
XC-BM500, XC-RH500, AT908, XC2002, XC2005, XC9915
Trade Mark: N/A
Date Received: 2022/09/14
Report Date: 2022/11/15

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

Prepared and Checked By:

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EMC Engineer

Approved By:

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

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	SZNS1220914-41680E-RF-00F	Original Report	2022/11/15

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Portable reader
Tested Model	XC2908
Multiple Models	XC2908-A,XC2908-B,XC2908-C,XC2908-D,XC2908-E, XC2908-F,XC2908-G,XC2908-H,XC2908-I,XC2908-J, XC2908-K,XC2908-L,XC2908-M,XC2908-N,XC2908-BM, XC-BM500,XC-RH500,AT908, XC2002,XC2005,XC9915 (model difference see product declaration letter of similarity)
Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 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) LTE Band 38: 2570-2620MHz(TX/RX) LTE Band 40 Lower: 2305-2315MHz(TX/RX) LTE Band 40 Upper: 2350-2360MHz(TX/RX) LTE Band 41: 2575-2635MHz(TX/RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band5/LTE Band 5: 0.65dBi PCS1900/WCDMA Band 2/ LTE Band 2: 1.11dBi WCDMA Band 4/ LTE Band 4: 1.02dBi LTE Band7/Band38/Band41:1.21dBi LTE Band12/LTE Band17:0.53dBi LTE Band40: 1.18dBi (provided by the applicant)
Voltage Range	3.7V from battery or DC 5V from adapter
Test Sample serial number	SZNS1220914-41680E-RF-S1 for Conducted and Radiated Emissions SZNS1220914-41680E-RF-S2 for RF Conducted Test (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model: ICP20-050-3000B Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 3.0A ,15.0W
Extreme condition*	L.V.: Low Voltage 3.45V _{DC} N.V.: Normal Voltage 3.7V _{DC} H.V.: High Voltage 4.2V _{DC} (provided by the applicant)
Note: the series models are electrical identical, they may have slight difference in appearance, detail please refer to the DOS letter and External photo, the model XC2908 was selected to test.	

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part24-Subpart E, and Part 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.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
RF Frequency		±0.082*10 ⁻⁷
Emissions, Radiated	30MHz - 1GHz	±4.28dB
	1GHz - 18GHz	±4.98dB
	18GHz - 26.5GHz	±5.06dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

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

Test Facility

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

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
DCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
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

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610
LTE B40 Lower	5	2307.5	2310	2312.5
	10	/	2310	/
LTE B40 Upper	5	2352.5	2355	2357.5
	10	/	2355	/
LTE B41	5	2577.5	2605	2632.5
	10	2580	2605	2630
	15	2582.5	2605	2627.5
	20	2585	2605	2625

Equipment Modifications

No modification was made to the EUT.

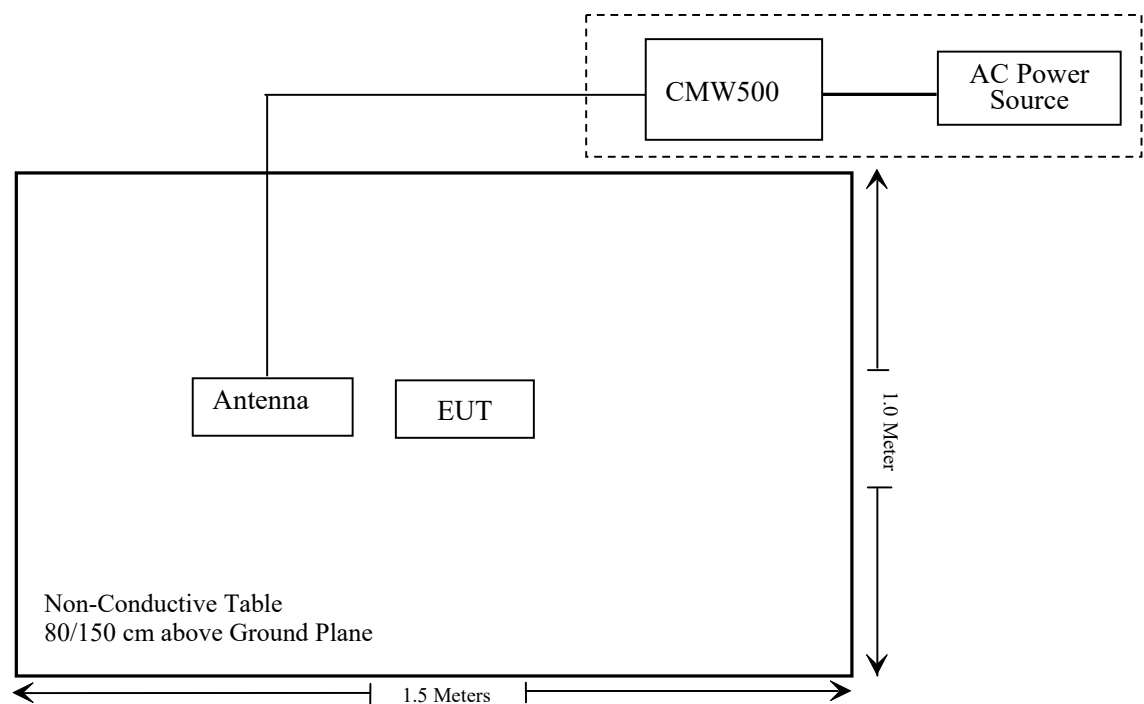
Support Equipment List and Details

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

Support Cable Description

Cable Description	Length (m)	From / Port	To
Un-shielded 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)(d); § 24.232 (c)(d); §27.50(a)(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(a)(g)(h)(m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

Note: * Please refer to SAR report number: SZNS1220914-41680E-SA.

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-184055 36-J0	15964001002	2021/11/11	2022/11/10
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120 (ATC-BA-024-1)	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120 (ATC-BA-025-1)	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N200	2021/12/14	2022/12/13
Agilent	Signal Generator	N5183A	MY51040755	2021/12/13	2022/12/12
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2021/12/14	2022/12/13
CD	High Pass Filter	HPM-1.2/18G -60	110	2021/12/14	2022/12/13

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
WEINSCHTEL	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: SZNS1220914-41680E-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)(d)&§ 24.232(c)(d); §27.50(a)(c)(d)(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(a), For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

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.

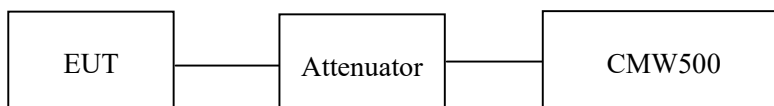
According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2496-2690MHz.

Test Procedure

According to ANSI C63.26-2015 section 5.2

Conducted method:

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



Note: the path loss (cable loss and attenuator) has including in the test result.

Test Data**Environmental Conditions**

Temperature:	27.2~28℃
Relative Humidity:	33~56.2%
ATM Pressure:	101.0 kPa

The testing was performed by Roger Lin on 2022-10-10 and Andy Yu on 2022-10-11~2022-11-08.

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	32.64	30.64	38.45
	190	836.6	32.62	30.62	38.45
	251	848.8	32.66	30.66	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	31.91	30.93	29.09	27.76	29.91	28.93	27.09	25.76	38.45
	190	836.6	31.85	30.82	28.70	27.43	29.85	28.82	26.70	25.43	38.45
	251	848.8	31.62	30.63	28.48	27.49	29.62	28.63	26.48	25.49	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	25.83	24.85	23.04	21.68	23.83	22.85	21.04	19.68	38.45
	190	836.6	25.77	24.76	22.63	21.36	23.77	22.76	20.63	19.36	38.45
	251	848.8	25.57	24.58	22.45	21.42	23.57	22.58	20.45	19.42	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		22.39	22.58	22.34	20.39	20.58	20.34
	HSDPA	1	19.69	19.76	19.84	17.69	17.76	17.84
		2	19.89	19.79	19.80	17.89	17.79	17.8
		3	19.82	19.61	19.68	17.82	17.61	17.68
		4	19.73	19.69	19.64	17.73	17.69	17.64
	HSUPA	1	21.37	21.03	20.90	19.37	19.03	18.9
		2	21.42	20.72	20.92	19.42	18.72	18.92
		3	21.35	20.89	20.79	19.35	18.89	18.79
		4	21.46	20.90	20.83	19.46	18.9	18.83
		5	21.59	20.92	20.77	19.59	18.92	18.77
	HSPA+	1	21.50	20.82	20.51	19.5	18.82	18.51

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Path loss(dB)

For GSM850 / WCDMA Band5: Antenna Gain = 0.65dBi = -1.5dBd (0dBd=2.15dBi)

Path 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	32.16	32.27	33
	661	1880.0	32.11	32.22	33
	810	1909.8	32.07	32.18	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	30.05	29.02	27.2	25.84	30.16	29.13	27.31	25.95	33
	661	1880.0	29.95	28.91	26.84	25.53	30.06	29.02	26.95	25.64	33
	810	1909.8	29.78	28.74	26.61	25.6	29.89	28.85	26.72	25.71	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	25.12	24.08	22.00	20.66	25.23	24.19	22.11	20.77	33
	661	1880.0	24.79	23.68	21.41	20.17	24.9	23.79	21.52	20.28	33
	810	1909.8	24.44	23.31	21.00	19.81	24.55	23.42	21.11	19.92	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		22.39	22.69	22.71	22.5	22.8	22.82
	HSDPA	1	19.73	19.78	19.84	19.84	19.89	19.95
		2	19.84	19.78	19.78	19.95	19.89	19.89
		3	19.77	19.60	19.70	19.88	19.71	19.81
		4	19.74	19.68	19.59	19.85	19.79	19.7
	HSUPA	1	21.38	21.01	20.93	21.49	21.12	21.04
		2	21.43	20.71	20.91	21.54	20.82	21.02
		3	21.37	20.89	20.80	21.48	21.00	20.91
		4	21.48	20.89	20.85	21.59	21.00	20.96
		5	21.54	20.85	20.75	21.65	20.96	20.86
	HSPA+	1	21.51	20.82	20.51	21.62	20.93	20.62

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Path loss(dB)

For PCS1900 / WCDMA Band2: Antenna Gain = 1.11dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤33dBm

LTE Band 2

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	19.01	18.93	18.17	19.12	19.04	18.28
		RB1#3	19.22	19.08	18.34	19.33	19.19	18.45
		RB1#5	19.01	18.90	18.15	19.12	19.01	18.26
		RB3#0	19.14	19.03	18.29	19.25	19.14	18.40
		RB3#3	19.17	19.03	18.29	19.28	19.14	18.40
		RB6#0	18.05	17.98	17.22	18.16	18.09	17.33
	16QAM	RB1#0	18.07	17.97	17.31	18.18	18.08	17.42
		RB1#3	19.06	18.30	18.49	19.17	18.41	18.60
		RB1#5	19.03	18.26	18.45	19.14	18.37	18.56
		RB3#0	19.05	18.25	18.43	19.16	18.36	18.54
		RB3#3	18.01	17.21	17.44	18.12	17.32	17.55
		RB6#0	17.96	17.22	17.45	18.07	17.33	17.56
3.0	QPSK	RB1#0	18.08	17.33	17.50	18.19	17.44	17.61
		RB1#8	18.28	17.34	18.06	18.39	17.45	18.17
		RB1#14	18.21	17.35	18.06	18.32	17.46	18.17
		RB6#0	18.21	17.25	18.01	18.32	17.36	18.12
		RB6#9	17.03	16.21	16.53	17.14	16.32	16.64
		RB15#0	17.03	16.17	16.57	17.14	16.28	16.68
	16QAM	RB1#0	17.07	16.36	16.61	17.18	16.47	16.72
		RB1#8	19.06	18.30	18.49	19.17	18.41	18.60
		RB1#14	19.03	18.26	18.45	19.14	18.37	18.56
		RB6#0	19.05	18.25	18.43	19.16	18.36	18.54
		RB6#9	18.01	17.21	17.44	18.12	17.32	17.55
		RB15#0	17.96	17.22	17.45	18.07	17.33	17.56

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	18.99	19.00	18.77	19.10	19.11	18.88
		RB1#13	19.07	19.06	18.92	19.18	19.17	19.03
		RB1#24	18.96	18.96	18.80	19.07	19.07	18.91
		RB15#0	18.08	18.11	17.91	18.19	18.22	18.02
		RB15#10	18.04	18.06	17.94	18.15	18.17	18.05
		RB25#0	18.04	18.06	17.87	18.15	18.17	17.98
	16QAM	RB1#0	17.88	18.36	17.92	17.99	18.47	18.03
		RB1#13	18.04	18.39	17.99	18.15	18.50	18.10
		RB1#24	17.88	18.28	17.87	17.99	18.39	17.98
		RB15#0	17.19	17.09	16.99	17.30	17.20	17.10
		RB15#10	17.10	17.07	16.99	17.21	17.18	17.10
		RB25#0	17.16	17.08	16.95	17.27	17.19	17.06
10.0	QPSK	RB1#0	18.99	18.40	18.41	19.10	18.51	18.52
		RB1#25	19.09	18.49	18.53	19.20	18.6	18.64
		RB1#49	18.97	18.27	18.38	19.08	18.38	18.49
		RB25#0	18.10	17.39	17.47	18.21	17.50	17.58
		RB25#25	18.05	17.39	17.44	18.16	17.50	17.55
		RB50#0	18.08	17.44	17.45	18.19	17.55	17.56
	16QAM	RB1#0	18.67	17.56	17.43	18.78	17.67	17.54
		RB1#25	18.73	17.67	17.54	18.84	17.78	17.65
		RB1#49	18.61	17.45	17.35	18.72	17.56	17.46
		RB25#0	17.17	16.49	16.63	17.28	16.60	16.74
		RB25#25	17.18	16.46	16.59	17.29	16.57	16.70
		RB50#0	17.14	16.47	16.55	17.25	16.58	16.66

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	18.92	18.41	18.39	19.03	18.52	18.50
		RB1#38	19.05	18.47	18.54	19.16	18.58	18.65
		RB1#74	18.88	18.25	18.36	18.99	18.36	18.47
		RB36#0	18.08	17.53	17.59	18.19	17.64	17.70
		RB36#39	18.06	17.48	17.53	18.17	17.59	17.64
		RB75#0	18.07	17.51	17.56	18.18	17.62	17.67
	16QAM	RB1#0	18.61	17.56	17.83	18.72	17.67	17.94
		RB1#38	18.72	17.68	17.93	18.83	17.79	18.04
		RB1#74	18.53	17.48	17.73	18.64	17.59	17.84
		RB36#0	17.06	16.54	16.63	17.17	16.65	16.74
		RB36#39	17.07	16.51	16.55	17.18	16.62	16.66
		RB75#0	17.11	16.54	16.59	17.22	16.65	16.70
20.0	QPSK	RB1#0	18.79	18.35	17.99	18.90	18.46	18.10
		RB1#50	19.20	18.75	18.45	19.31	18.86	18.56
		RB1#99	18.72	18.24	17.98	18.83	18.35	18.09
		RB50#0	18.08	17.60	17.48	18.19	17.71	17.59
		RB50#50	18.09	17.59	17.31	18.20	17.70	17.42
		RB100#0	18.09	17.61	17.42	18.20	17.72	17.53
	16QAM	RB1#0	18.15	17.58	17.68	18.26	17.69	17.79
		RB1#50	18.57	17.96	17.97	18.68	18.07	18.08
		RB1#99	18.08	17.51	17.56	18.19	17.62	17.67
		RB50#0	17.09	16.64	16.58	17.20	16.75	16.69
		RB50#50	17.11	16.62	16.38	17.22	16.73	16.49
		RB100#0	17.12	16.66	16.48	17.23	16.77	16.59

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

For Band2: Antenna Gain = 1.11dBi

Path loss=1.0dB*(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	18.75	19.47	19.38	18.77	19.49	19.40
		RB1#3	18.81	19.66	19.50	18.83	19.68	19.52
		RB1#5	18.73	19.47	19.29	18.75	19.49	19.31
		RB3#0	18.83	19.57	19.44	18.85	19.59	19.46
		RB3#3	18.77	19.62	19.42	18.79	19.64	19.44
		RB6#0	17.81	18.55	18.43	17.83	18.57	18.45
	16QAM	RB1#0	17.86	18.50	18.35	17.88	18.52	18.37
		RB1#3	18.06	18.69	18.51	18.08	18.71	18.53
		RB1#5	17.83	18.50	18.37	17.85	18.52	18.39
		RB3#0	17.80	18.67	18.62	17.82	18.69	18.64
		RB3#3	17.83	18.64	18.62	17.85	18.66	18.64
		RB6#0	16.84	17.53	17.42	16.86	17.55	17.44
3.0	QPSK	RB1#0	19.53	18.90	19.39	19.55	18.92	19.41
		RB1#8	19.52	18.87	19.27	19.54	18.89	19.29
		RB1#14	19.45	18.84	19.30	19.47	18.86	19.32
		RB6#0	18.55	17.86	18.30	18.57	17.88	18.32
		RB6#9	18.51	17.84	18.28	18.53	17.86	18.30
		RB15#0	18.54	17.89	18.37	18.56	17.91	18.39
	16QAM	RB1#0	19.13	18.05	18.41	19.15	18.07	18.43
		RB1#8	19.09	18.05	18.35	19.11	18.07	18.37
		RB1#14	19.09	18.02	18.29	19.11	18.04	18.31
		RB6#0	17.59	16.88	17.27	17.61	16.90	17.29
		RB6#9	17.57	16.87	17.22	17.59	16.89	17.24
		RB15#0	17.60	16.86	17.39	17.62	16.88	17.41

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	19.42	19.35	19.40	19.44	19.37	19.42
		RB1#13	19.57	19.44	19.42	19.59	19.46	19.44
		RB1#24	19.40	19.30	19.25	19.42	19.32	19.27
		RB15#0	18.53	18.45	18.53	18.55	18.47	18.55
		RB15#10	18.56	18.42	18.44	18.58	18.44	18.46
		RB25#0	18.48	18.45	18.47	18.50	18.47	18.49
	16QAM	RB1#0	18.36	18.71	18.41	18.38	18.73	18.43
		RB1#13	18.45	18.75	18.51	18.47	18.77	18.53
		RB1#24	18.30	18.61	18.37	18.32	18.63	18.39
		RB15#0	17.55	17.46	17.57	17.57	17.48	17.59
		RB15#10	17.57	17.44	17.48	17.59	17.46	17.50
		RB25#0	17.55	17.45	17.48	17.57	17.47	17.50
10.0	QPSK	RB1#0	19.54	19.44	18.80	19.56	19.46	18.82
		RB1#25	19.68	19.62	19.00	19.70	19.64	19.02
		RB1#49	19.43	19.39	18.71	19.45	19.41	18.73
		RB25#0	18.49	18.52	17.87	18.51	18.54	17.89
		RB25#25	18.58	18.41	17.77	18.60	18.43	17.79
		RB50#0	18.54	18.49	17.84	18.56	18.51	17.86
	16QAM	RB1#0	19.13	18.65	17.86	19.15	18.67	17.88
		RB1#25	19.27	18.76	17.99	19.29	18.78	18.01
		RB1#49	19.02	18.56	17.74	19.04	18.58	17.76
		RB25#0	17.57	17.58	16.96	17.59	17.60	16.98
		RB25#25	17.61	17.47	16.87	17.63	17.49	16.89
		RB50#0	17.55	17.5	16.85	17.57	17.52	16.87

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	19.43	19.33	18.63	19.45	19.35	18.65
		RB1#38	19.51	19.39	18.74	19.53	19.41	18.76
		RB1#74	19.33	19.17	18.49	19.35	19.19	18.51
		RB36#0	18.51	18.51	17.75	18.53	18.53	17.77
		RB36#39	18.50	18.42	17.75	18.52	18.44	17.77
		RB75#0	18.54	18.46	17.76	18.56	18.48	17.78
	16QAM	RB1#0	18.84	18.94	17.78	18.86	18.96	17.80
		RB1#38	18.93	19.02	17.91	18.95	19.04	17.93
		RB1#74	18.73	18.81	17.66	18.75	18.83	17.68
		RB36#0	17.45	17.48	16.77	17.47	17.50	16.79
		RB36#39	17.47	17.42	16.70	17.49	17.44	16.72
		RB75#0	17.47	17.48	16.73	17.49	17.50	16.75
20.0	QPSK	RB1#0	19.28	18.68	18.34	19.30	18.70	18.36
		RB1#50	19.62	19.07	18.76	19.64	19.09	18.78
		RB1#99	19.15	18.54	18.22	19.17	18.56	18.24
		RB50#0	18.47	18.00	17.63	18.49	18.02	17.65
		RB50#50	18.43	17.81	17.59	18.45	17.83	17.61
		RB100#0	18.47	17.95	17.64	18.49	17.97	17.66
	16QAM	RB1#0	18.58	17.92	17.94	18.6	17.94	17.96
		RB1#50	18.97	18.26	18.30	18.99	18.28	18.32
		RB1#99	18.47	17.75	17.76	18.49	17.77	17.78
		RB50#0	17.50	17.02	16.68	17.52	17.04	16.70
		RB50#50	17.46	16.86	16.57	17.48	16.88	16.59
		RB100#0	17.53	16.98	16.67	17.55	17.00	16.69

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

For Band4: Antenna Gain = 1.02dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP ≤ 30dBm

LTE Band5

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	21.27	20.55	20.71	19.27	18.55	18.71
		RB1#3	21.41	20.69	20.92	19.41	18.69	18.92
		RB1#5	21.25	20.52	20.76	19.25	18.52	18.76
		RB3#0	21.29	20.61	20.83	19.29	18.61	18.83
		RB3#3	21.37	20.63	20.81	19.37	18.63	18.81
		RB6#0	20.30	19.60	19.82	18.30	17.60	17.82
	16QAM	RB1#0	20.37	19.50	19.71	18.37	17.50	17.71
		RB1#3	20.53	19.71	19.90	18.53	17.71	17.90
		RB1#5	20.38	19.55	19.71	18.38	17.55	17.71
		RB3#0	20.25	19.65	19.97	18.25	17.65	17.97
		RB3#3	20.24	19.63	19.91	18.24	17.63	17.91
		RB6#0	19.36	18.57	18.90	17.36	16.57	16.9
3.0	QPSK	RB1#0	21.31	21.21	21.14	19.31	19.21	19.14
		RB1#8	21.21	21.15	21.08	19.21	19.15	19.08
		RB1#14	21.23	21.17	21.10	19.23	19.17	19.10
		RB6#0	20.22	20.19	20.07	18.22	18.19	18.07
		RB6#9	20.25	20.14	20.05	18.25	18.14	18.05
		RB15#0	20.22	20.17	20.10	18.22	18.17	18.10
	16QAM	RB1#0	20.90	20.32	20.16	18.90	18.32	18.16
		RB1#8	20.85	20.29	20.06	18.85	18.29	18.06
		RB1#14	20.85	20.26	20.02	18.85	18.26	18.02
		RB6#0	19.32	19.18	19.02	17.32	17.18	17.02
		RB6#9	19.34	19.17	19.03	17.34	17.17	17.03
		RB15#0	19.31	19.14	19.16	17.31	17.14	17.16

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	21.21	21.16	20.17	19.21	19.16	18.17
		RB1#13	21.33	21.22	20.24	19.33	19.22	18.24
		RB1#24	21.22	21.06	20.09	19.22	19.06	18.09
		RB15#0	20.21	20.26	19.23	18.21	18.26	17.23
		RB15#10	20.31	20.16	19.22	18.31	18.16	17.22
		RB25#0	20.25	20.18	19.19	18.25	18.18	17.19
	16QAM	RB1#0	20.11	20.38	19.24	18.11	18.38	17.24
		RB1#13	20.19	20.47	19.31	18.19	18.47	17.31
		RB1#24	20.08	20.36	19.15	18.08	18.36	17.15
		RB15#0	19.30	19.25	18.29	17.30	17.25	16.29
		RB15#10	19.38	19.15	18.29	17.38	17.15	16.29
		RB25#0	19.35	19.23	18.23	17.35	17.23	16.23
10.0	QPSK	RB1#0	21.27	20.75	21.04	19.27	18.75	19.04
		RB1#25	21.44	20.90	21.15	19.44	18.90	19.15
		RB1#49	21.17	20.69	20.92	19.17	18.69	18.92
		RB25#0	20.25	19.84	20.05	18.25	17.84	18.05
		RB25#25	20.30	19.69	19.96	18.30	17.69	17.96
		RB50#0	20.23	19.74	20.02	18.23	17.74	18.02
	16QAM	RB1#0	20.91	19.87	20.04	18.91	17.87	18.04
		RB1#25	20.97	19.99	20.14	18.97	17.99	18.14
		RB1#49	20.72	19.81	19.86	18.72	17.81	17.86
		RB25#0	19.34	18.89	19.19	17.34	16.89	17.19
		RB25#25	19.39	18.74	19.08	17.39	16.74	17.08
		RB50#0	19.30	18.81	19.08	17.30	16.81	17.08

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Path loss(dB)

For LTE Band5: Antenna Gain = 0.65dBi = -1.5dBd (0dBd=2.15dBi)

Path Loss=0.5dB* (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	16.01	16.62	16.97	16.22	16.83	17.18
		RB1#13	16.13	16.72	17.11	16.34	16.93	17.32
		RB1#24	16.04	16.58	16.95	16.25	16.79	17.16
		RB15#0	15.07	15.70	16.10	15.28	15.91	16.31
		RB15#10	15.12	15.75	16.06	15.33	15.96	16.27
		RB25#0	15.05	15.67	16.04	15.26	15.88	16.25
	16QAM	RB1#0	15.26	15.71	15.84	15.47	15.92	16.05
		RB1#13	15.38	15.79	15.99	15.59	16.00	16.20
		RB1#24	15.28	15.65	15.81	15.49	15.86	16.02
		RB15#0	13.98	14.69	15.14	14.19	14.90	15.35
		RB15#10	14.07	14.76	15.10	14.28	14.97	15.31
		RB25#0	14.07	14.70	15.12	14.28	14.91	15.33
10.0	QPSK	RB1#0	16.71	16.26	16.39	16.92	16.47	16.60
		RB1#25	16.95	16.41	16.61	17.16	16.62	16.82
		RB1#49	16.73	16.21	16.42	16.94	16.42	16.63
		RB25#0	15.72	15.29	15.47	15.93	15.50	15.68
		RB25#25	15.86	15.36	15.48	16.07	15.57	15.69
		RB50#0	15.82	15.34	15.48	16.03	15.55	15.69
	16QAM	RB1#0	16.25	15.41	15.36	16.46	15.62	15.57
		RB1#25	16.39	15.51	15.58	16.60	15.72	15.79
		RB1#49	16.22	15.32	15.36	16.43	15.53	15.57
		RB25#0	14.76	14.31	14.57	14.97	14.52	14.78
		RB25#25	14.88	14.39	14.56	15.09	14.60	14.77
		RB50#0	14.80	14.35	14.52	15.01	14.56	14.73

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	16.59	17.04	16.51	16.80	17.25	16.72
		RB1#38	16.76	17.15	16.67	16.97	17.36	16.88
		RB1#74	16.61	16.95	16.53	16.82	17.16	16.74
		RB36#0	15.74	16.20	15.75	15.95	16.41	15.96
		RB36#39	15.87	16.23	15.78	16.08	16.44	15.99
		RB75#0	15.80	16.18	15.74	16.01	16.39	15.95
	16QAM	RB1#0	16.14	16.16	15.79	16.35	16.37	16.00
		RB1#38	16.26	16.25	16.00	16.47	16.46	16.21
		RB1#74	16.16	16.08	15.88	16.37	16.29	16.09
		RB36#0	14.67	15.17	14.67	14.88	15.38	14.88
		RB36#39	14.81	15.18	14.67	15.02	15.39	14.88
		RB75#0	14.79	15.17	14.70	15.00	15.38	14.91
20.0	QPSK	RB1#0	16.44	16.71	16.32	16.65	16.92	16.53
		RB1#50	16.88	17.02	16.71	17.09	17.23	16.92
		RB1#99	16.53	16.63	16.31	16.74	16.84	16.52
		RB50#0	15.60	15.85	15.63	15.81	16.06	15.84
		RB50#50	15.80	15.96	15.66	16.01	16.17	15.87
		RB100#0	15.69	15.91	15.66	15.90	16.12	15.87
	16QAM	RB1#0	15.73	15.84	15.85	15.94	16.05	16.06
		RB1#50	16.14	16.23	16.22	16.35	16.44	16.43
		RB1#99	15.76	15.76	15.88	15.97	15.97	16.09
		RB50#0	14.61	14.89	14.64	14.82	15.10	14.85
		RB50#50	14.77	14.96	14.60	14.98	15.17	14.81
		RB100#0	14.74	14.93	14.66	14.95	15.14	14.87

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

For Band7: Antenna Gain = 1.21dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤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	20.91	20.83	21.31	18.79	18.71	19.19
		RB1#3	21.17	21.00	21.46	19.05	18.88	19.34
		RB1#5	20.94	20.80	21.31	18.82	18.68	19.19
		RB3#0	21.01	20.88	21.36	18.89	18.76	19.24
		RB3#3	21.01	20.93	21.33	18.89	18.81	19.21
		RB6#0	19.99	19.89	20.35	17.87	17.77	18.23
	16QAM	RB1#0	20.03	19.80	20.28	17.91	17.68	18.16
		RB1#3	20.21	19.99	20.47	18.09	17.87	18.35
		RB1#5	20.06	19.79	20.30	17.94	17.67	18.18
		RB3#0	19.99	19.95	20.53	17.87	17.83	18.41
		RB3#3	20.02	19.95	20.52	17.90	17.83	18.40
		RB6#0	19.05	18.87	19.42	16.93	16.75	17.30
3.0	QPSK	RB1#0	21.59	21.51	21.27	19.47	19.39	19.15
		RB1#8	21.64	21.48	21.29	19.52	19.36	19.17
		RB1#14	21.54	21.42	21.23	19.42	19.30	19.11
		RB6#0	20.54	20.42	20.28	18.42	18.30	18.16
		RB6#9	20.48	20.43	20.22	18.36	18.31	18.10
		RB15#0	20.58	20.46	20.27	18.46	18.34	18.15
	16QAM	RB1#0	20.72	20.53	20.93	18.60	18.41	18.81
		RB1#8	20.68	20.47	20.85	18.56	18.35	18.73
		RB1#14	20.63	20.44	20.77	18.51	18.32	18.65
		RB6#0	19.59	19.46	19.40	17.47	17.34	17.28
		RB6#9	19.63	19.42	19.34	17.51	17.30	17.22
		RB15#0	19.57	19.57	19.39	17.45	17.45	17.27

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	21.56	21.22	21.01	19.44	19.10	18.89
		RB1#13	21.61	21.32	21.08	19.49	19.20	18.96
		RB1#24	21.50	21.16	20.95	19.38	19.04	18.83
		RB15#0	20.57	20.30	20.11	18.45	18.18	17.99
		RB15#10	20.55	20.24	20.15	18.43	18.12	18.03
		RB25#0	20.56	20.24	20.11	18.44	18.12	17.99
	16QAM	RB1#0	20.37	20.50	20.12	18.25	18.38	18.00
		RB1#13	20.48	20.60	20.22	18.36	18.48	18.10
		RB1#24	20.35	20.42	19.97	18.23	18.30	17.85
		RB15#0	19.63	19.31	19.18	17.51	17.19	17.06
		RB15#10	19.65	19.26	19.22	17.53	17.14	17.10
		RB25#0	19.65	19.35	19.17	17.53	17.23	17.05
10.0	QPSK	RB1#0	21.56	20.68	21.25	19.44	18.56	19.13
		RB1#25	21.70	20.73	21.38	19.58	18.61	19.26
		RB1#49	21.42	20.53	21.15	19.30	18.41	19.03
		RB25#0	20.50	19.64	20.34	18.38	17.52	18.22
		RB25#25	20.51	19.61	20.26	18.39	17.49	18.14
		RB50#0	20.56	19.62	20.32	18.44	17.50	18.20
	16QAM	RB1#0	21.17	19.70	20.20	19.05	17.58	18.08
		RB1#25	21.26	19.89	20.41	19.14	17.77	18.29
		RB1#49	21.01	19.64	20.10	18.89	17.52	17.98
		RB25#0	19.61	18.69	19.48	17.49	16.57	17.36
		RB25#25	19.62	18.67	19.40	17.50	16.55	17.28
		RB50#0	19.59	18.68	19.37	17.47	16.56	17.25

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Path loss(dB)

For LTE Band12: Antenna Gain = 0.53dBi = -1.62dBd (0dBd=2.15dBi)

Path 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	21.49	21.39	21.84	19.37	19.27	19.72
		RB1#13	21.65	21.48	21.92	19.53	19.36	19.80
		RB1#24	21.49	21.31	21.77	19.37	19.19	19.65
		RB15#0	20.55	20.48	20.87	18.43	18.36	18.75
		RB15#10	20.53	20.46	20.87	18.41	18.34	18.75
		RB25#0	20.53	20.46	20.80	18.41	18.34	18.68
	16QAM	RB1#0	20.72	20.46	20.67	18.60	18.34	18.55
		RB1#13	20.92	20.55	20.75	18.80	18.43	18.63
		RB1#24	20.74	20.33	20.65	18.62	18.21	18.53
		RB15#0	19.51	19.47	19.92	17.39	17.35	17.80
		RB15#10	19.49	19.41	19.90	17.37	17.29	17.78
		RB25#0	19.53	19.45	19.88	17.41	17.33	17.76
10.0	QPSK	RB1#0	21.89	21.11	21.96	19.77	18.99	19.84
		RB1#25	22.09	21.23	22.09	19.97	19.11	19.97
		RB1#49	21.83	20.97	21.87	19.71	18.85	19.75
		RB25#0	21.04	20.13	21.00	18.92	18.01	18.88
		RB25#25	20.95	20.08	20.92	18.83	17.96	18.80
		RB50#0	21.00	20.10	20.94	18.88	17.98	18.82
	16QAM	RB1#0	21.54	20.21	20.96	19.42	18.09	18.84
		RB1#25	21.56	20.37	21.04	19.44	18.25	18.92
		RB1#49	21.44	20.07	20.82	19.32	17.95	18.70
		RB25#0	20.06	19.12	20.06	17.94	17.00	17.94
		RB25#25	20.00	19.10	19.97	17.88	16.98	17.85
		RB50#0	19.98	19.09	19.95	17.86	16.97	17.83

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Path loss(dB)

For LTE Band17: Antenna Gain = 0.53dBi = -1.62dBd (0dBd=2.15dBi)

Path Loss=0.5dB* (provided by the applicant)

Limit: ERP≤34.77dBm

LTE Band 38

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	16.93	17.08	16.35	17.14	17.29	16.56
		RB1#13	16.97	17.19	16.41	17.18	17.40	16.62
		RB1#24	16.83	17.04	16.32	17.04	17.25	16.53
		RB15#0	15.93	16.09	15.41	16.14	16.30	15.62
		RB15#10	15.89	16.11	15.43	16.10	16.32	15.64
		RB25#0	15.93	16.10	15.40	16.14	16.31	15.61
	16QAM	RB1#0	15.98	16.35	15.37	16.19	16.56	15.58
		RB1#13	16.03	16.40	15.45	16.24	16.61	15.66
		RB1#24	15.88	16.30	15.32	16.09	16.51	15.53
		RB15#0	14.94	15.13	14.38	15.15	15.34	14.59
		RB15#10	14.93	15.16	14.35	15.14	15.37	14.56
		RB25#0	14.98	15.09	14.44	15.19	15.30	14.65
10.0	QPSK	RB1#0	17.04	16.29	16.86	17.25	16.50	17.07
		RB1#25	17.22	16.53	17.06	17.43	16.74	17.27
		RB1#49	16.96	16.18	16.75	17.17	16.39	16.96
		RB25#0	15.99	15.26	15.84	16.20	15.47	16.05
		RB25#25	15.97	15.24	15.85	16.18	15.45	16.06
		RB50#0	15.98	15.24	15.83	16.19	15.45	16.04
	16QAM	RB1#0	15.96	15.38	16.04	16.17	15.59	16.25
		RB1#25	16.12	15.61	16.29	16.33	15.82	16.50
		RB1#49	15.87	15.28	15.99	16.08	15.49	16.20
		RB25#0	15.02	14.31	14.86	15.23	14.52	15.07
		RB25#25	15.05	14.28	14.86	15.26	14.49	15.07
		RB50#0	14.99	14.29	14.84	15.20	14.50	15.05

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	16.94	16.73	17.07	17.15	16.94	17.28
		RB1#38	16.92	16.79	17.10	17.13	17.00	17.31
		RB1#74	16.78	16.60	16.96	16.99	16.81	17.17
		RB36#0	15.94	15.78	16.12	16.15	15.99	16.33
		RB36#39	15.98	15.71	16.06	16.19	15.92	16.27
		RB75#0	15.96	15.76	16.09	16.17	15.97	16.30
	16QAM	RB1#0	16.15	15.67	16.28	16.36	15.88	16.49
		RB1#38	16.14	15.72	16.3	16.35	15.93	16.51
		RB1#74	16.00	15.53	16.17	16.21	15.74	16.38
		RB36#0	14.91	14.74	15.15	15.12	14.95	15.36
		RB36#39	14.95	14.66	15.10	15.16	14.87	15.31
		RB75#0	14.90	14.75	15.10	15.11	14.96	15.31
20.0	QPSK	RB1#0	16.86	16.86	16.63	17.07	17.07	16.84
		RB1#50	17.25	17.26	17.05	17.46	17.47	17.26
		RB1#99	16.71	16.71	16.51	16.92	16.92	16.72
		RB50#0	15.87	16.06	15.84	16.08	16.27	16.05
		RB50#50	15.95	16.01	15.81	16.16	16.22	16.02
		RB100#0	15.91	16.03	15.85	16.12	16.24	16.06
	16QAM	RB1#0	16.09	15.95	15.62	16.30	16.16	15.83
		RB1#50	16.48	16.35	16.07	16.69	16.56	16.28
		RB1#99	15.97	15.83	15.49	16.18	16.04	15.70
		RB50#0	14.94	15.03	14.89	15.15	15.24	15.10
		RB50#50	14.98	15.02	14.88	15.19	15.23	15.09
		RB100#0	14.94	15.06	14.87	15.15	15.27	15.08

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

For Band38: Antenna Gain = 1.21dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤33dBm

LTE Band 40 Lower: (2305-2315MHz)

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	17.74	16.78	16.34	17.92	16.96	16.52
		RB1#13	17.82	16.84	16.44	18.00	17.02	16.62
		RB1#24	17.69	16.67	16.27	17.87	16.85	16.45
		RB15#0	16.71	15.81	15.36	16.89	15.99	15.54
		RB15#10	16.76	15.80	15.36	16.94	15.98	15.54
		RB25#0	16.75	15.81	15.36	16.93	15.99	15.54
	16QAM	RB1#0	17.01	15.80	15.39	17.19	15.98	15.57
		RB1#13	17.06	15.91	15.52	17.24	16.09	15.70
		RB1#24	16.93	15.70	15.35	17.11	15.88	15.53
		RB15#0	15.81	14.80	14.42	15.99	14.98	14.60
		RB15#10	15.81	14.74	14.43	15.99	14.92	14.61
		RB25#0	15.73	14.85	14.44	15.91	15.03	14.62
10.0	QPSK	RB1#0	/	17.30	/	/	17.48	/
		RB1#25	/	17.50	/	/	17.68	/
		RB1#49	/	17.10	/	/	17.28	/
		RB25#0	/	16.27	/	/	16.45	/
		RB25#25	/	16.21	/	/	16.39	/
		RB50#0	/	16.27	/	/	16.45	/
	16QAM	RB1#0	/	16.25	/	/	16.43	/
		RB1#25	/	16.43	/	/	16.61	/
		RB1#49	/	16.04	/	/	16.22	/
		RB25#0	/	15.36	/	/	15.54	/
		RB25#25	/	15.28	/	/	15.46	/
		RB50#0	/	15.31	/	/	15.49	/

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

For Band 40: Antenna Gain = 1.18dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤24dBm/5MHz

For 5MHz bandwidth, the channel power is equal to the test result in dBm/5MHz

For 10MHz bandwidth, the channel power is sum of 10MHz bandwidth, the result is less than 24dBm, so in any 5MHz bandwidth, it will not exceed the limit

LTE Band 40 Lower: (2350-2360MHz)

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5	QPSK	RB1#0	17.79	17.44	16.78	17.97	17.62	16.96
		RB1#13	17.74	17.37	16.76	17.92	17.55	16.94
		RB1#24	17.59	17.10	16.55	17.77	17.28	16.73
		RB15#0	16.77	16.44	15.79	16.95	16.62	15.97
		RB15#10	16.65	16.34	15.72	16.83	16.52	15.90
		RB25#0	16.73	16.36	15.76	16.91	16.54	15.94
	16QAM	RB1#0	17.01	16.64	15.71	17.19	16.82	15.89
		RB1#13	17.01	16.58	15.68	17.19	16.76	15.86
		RB1#24	16.80	16.34	15.45	16.98	16.52	15.63
		RB15#0	15.81	15.41	14.73	15.99	15.59	14.91
		RB15#10	15.74	15.29	14.63	15.92	15.47	14.81
		RB25#0	15.76	15.32	14.76	15.94	15.50	14.94
10	QPSK	RB1#0	/	17.36	/	/	17.54	/
		RB1#25	/	17.64	/	/	17.82	/
		RB1#49	/	16.96	/	/	17.14	/
		RB25#0	/	16.51	/	/	16.69	/
		RB25#25	/	16.39	/	/	16.57	/
		RB50#0	/	16.46	/	/	16.64	/
	16QAM	RB1#0	/	16.38	/	/	16.56	/
		RB1#25	/	16.68	/	/	16.86	/
		RB1#49	/	15.96	/	/	16.14	/
		RB25#0	/	15.60	/	/	15.78	/
		RB25#25	/	15.53	/	/	15.71	/
		RB50#0	/	15.49	/	/	15.67	/

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

For Band 40: Antenna Gain = 1.18dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤24dBm/5MHz

For 5MHz bandwidth, the channel power is equal to the test result in dBm/5MHz

For 10MHz bandwidth, the channel power is sum of 10MHz bandwidth, the result is less than 24dBm, so in any 5MHz bandwidth, it will not exceed the limit

LTE Band 41

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	16.91	16.78	16.34	17.12	16.99	16.55
		RB1#13	17.03	16.88	16.43	17.24	17.09	16.64
		RB1#24	16.86	16.72	16.27	17.07	16.93	16.48
		RB15#0	15.93	15.83	15.38	16.14	16.04	15.59
		RB15#10	15.95	15.79	15.39	16.16	16.00	15.60
		RB25#0	15.96	15.82	15.38	16.17	16.03	15.59
	16QAM	RB1#0	15.95	16.03	15.34	16.16	16.24	15.55
		RB1#13	16.08	16.13	15.43	16.29	16.34	15.64
		RB1#24	15.91	15.98	15.26	16.12	16.19	15.47
		RB15#0	14.94	14.87	14.36	15.15	15.08	14.57
		RB15#10	14.99	14.87	14.33	15.20	15.08	14.54
		RB25#0	14.99	14.81	14.40	15.20	15.02	14.61
10.0	QPSK	RB1#0	16.34	16.97	16.69	16.55	17.18	16.90
		RB1#25	16.60	17.25	16.98	16.81	17.46	17.19
		RB1#49	16.29	16.90	16.61	16.50	17.11	16.82
		RB25#0	15.30	15.96	15.75	15.51	16.17	15.96
		RB25#25	15.30	15.96	15.74	15.51	16.17	15.95
		RB50#0	15.30	15.96	15.74	15.51	16.17	15.95
	16QAM	RB1#0	15.24	16.05	15.90	15.45	16.26	16.11
		RB1#25	15.51	16.32	16.22	15.72	16.53	16.43
		RB1#49	15.19	16.01	15.85	15.40	16.22	16.06
		RB25#0	14.37	15.01	14.73	14.58	15.22	14.94
		RB25#25	14.36	15.01	14.74	14.57	15.22	14.95
		RB50#0	14.33	14.99	14.76	14.54	15.20	14.97

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	17.04	16.85	16.26	17.25	17.06	16.47
		RB1#38	17.11	16.91	16.34	17.32	17.12	16.55
		RB1#74	16.90	16.72	16.11	17.11	16.93	16.32
		RB36#0	16.08	15.91	15.37	16.29	16.12	15.58
		RB36#39	16.09	15.90	15.35	16.30	16.11	15.56
		RB75#0	16.07	15.94	15.31	16.28	16.15	15.52
	16QAM	RB1#0	15.99	16.04	15.45	16.20	16.25	15.66
		RB1#38	16.06	16.14	15.55	16.27	16.35	15.76
		RB1#74	15.86	15.96	15.33	16.07	16.17	15.54
		RB36#0	15.03	14.97	14.31	15.24	15.18	14.52
		RB36#39	15.02	14.95	14.30	15.23	15.16	14.51
		RB75#0	15.07	14.95	14.29	15.28	15.16	14.50
20.0	QPSK	RB1#0	16.44	16.98	16.58	16.65	17.19	16.79
		RB1#50	16.90	17.44	17.04	17.11	17.65	17.25
		RB1#99	16.31	16.86	16.44	16.52	17.07	16.65
		RB50#0	15.63	16.11	15.78	15.84	16.32	15.99
		RB50#50	15.65	16.13	15.80	15.86	16.34	16.01
		RB100#0	15.65	16.13	15.78	15.86	16.34	15.99
	16QAM	RB1#0	15.44	16.19	15.66	15.65	16.40	15.87
		RB1#50	15.92	16.68	16.10	16.13	16.89	16.31
		RB1#99	15.30	16.12	15.55	15.51	16.33	15.76
		RB50#0	14.71	15.13	14.79	14.92	15.34	15.00
		RB50#50	14.67	15.18	14.81	14.88	15.39	15.02
		RB100#0	14.65	15.13	14.79	14.86	15.34	15.00

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

For Band 41: Antenna Gain = 1.21dBi

Path loss=1.0dB*(provided by the applicant)

Limit: EIRP≤33dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.24	13
	Middle	3.86	13
	High	3.57	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	4.53	13
	Middle	4.66	13
	High	4.87	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.94	13
	Middle	2.93	13
	High	2.78	13
HSDPA (16QAM)	Low	4.78	13
	Middle	4.76	13
	High	4.69	13
HSUPA (BPSK)	Low	5.57	13
	Middle	5.66	13
	High	5.57	13
HSPA+	Low	3.29	13
	Middle	3.33	13
	High	3.32	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.68	13
	Middle	4.21	13
	High	3.65	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	4.55	13
	Middle	4.39	13
	High	5.22	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.89	13
	Middle	2.91	13
	High	2.90	13
HSDPA (16QAM)	Low	4.67	13
	Middle	5.00	13
	High	4.78	13
HSUPA (BPSK)	Low	5.39	13
	Middle	5.80	13
	High	5.73	13
HSPA+	Low	3.29	13
	Middle	3.24	13
	High	3.27	13

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	7.25	7.26	7.19	13	Pass
QPSK (100RB Size)	6.54	6.66	6.29	13	Pass
16QAM (1RB Size)	5.25	5.17	5.36	13	Pass
16QAM (100RB Size)	4.76	4.85	4.93	13	Pass

LTE Band 4 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.36	3.95	3.75	13	Pass
QPSK (100RB Size)	5.16	6.35	5.38	13	Pass
16QAM (1RB Size)	4.29	4.65	4.78	13	Pass
16QAM (100RB Size)	5.72	6.27	6.88	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	7.37	6.91	8.75	13	Pass
QPSK (50RB Size)	5.16	5.35	8.36	13	Pass
16QAM (1RB Size)	4.29	6.85	5.72	13	Pass
16QAM (50RB Size)	7.13	6.89	7.77	13	Pass

LTE Band 7 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.37	3.91	3.75	13	Pass
QPSK (100RB Size)	5.16	5.35	5.32	13	Pass
16QAM (1RB Size)	4.29	4.65	4.78	13	Pass
16QAM (100RB Size)	5.99	6.22	6.15	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.15	8.75	8.76	13	Pass
QPSK (50RB Size)	9.12	9.14	9.55	13	Pass
16QAM (1RB Size)	10.10	10.26	10.38	13	Pass
16QAM (50RB Size)	9.85	9.62	9.64	13	Pass

LTE Band 17 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.70	8.56	8.12	13	Pass
QPSK (50RB Size)	8.69	8.55	8.46	13	Pass
16QAM (1RB Size)	9.54	9.36	9.45	13	Pass
16QAM (50RB Size)	9.36	9.78	9.77	13	Pass

LTE Band 38 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	10.49	10.51	10.07	13	Pass
QPSK (100RB Size)	8.65	8.67	7.38	13	Pass
16QAM (1RB Size)	7.16	6.41	5.07	13	Pass
16QAM (100RB Size)	8.64	8.86	8.58	13	Pass

LTE Band 41 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	10.12	10.33	10.28	13	Pass
QPSK (100RB Size)	10.25	10.24	10.36	13	Pass
16QAM (1RB Size)	8.69	8.26	8.14	13	Pass
16QAM (100RB Size)	9.64	9.55	9.42	13	Pass

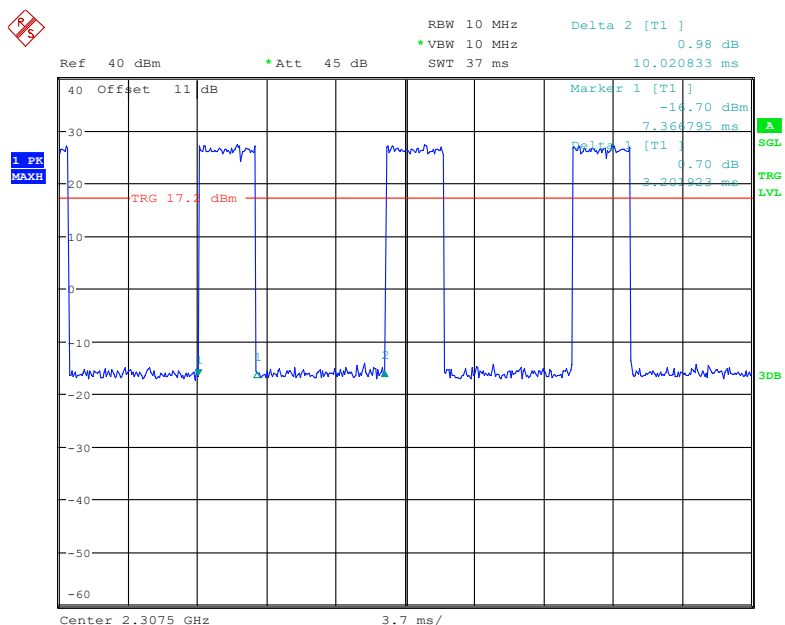
Duty Cycle: (LTE Band 40)**2305-2315MHz**

Modulation	Test bandwidth	Ton(ms)	Total(ms)	DutyCycle(%)	Limit
QPSK	5M	3.261	9.988	32.65	38
16-QAM	5M	3.202	10.020	31.96	
QPSK	10M	3.202	10.021	31.95	
16-QAM	10M	3.143	9.962	31.55	

2350-2360 MHz

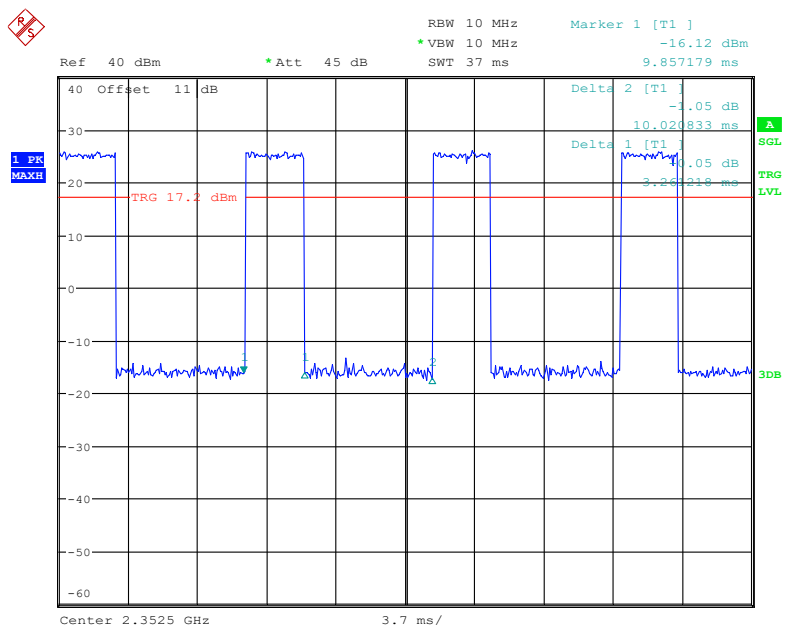
Modulation	Test bandwidth	Ton(ms)	Total(ms)	DutyCycle(%)	Limit
QPSK	5M	3.261	10.139	32.16	38
16-QAM	5M	3.261	10.021	32.54	
QPSK	10M	3.202	9.962	32.14	
16-QAM	10M	3.202	10.021	31.95	

5M-16QAM(2305-2315MHz)



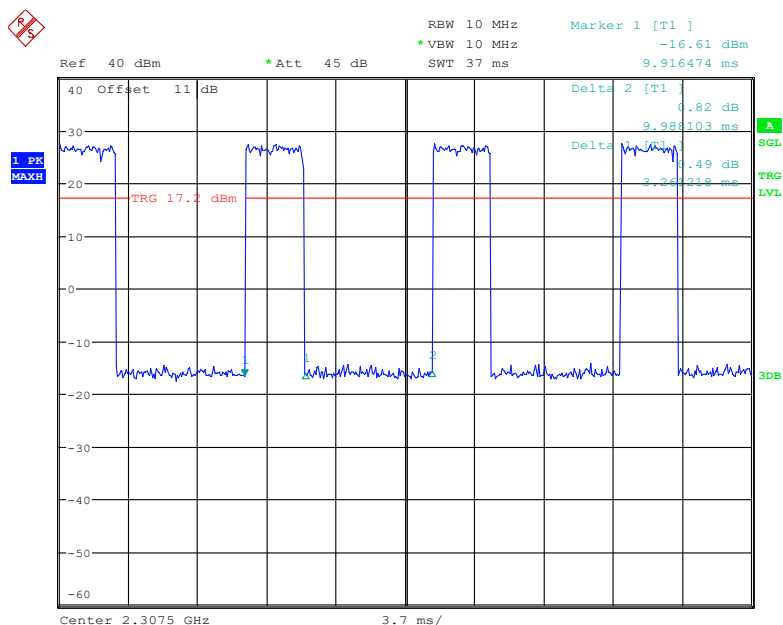
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5M-16QAM(2350-2360MHz)



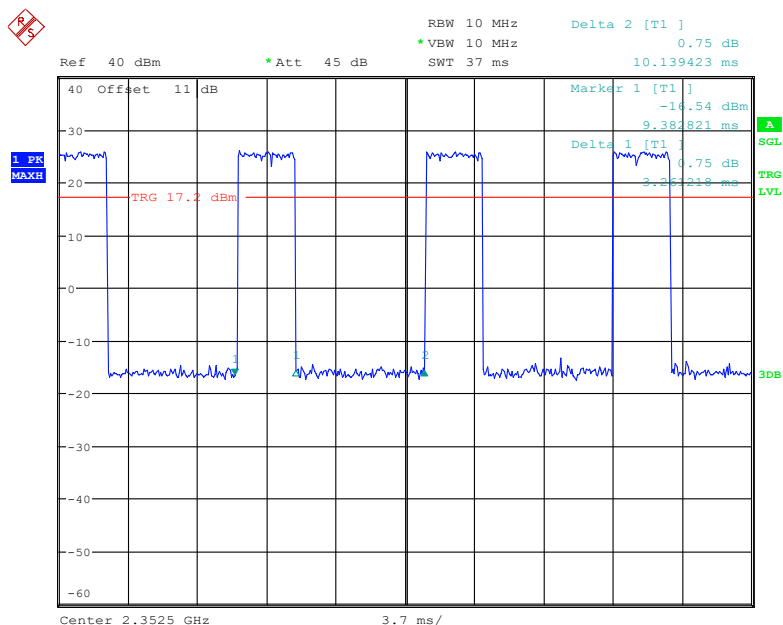
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5M-QPSK(2305-2315MHz)



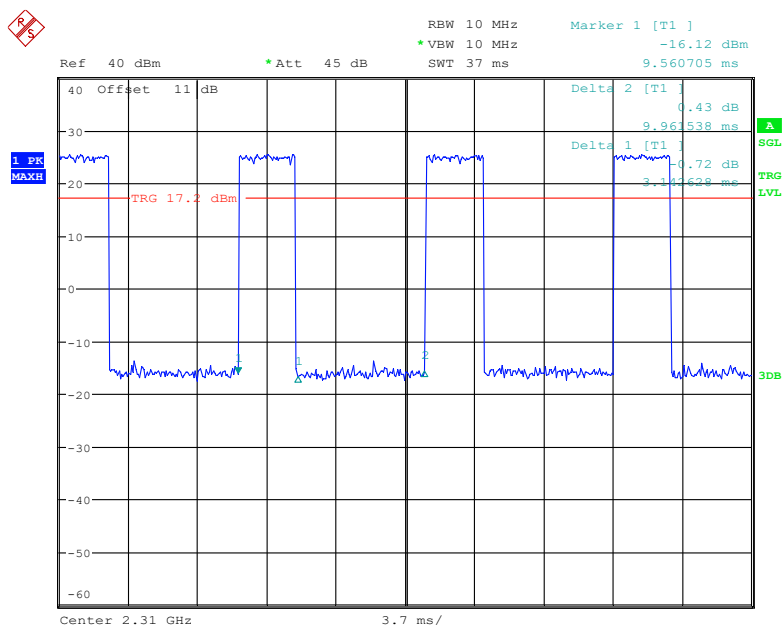
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5M-QPSK(2350-2360MHz)



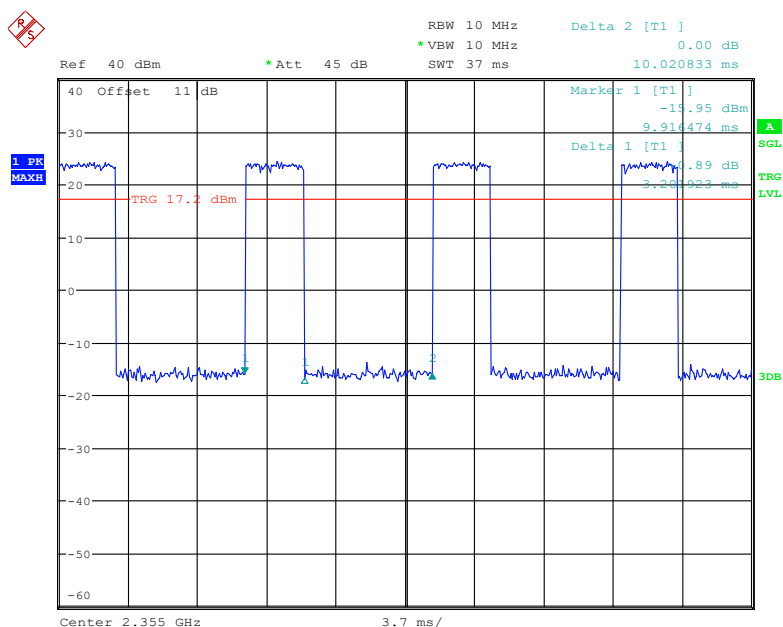
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10M-16QAM(2305-2315MHz)



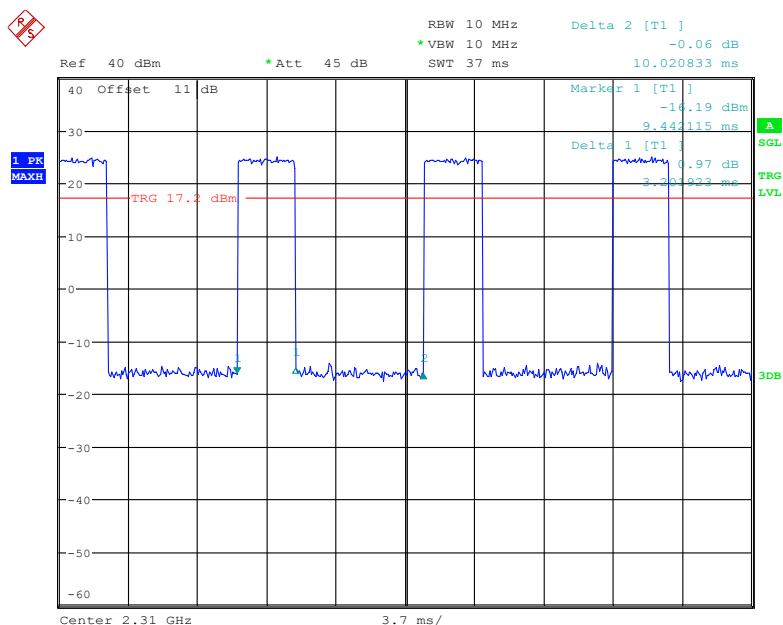
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10M-16QAM(2350-2360MHz)



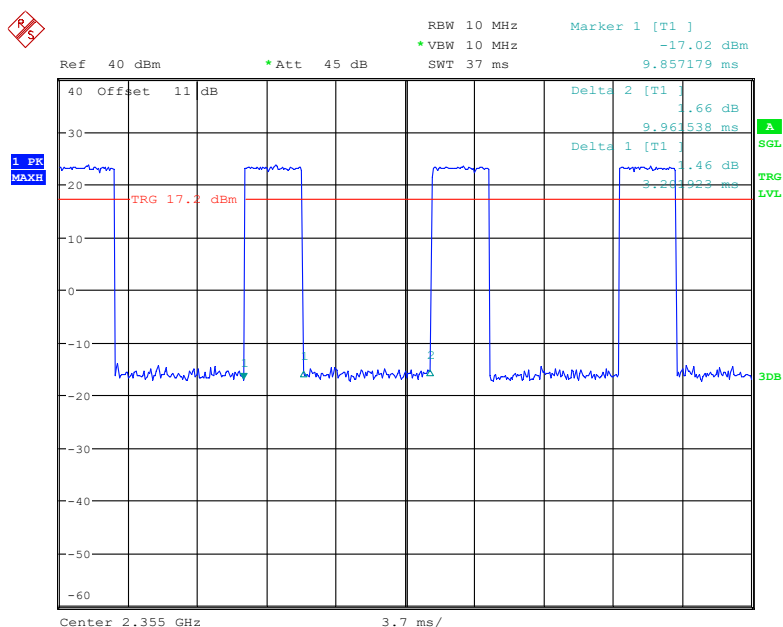
Date: 8.NOV.2022 17:00:28

10M-QPSK(2305-2315MHz)



Date: 8.NOV.2022 17:01:44

10M-QPSK(2350-2360MHz)



Date: 8.NOV.2022 17:01:05

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

Applicable Standard

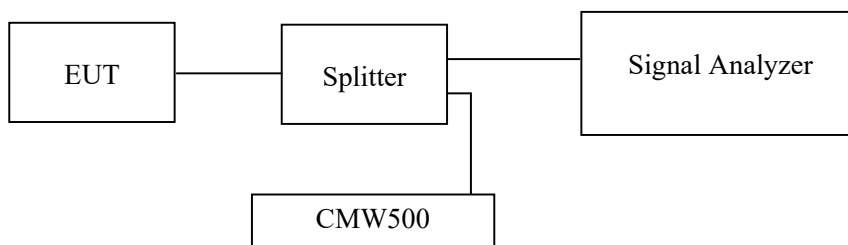
FCC 47 §2.1049, §22.917, §22.905, §24.238, and §27.53.

Test Procedure

According to ANSI C63.26-2015 section 5.4

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.



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

Test Data

Environmental Conditions

Temperature:	27.2~28℃
Relative Humidity:	33~56.2%
ATM Pressure:	101.0 kPa

The testing was performed by Roger Lin on 2022-10-10 and Andy Yu on 2022-10-11~2022-11-08.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	128	824.2	247.00	320.00
	190	836.6	245.00	320.00
	251	848.8	246.00	318.00
EGPRS(8PSK)	128	824.2	250.00	312.00
	190	836.6	248.00	328.00
	251	848.8	247.00	320.00

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.185	4.800
	836.4	4.170	4.740
	846.6	4.155	4.725
HSDPA	826.4	4.215	4.965
	836.4	4.215	4.995
	846.6	4.185	4.770
HSUPA	826.4	4.215	5.055
	836.4	4.215	4.785
	846.6	4.200	5.085

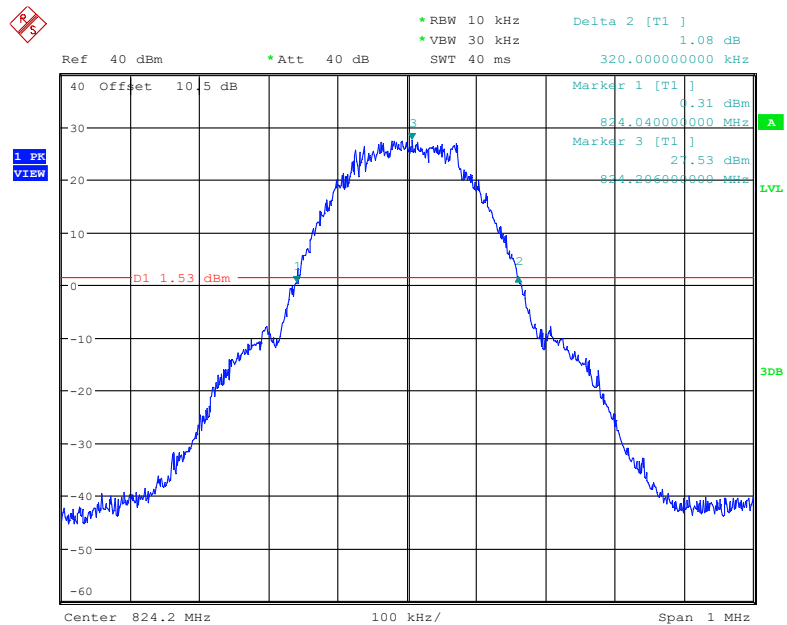
PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	243.00	320.00
	661	1880	243.00	317.00
	810	1909.8	245.00	313.00
EGPRS(8PSK)	512	1850.2	247.00	323.00
	661	1880	252.00	324.00
	810	1909.8	249.00	319.00

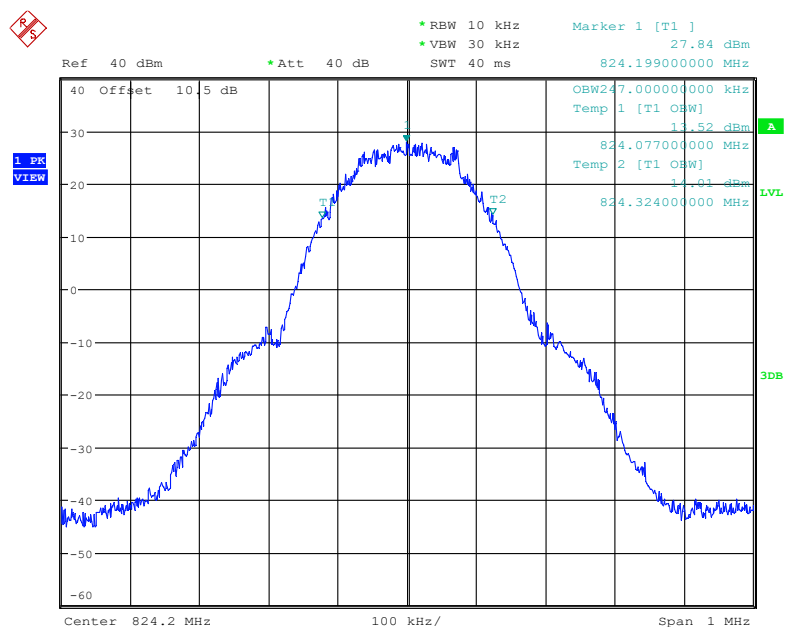
	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.170	4.740
	1880.0	4.170	4.740
	1907.6	4.170	4.740
HSDPA	1852.4	4.185	4.740
	1880.0	4.170	4.740
	1907.6	4.170	4.710
HSUPA	1852.4	4.185	4.740
	1880.0	4.185	4.725
	1907.6	4.185	4.725

Cellular Band (Part 22H)

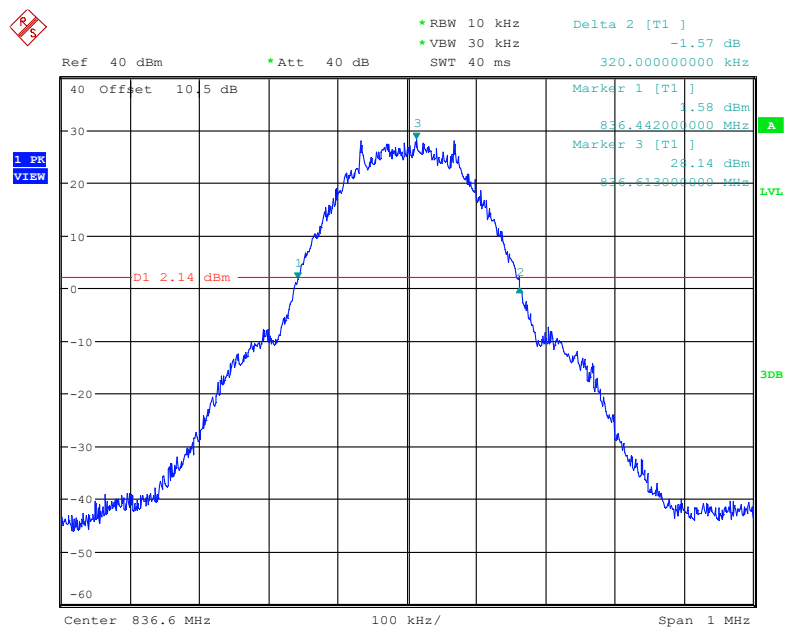
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel



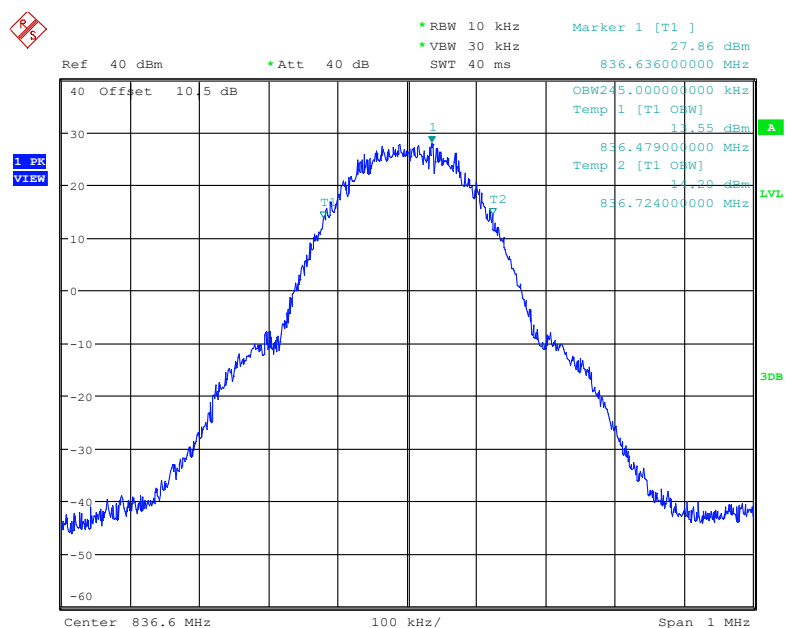
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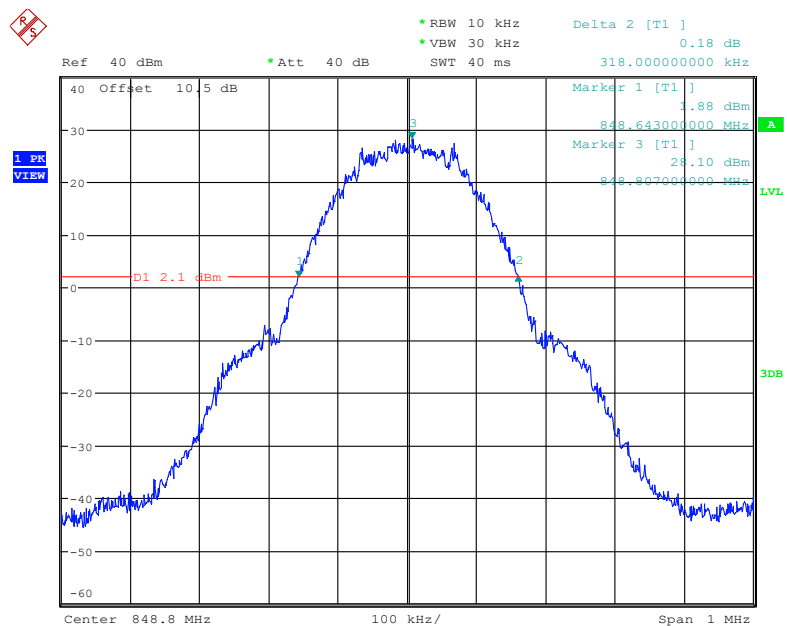
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26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel

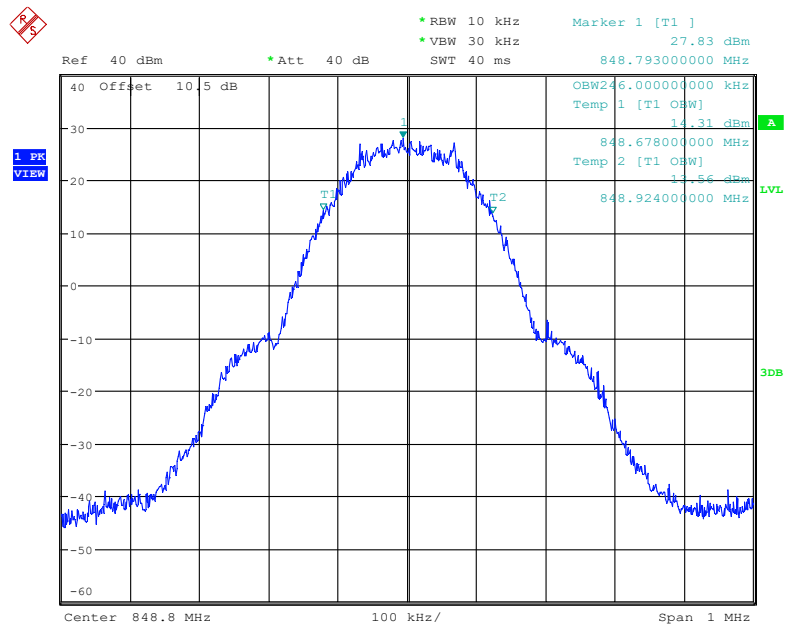
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Date: 10.OCT.2022 18:17:49

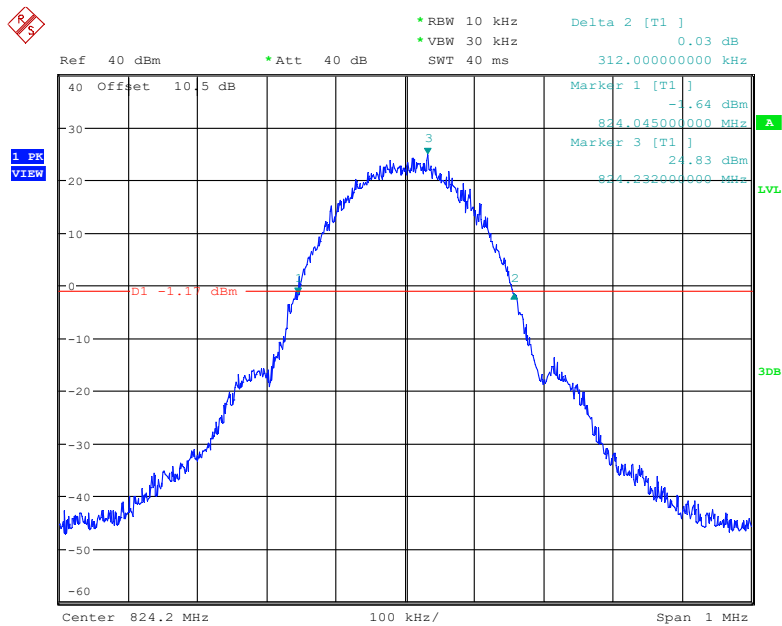
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel

Date: 10.OCT.2022 18:22:23

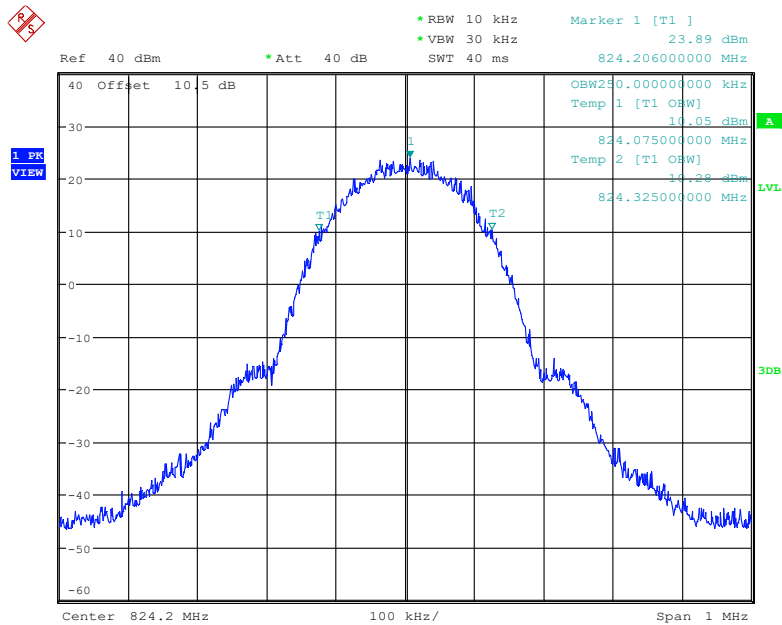


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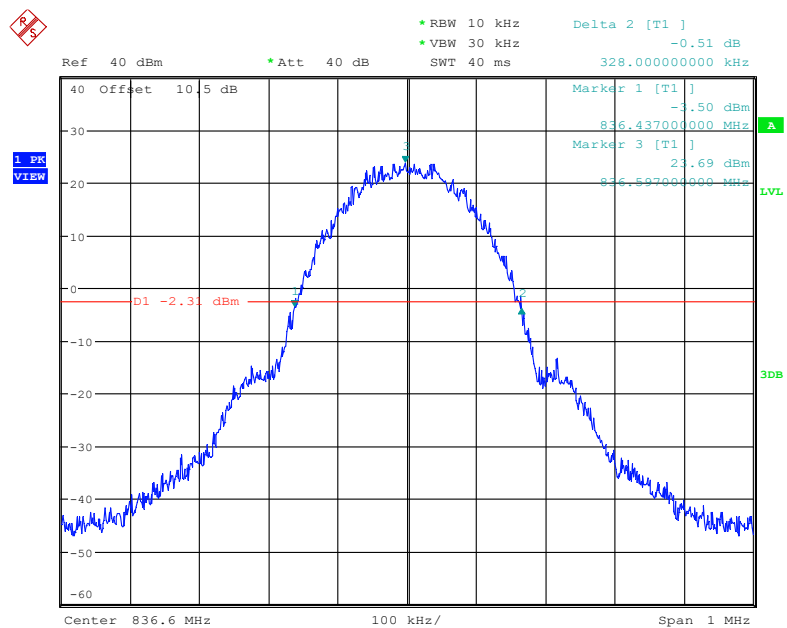
26 dB Emission Bandwidth for GSM(8PSK) Mode, Low channel



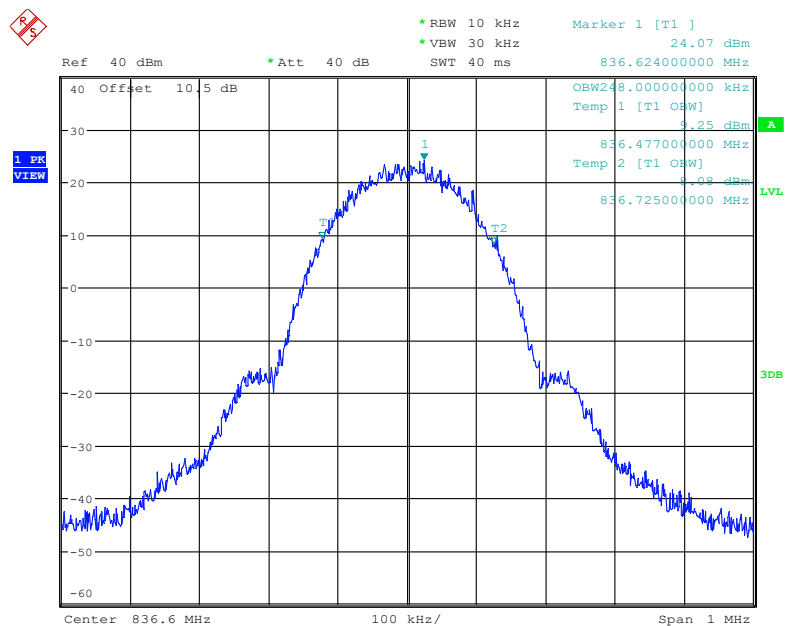
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Date: 10.OCT.2022 19:02:25

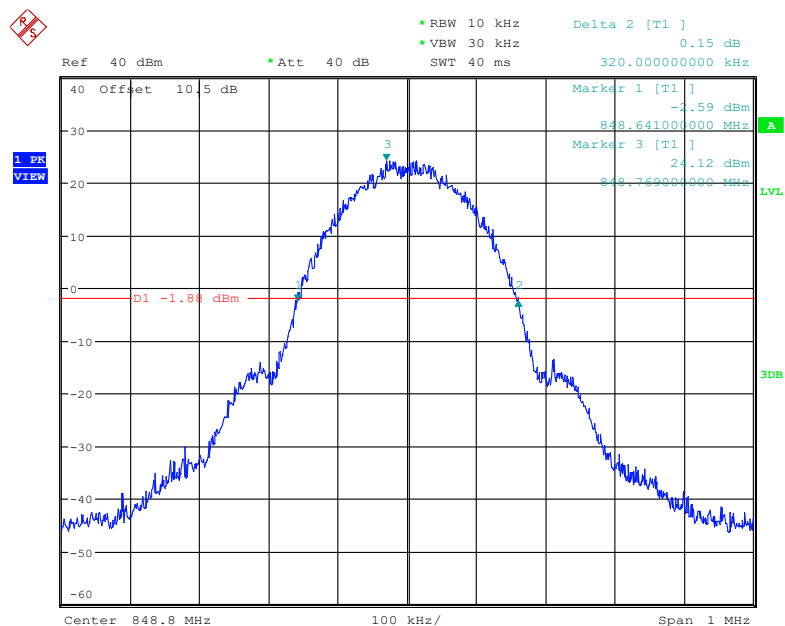
26 dB Emission Bandwidth for GSM(8PSK) Mode, Middle channel

Date: 10.OCT.2022 19:09:04

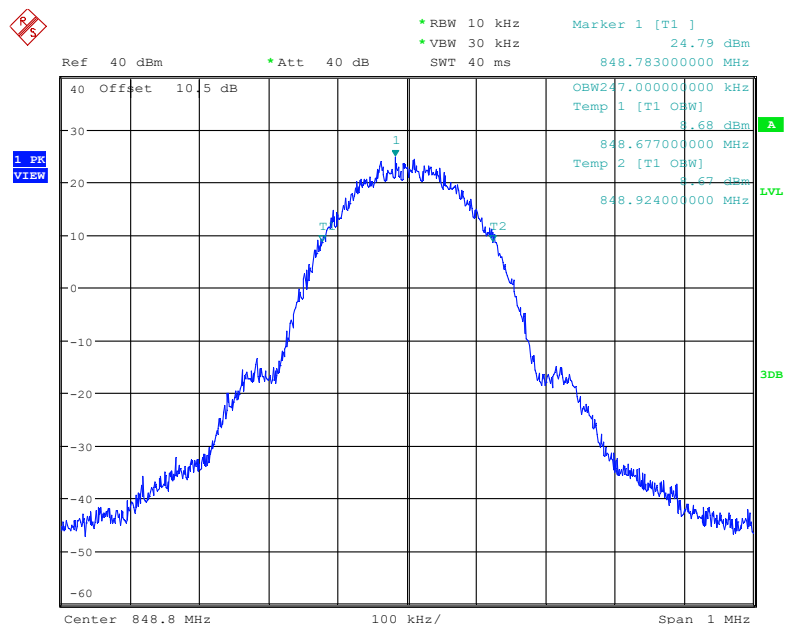


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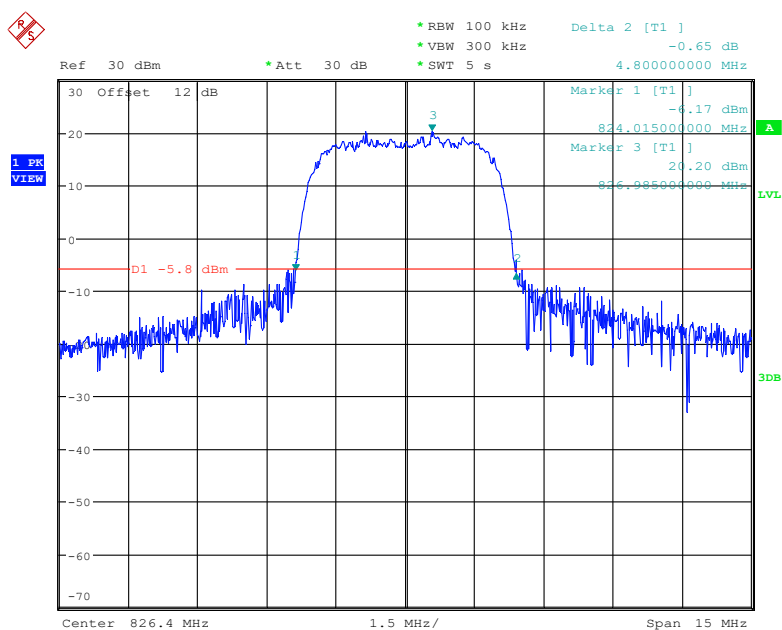
26 dB Emission Bandwidth for GSM(8PSK) Mode, High channel



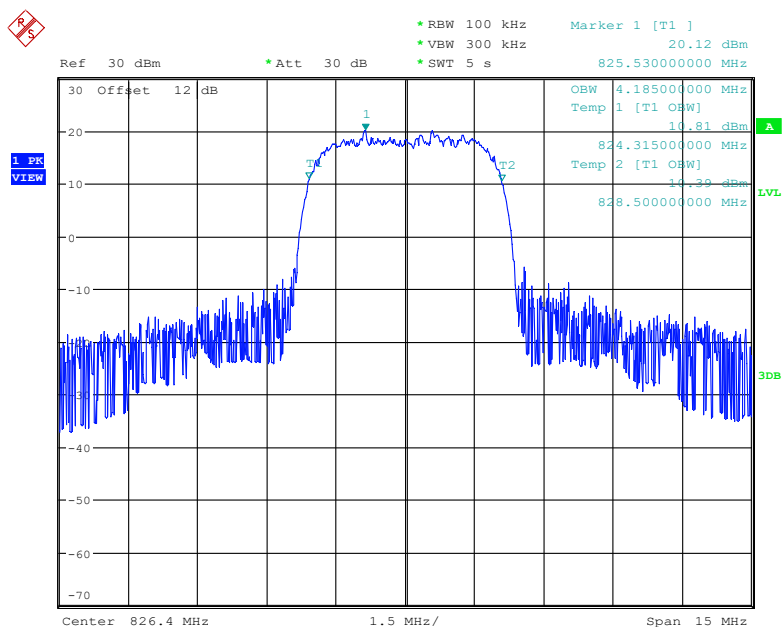
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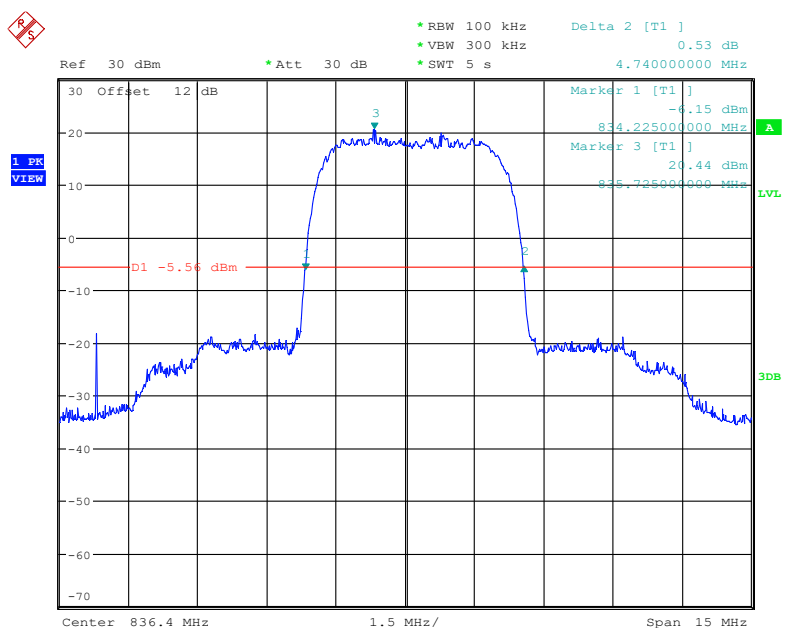
26 dB Emission Bandwidth for RMC (BPSK) Mode, Low channel

Date: 10.OCT.2022 21:48:47

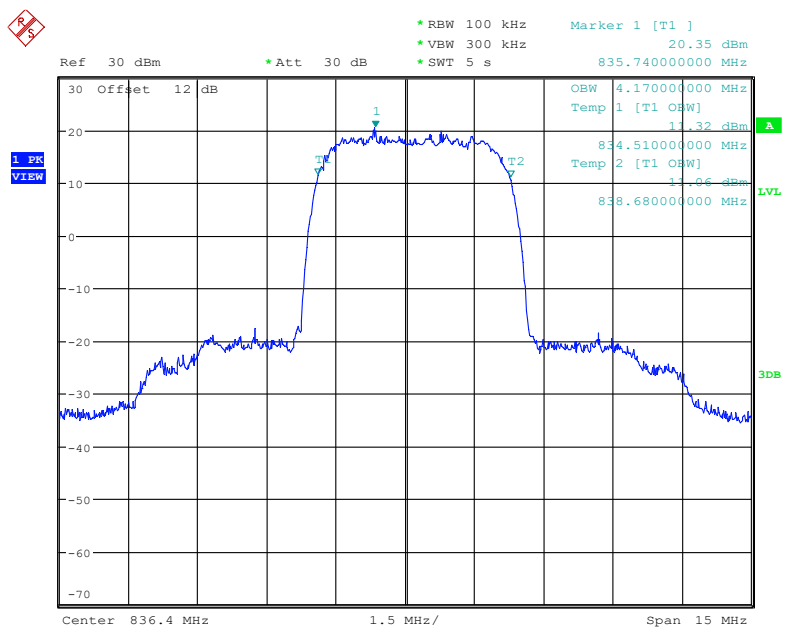


Date: 10.OCT.2022 21:48:08

26 dB Emission Bandwidth for RMC (BPSK) Mode, Middle channel

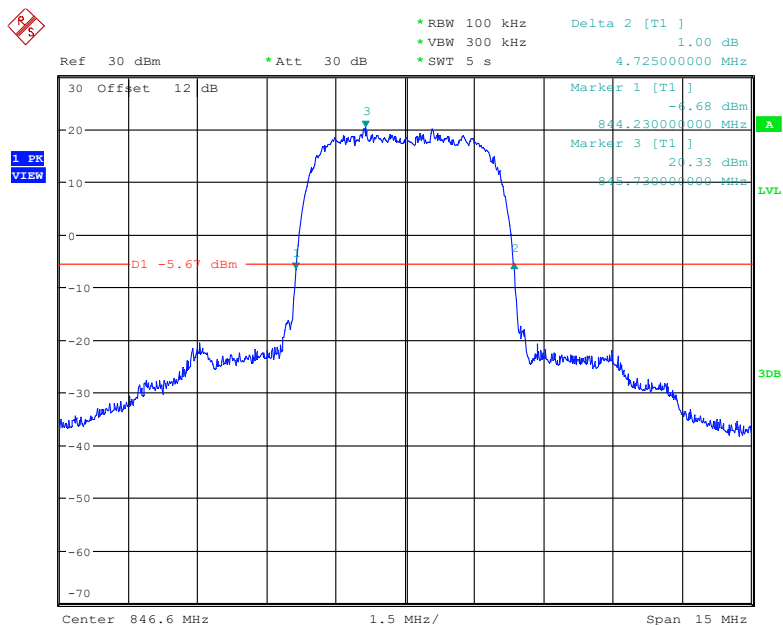


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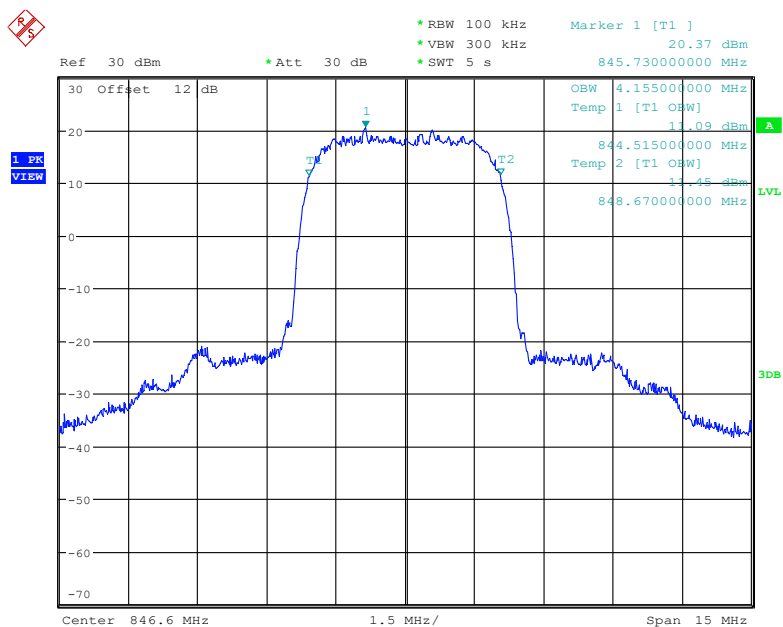


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26 dB Emission Bandwidth for RMC (BPSK) Mode, High channel

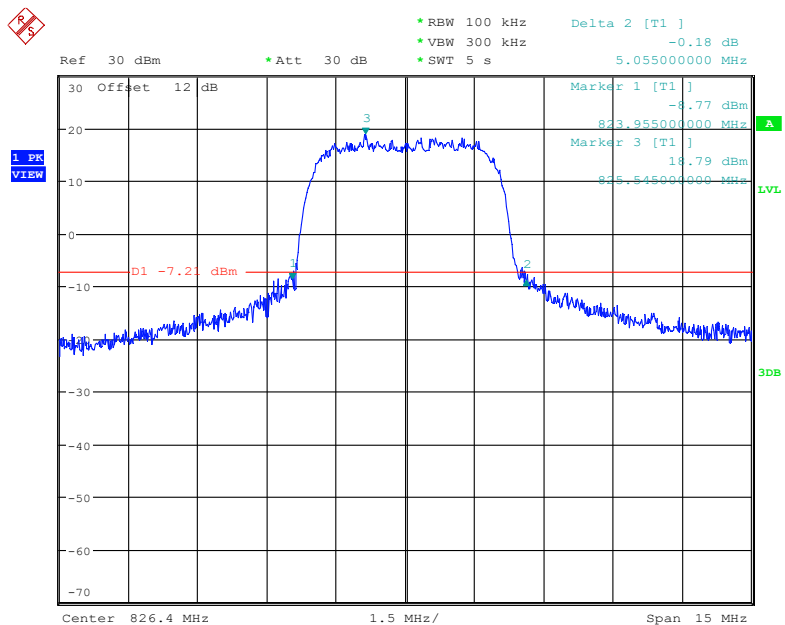


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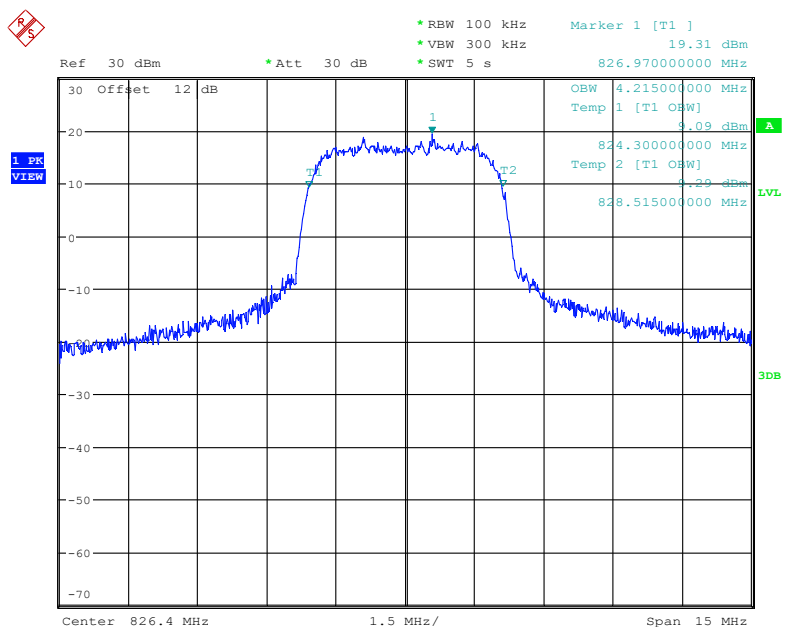


Date: 10.OCT.2022 21:55:19

26 dB Emission Bandwidth for HSUPA (QPSK) Mode, Low channel

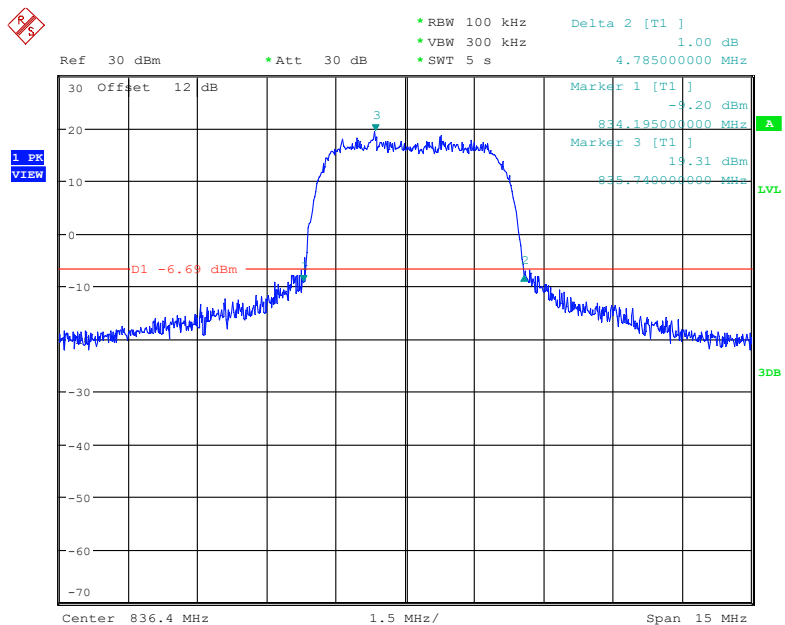


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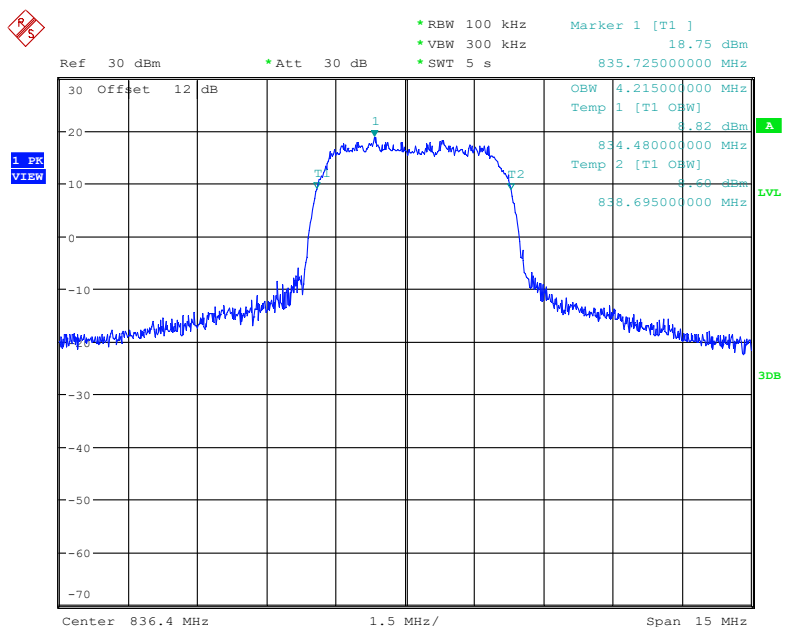


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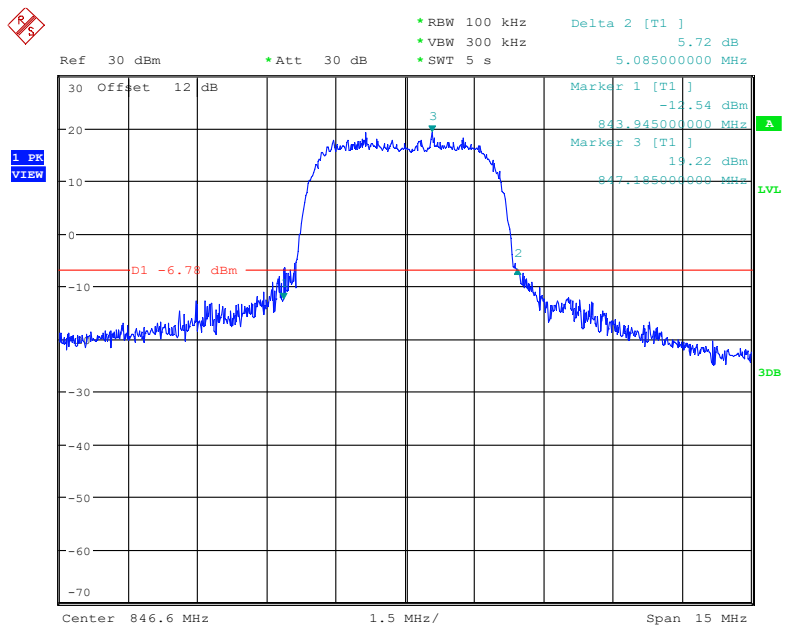
26 dB Emission Bandwidth for HSUPA (QPSK) Mode, Middle channel



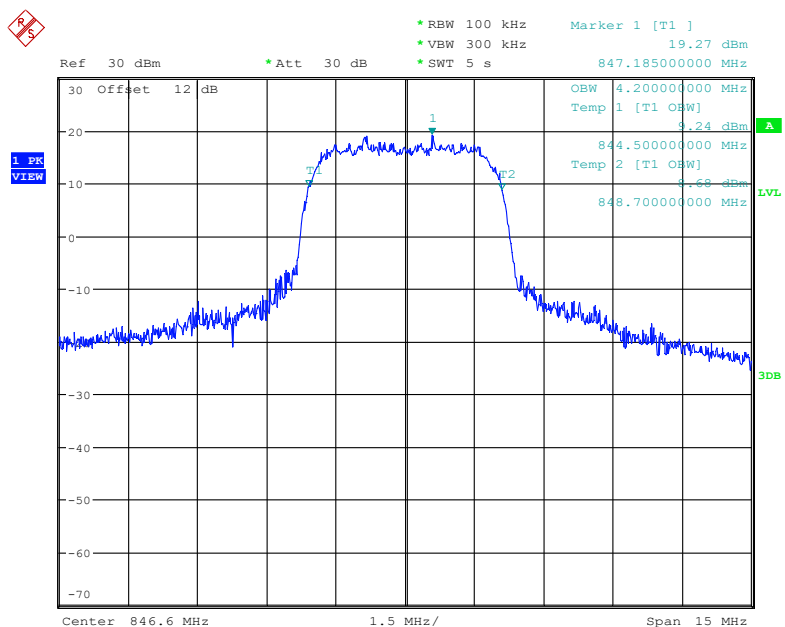
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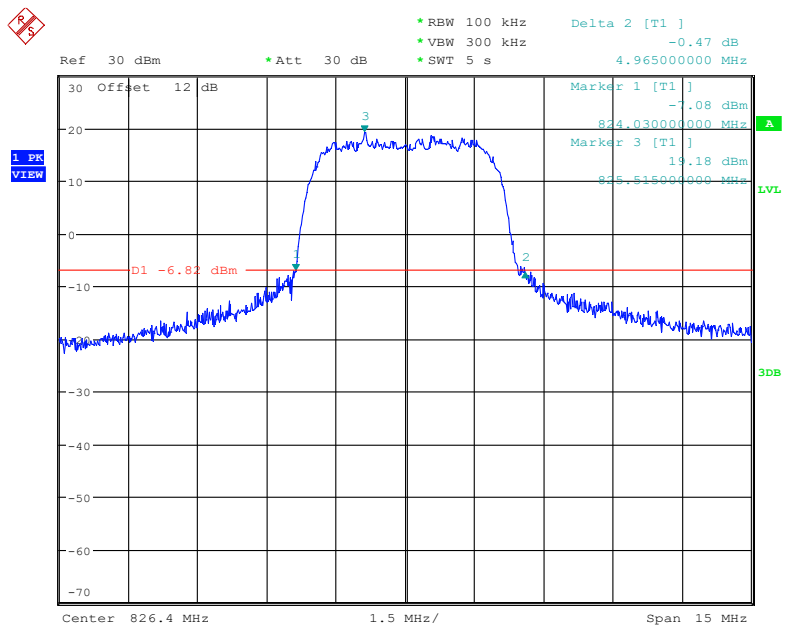
26 dB Emission Bandwidth for HSUPA (QPSK) Mode, High channel

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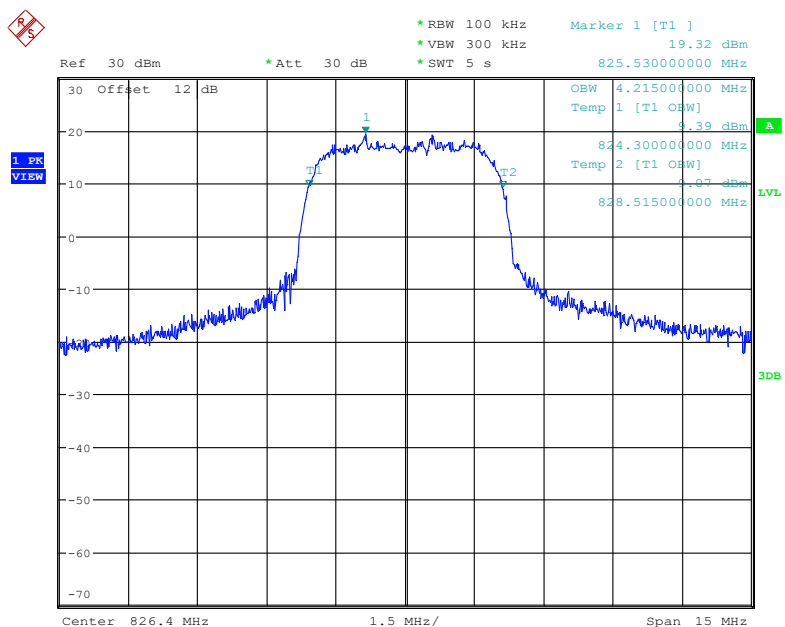


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26 dB Emission Bandwidth for HSDPA (16QAM) Mode, Low channel

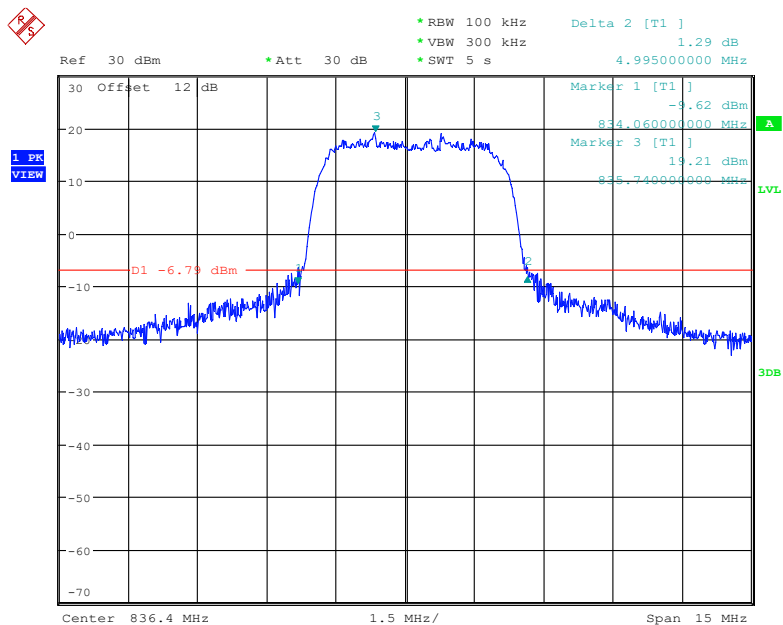


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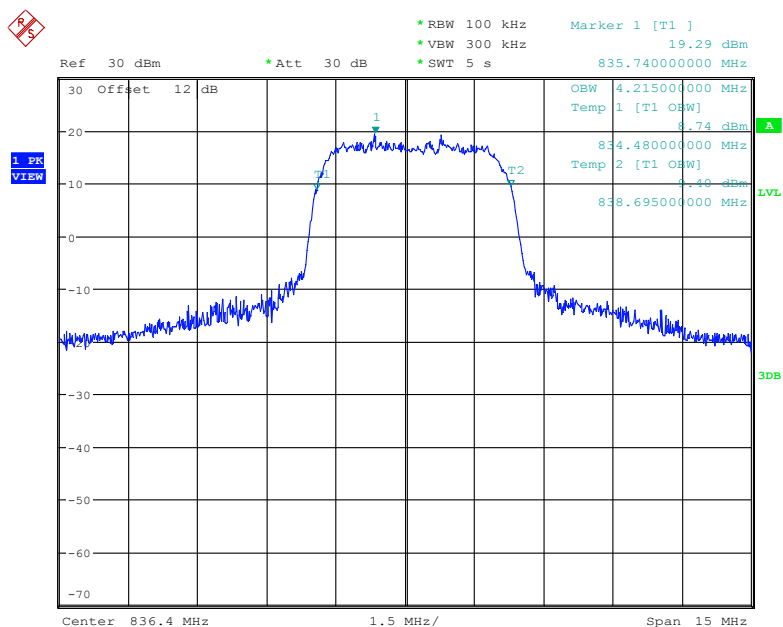


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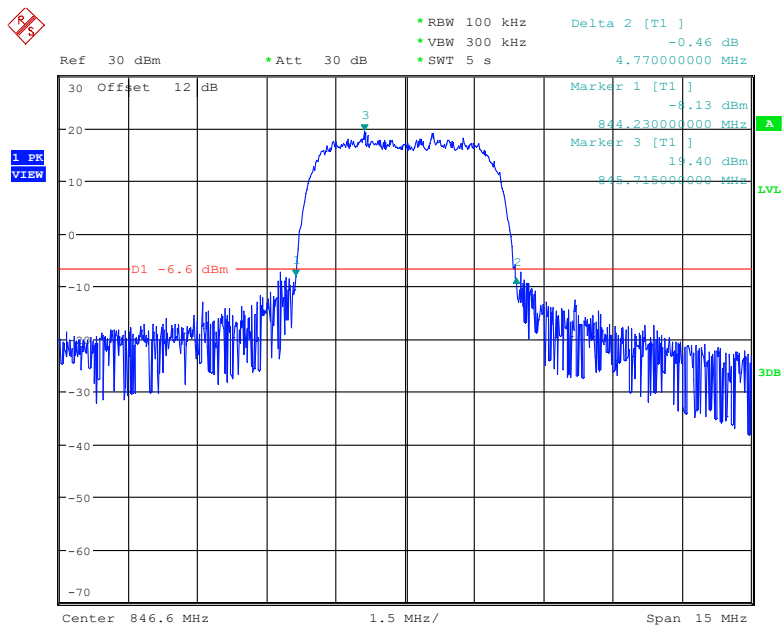
26 dB Emission Bandwidth for HSDPA (16QAM) Mode, Middle channel



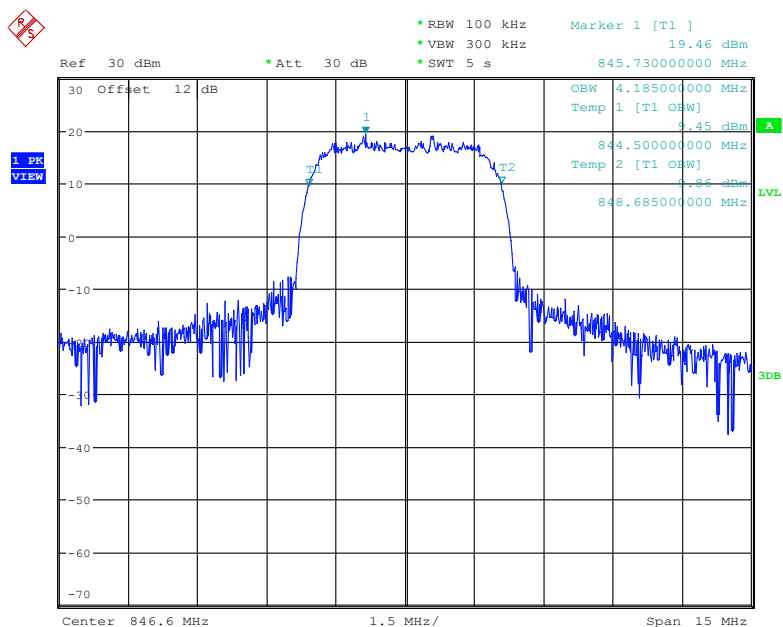
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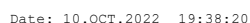
26 dB Emission Bandwidth for HSDPA (16QAM) Mode, High channel

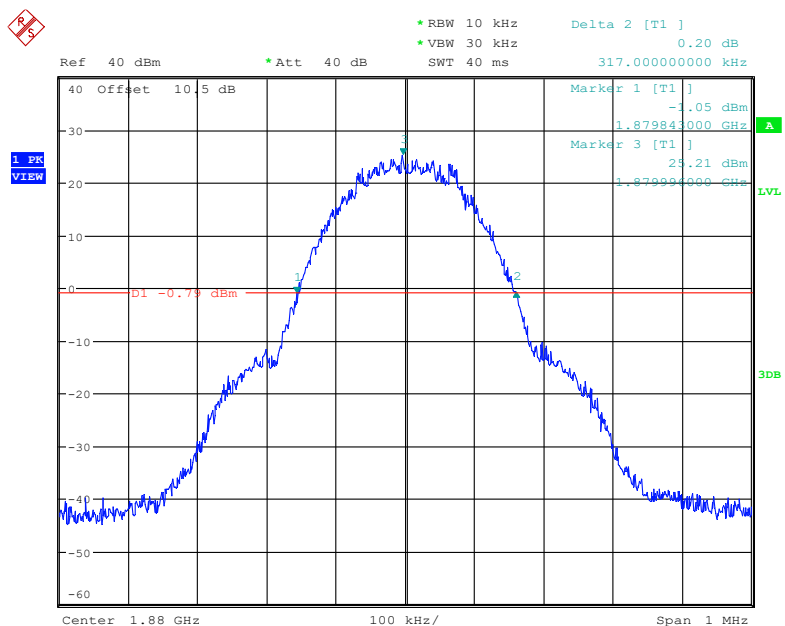
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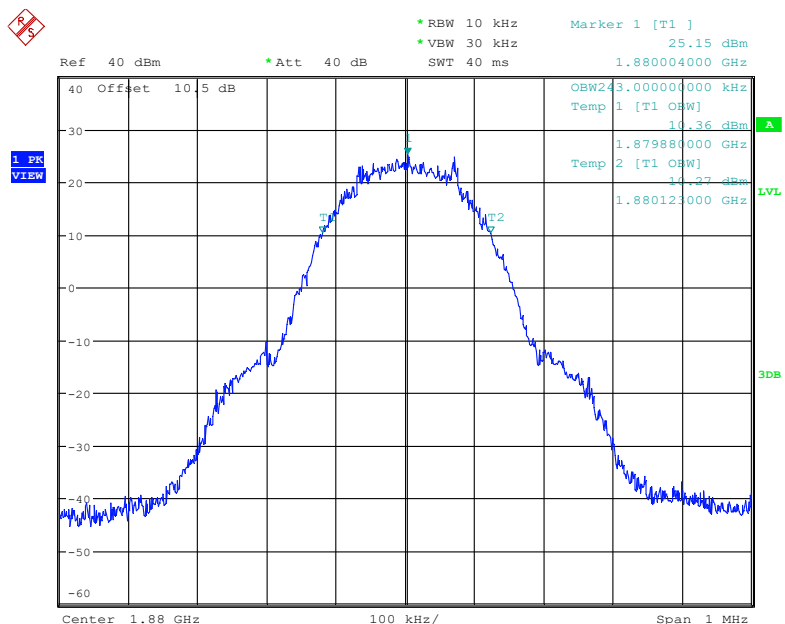
Date: 10.OCT.2022 22:09:39

26 dB Emission Bandwidth for GSM(GMSK) Mode, Low channel



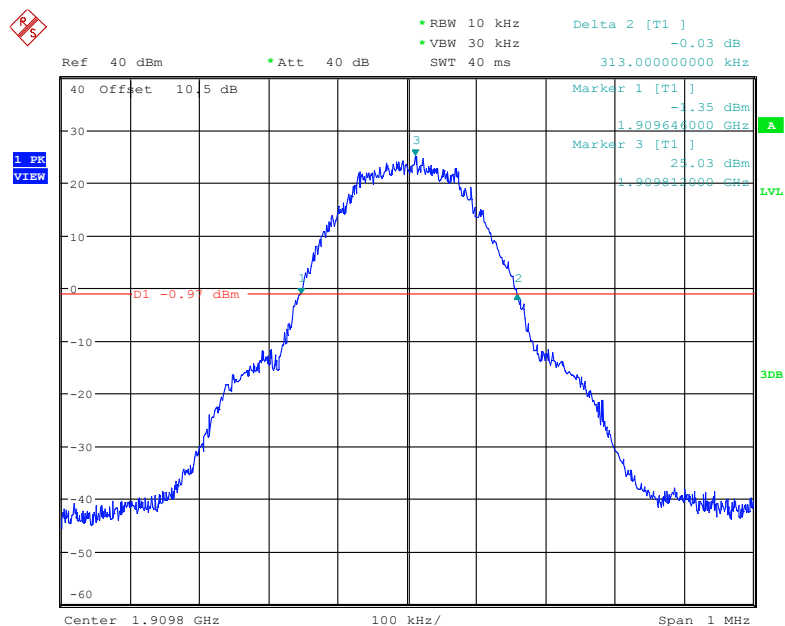
26 dB Emission Bandwidth for GSM(GMSK) Mode, Middle channel

Date: 10.OCT.2022 19:45:10

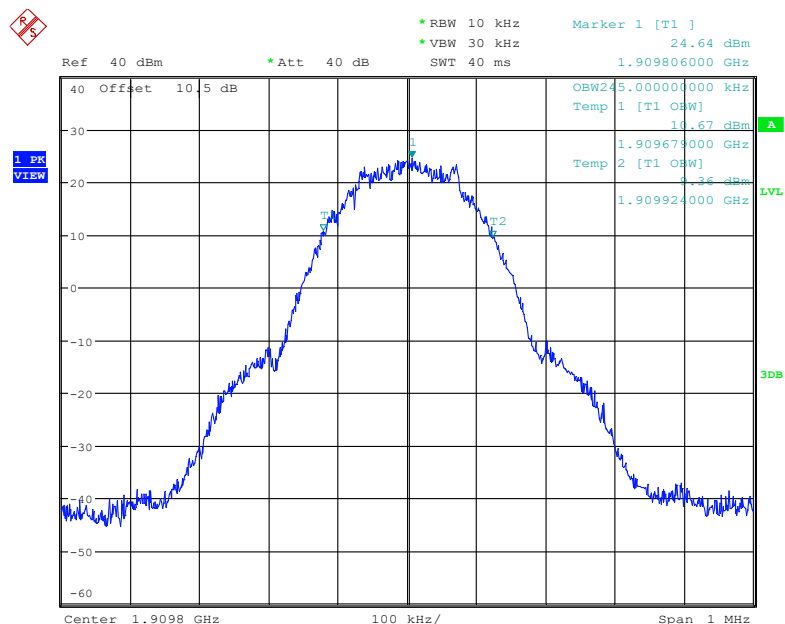


Date: 10.OCT.2022 19:44:29

26 dB Emission Bandwidth for GSM(GMSK) Mode, High channel

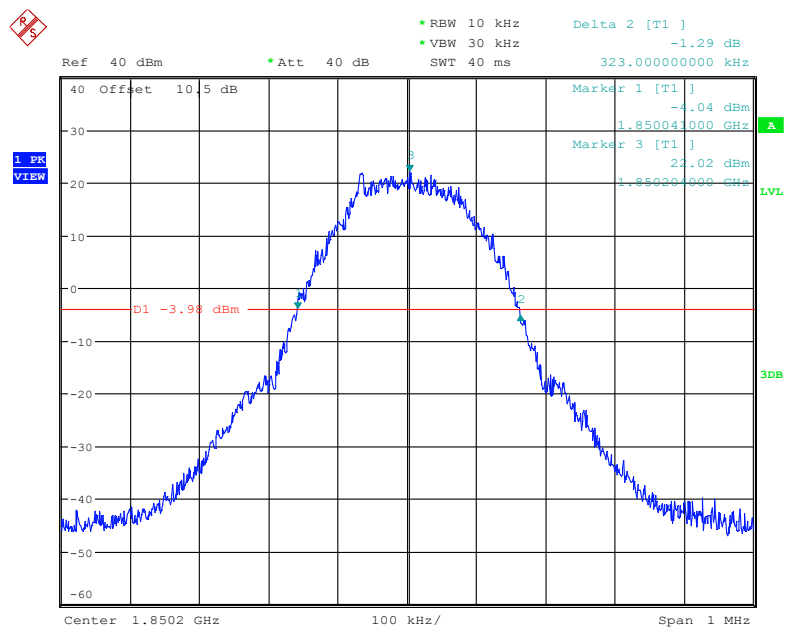


Date: 10.OCT.2022 19:50:49

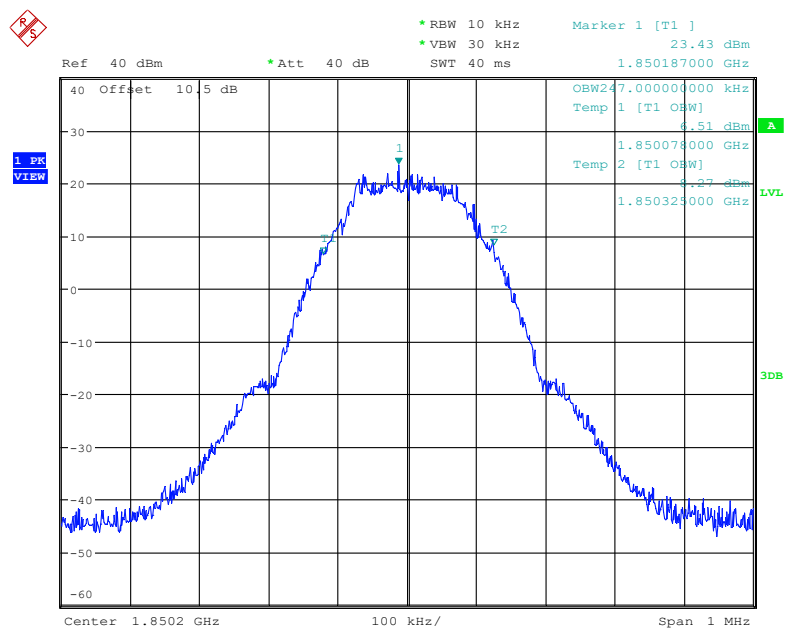


Date: 10.OCT.2022 19:50:10

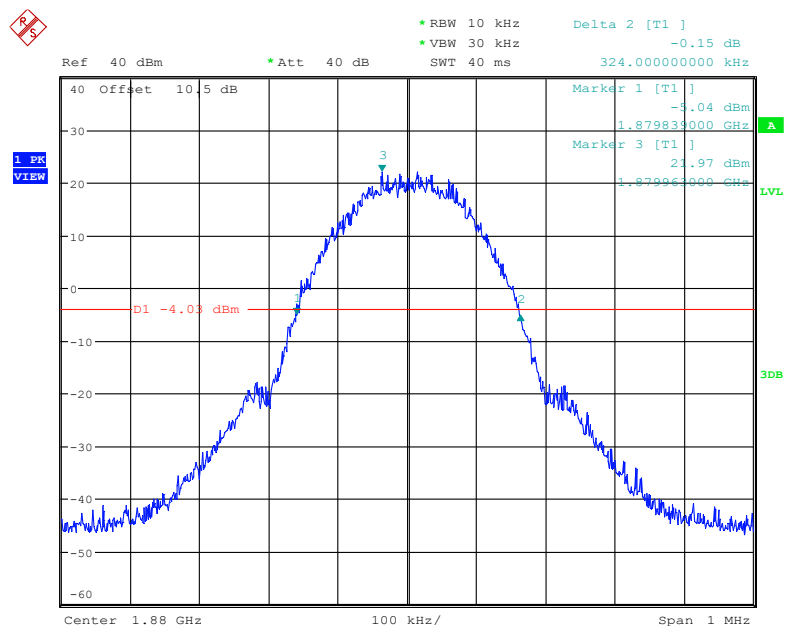
26 dB Emission Bandwidth for GSM(8PSK) Mode, Low channel



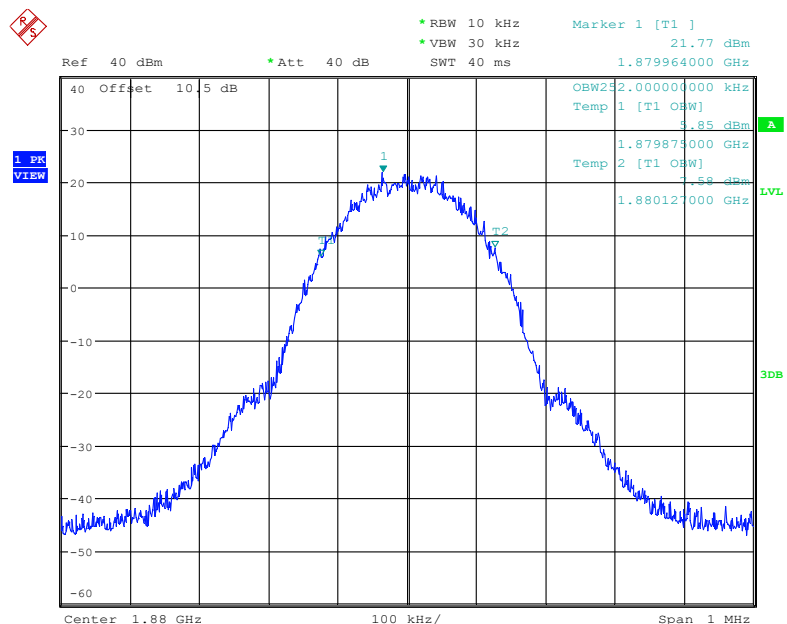
Date: 10.OCT.2022 20:15:30



Date: 10.OCT.2022 20:14:49

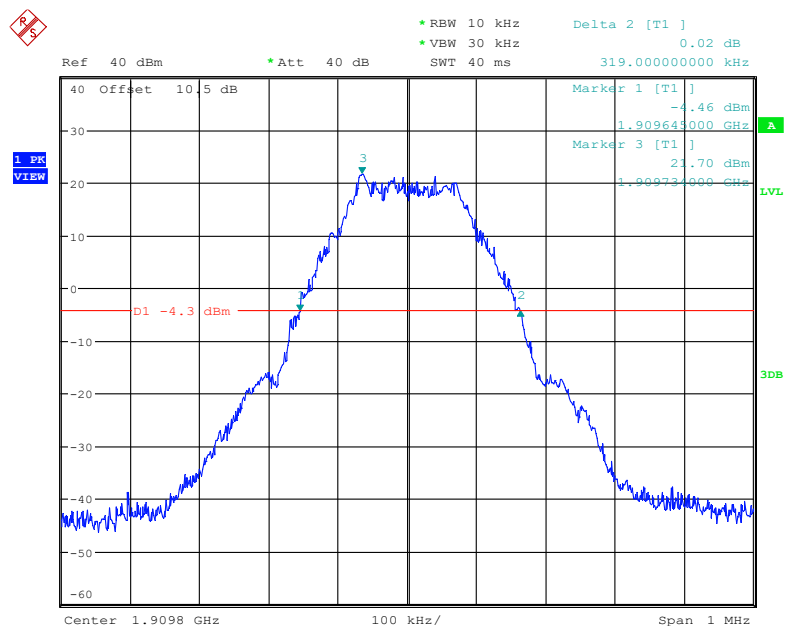
26 dB Emission Bandwidth for GSM(8PSK) Mode, Middle channel

Date: 10.OCT.2022 20:21:34

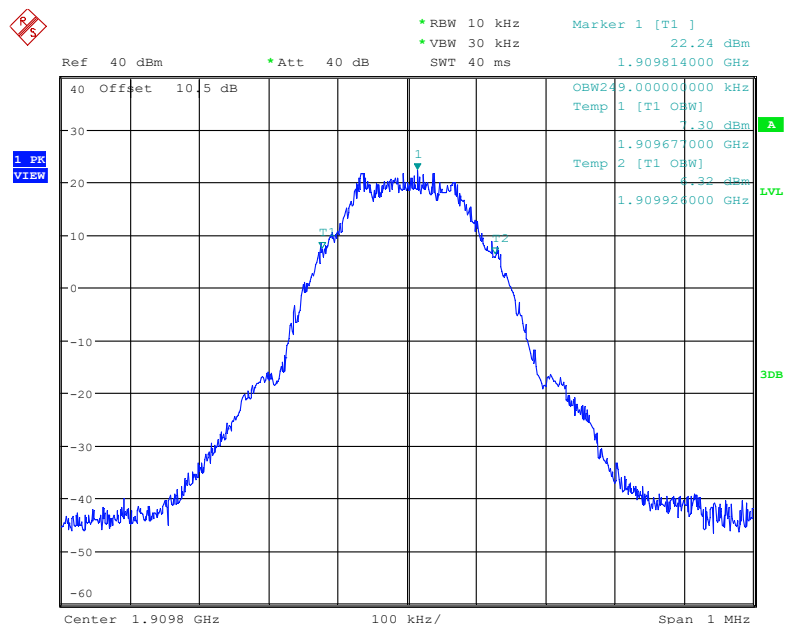


Date: 10.OCT.2022 20:20:54

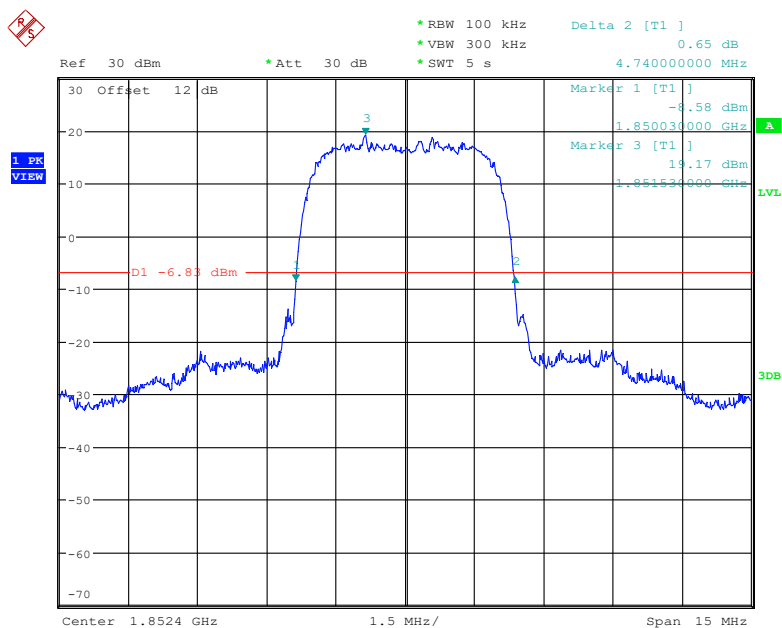
26 dB Emission Bandwidth for GSM(8PSK) Mode, High channel



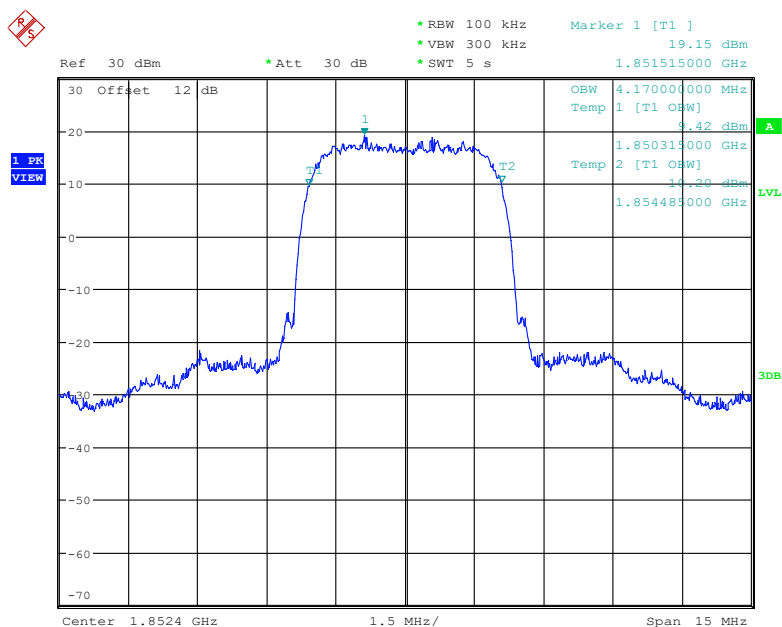
Date: 10.OCT.2022 20:39:07



Date: 10.OCT.2022 20:38:28

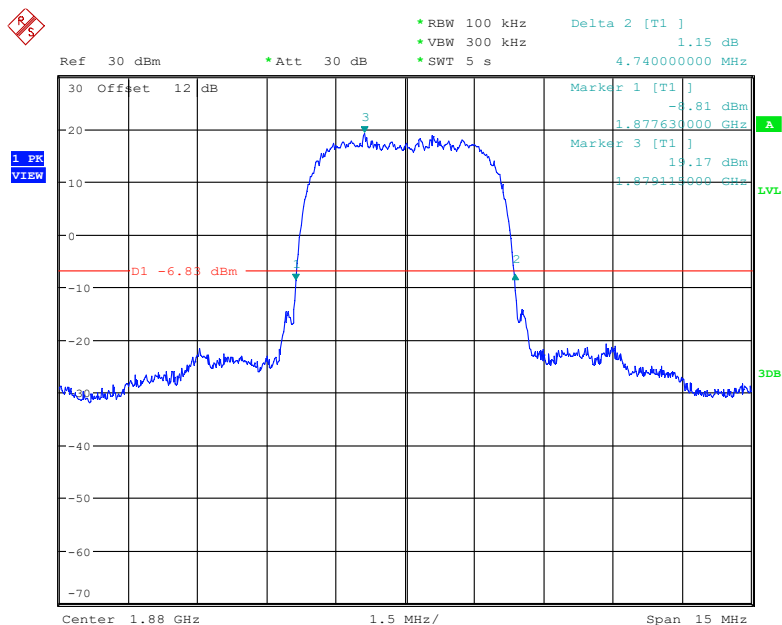
26 dB Emission Bandwidth for RMC (BPSK) Mode, Low channel

Date: 10.OCT.2022 20:56:12

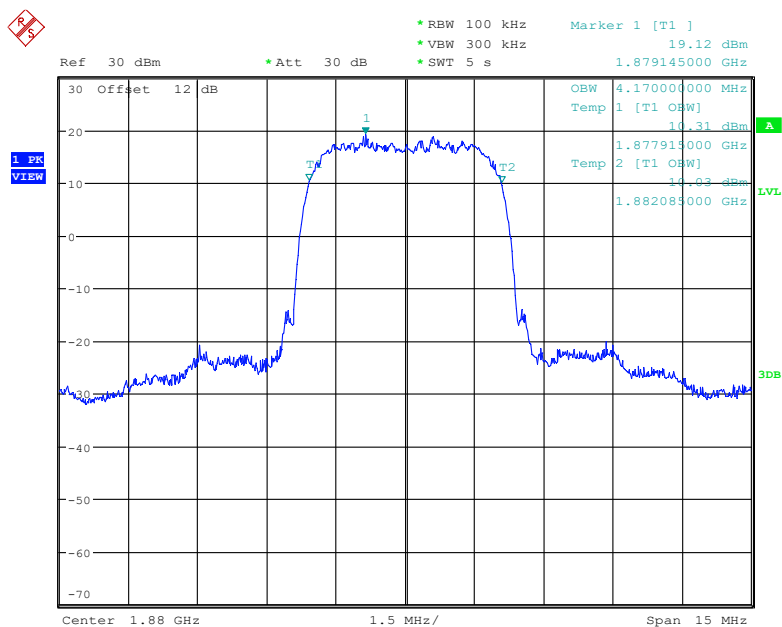


Date: 10.OCT.2022 20:55:32

26 dB Emission Bandwidth for RMC (BPSK) Mode, Middle channel

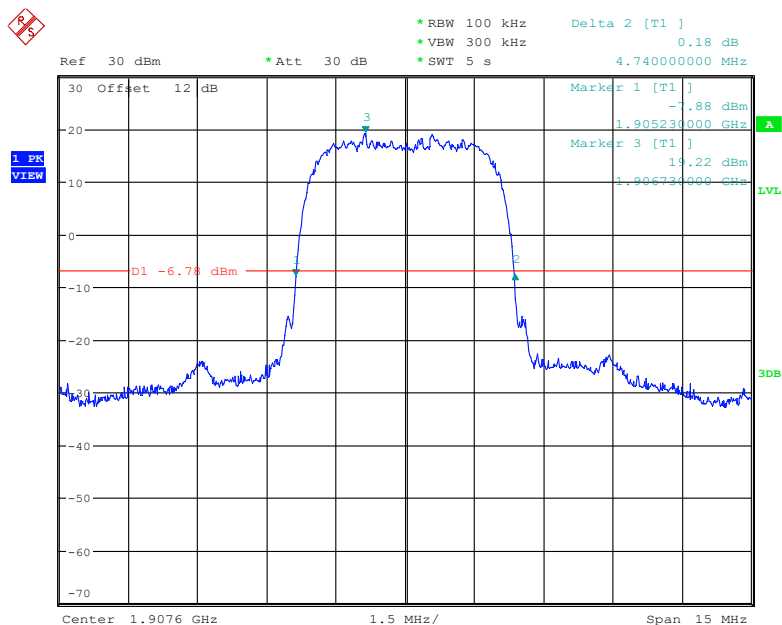


Date: 10.OCT.2022 21:01:28

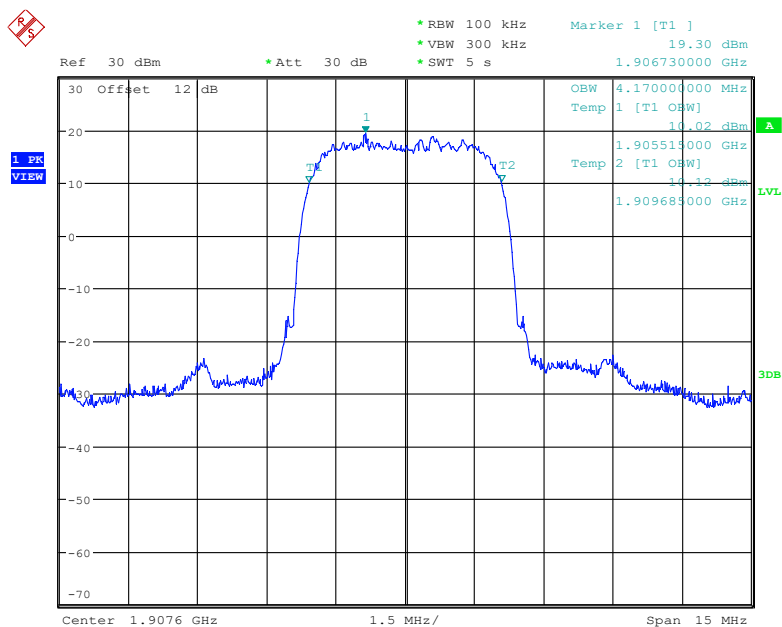


Date: 10.OCT.2022 21:00:48

26 dB Emission Bandwidth for RMC (BPSK) Mode, High channel

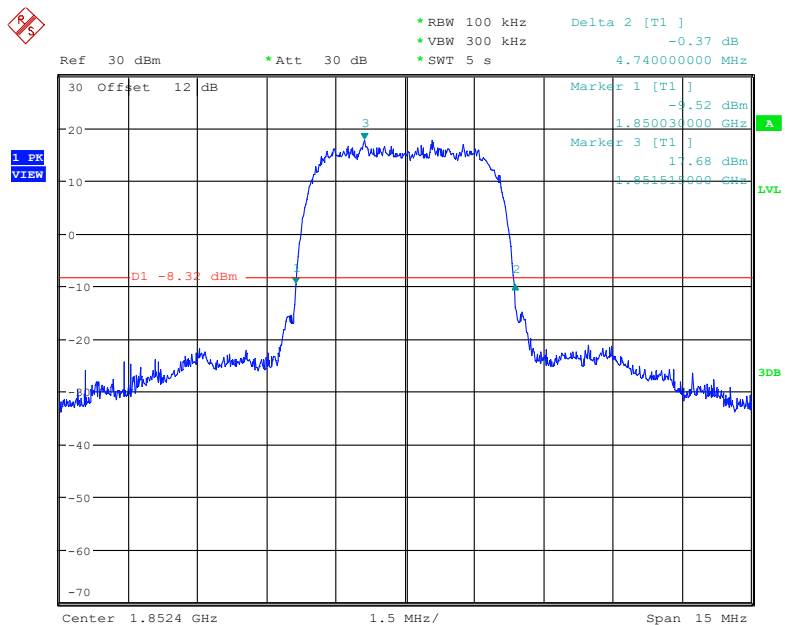


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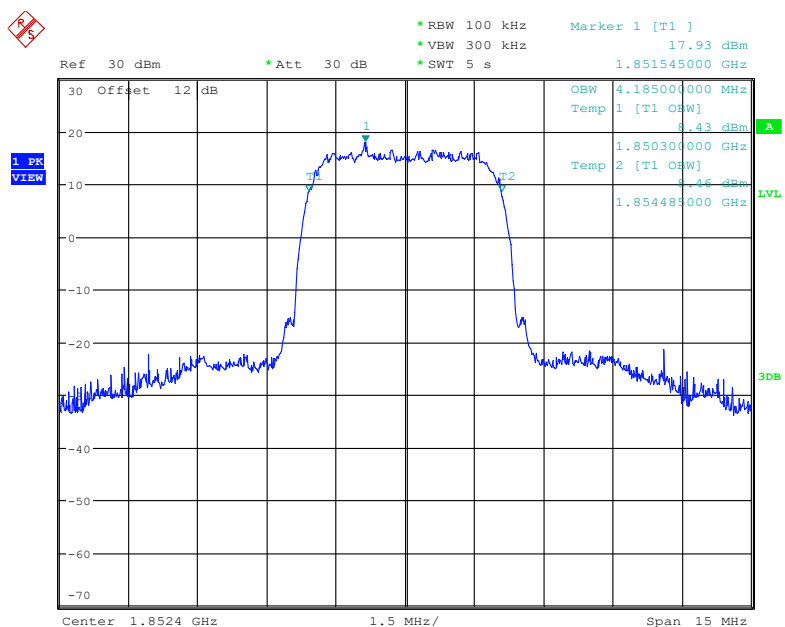


Date: 10.OCT.2022 21:05:46

26 dB Emission Bandwidth for HSUPA (QPSK) Mode, Low channel

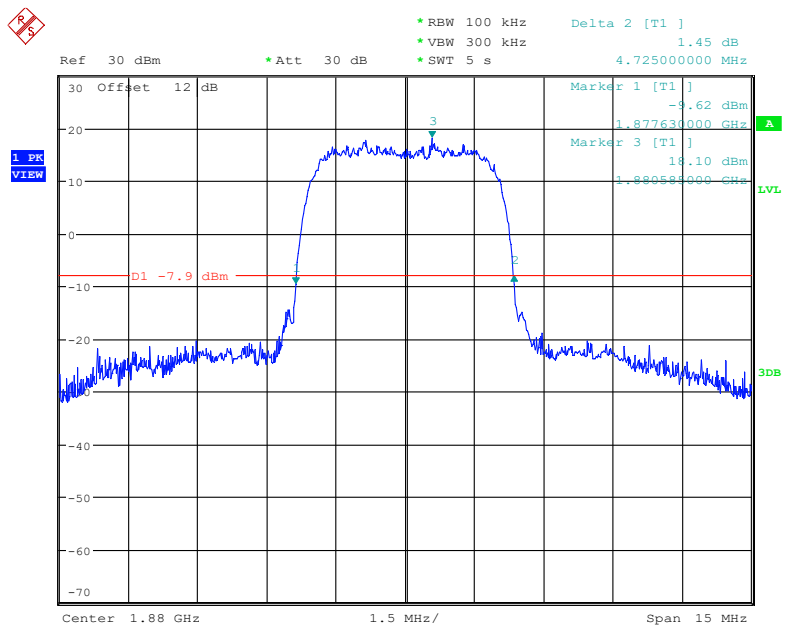


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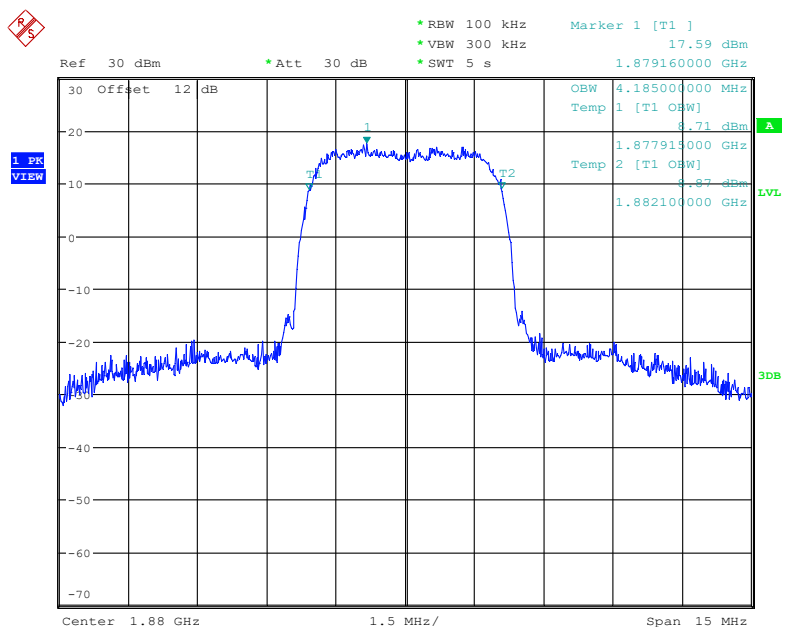


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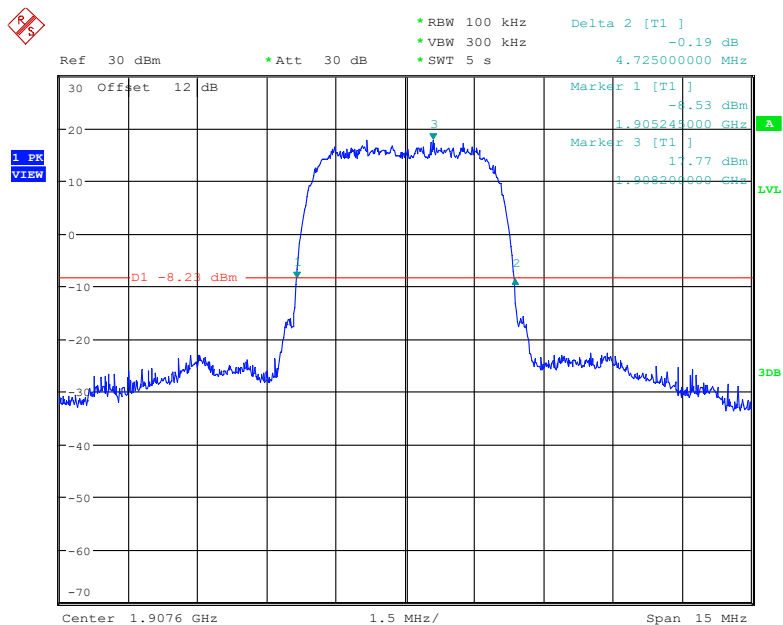
26 dB Emission Bandwidth for HSUPA (QPSK) Mode, Middle channel



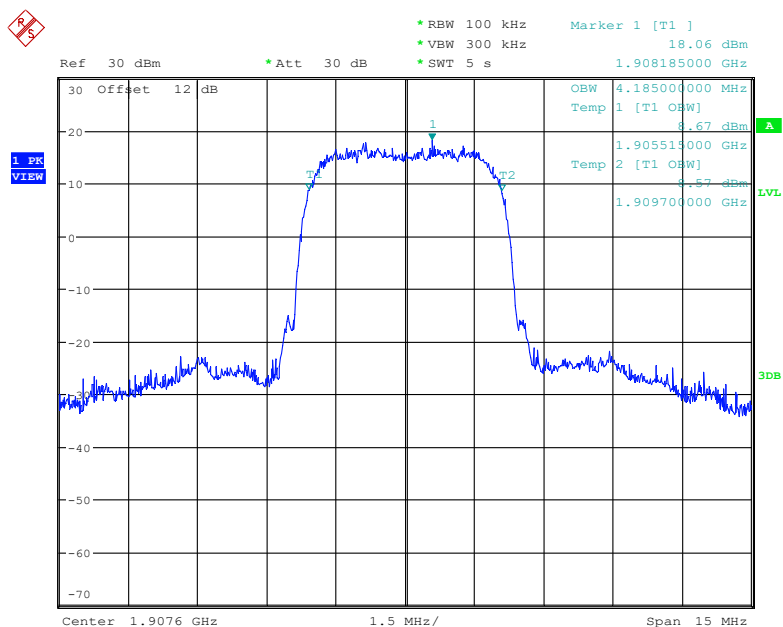
Date: 10.OCT.2022 21:37:19



Date: 10.OCT.2022 21:36:40

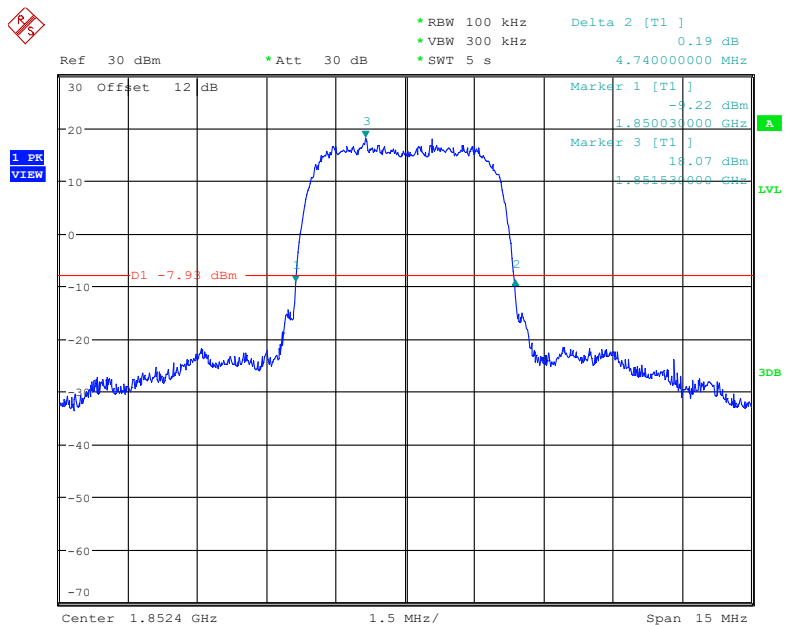
26 dB Emission Bandwidth for HSUPA (QPSK) Mode, High channel

Date: 10.OCT.2022 21:41:26

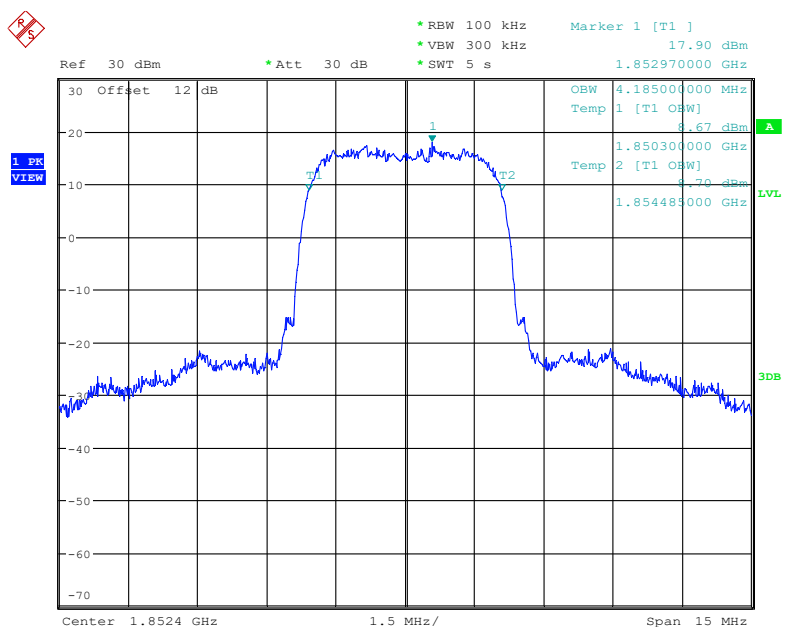


Date: 10.OCT.2022 21:40:46

26 dB Emission Bandwidth for HSDPA (16QAM) Mode, Low channel

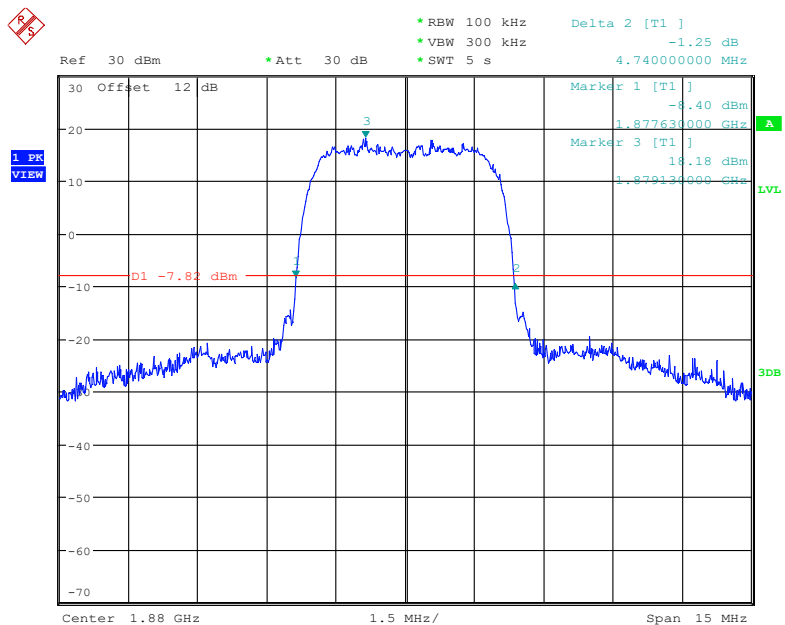


Date: 10.OCT.2022 21:13:00

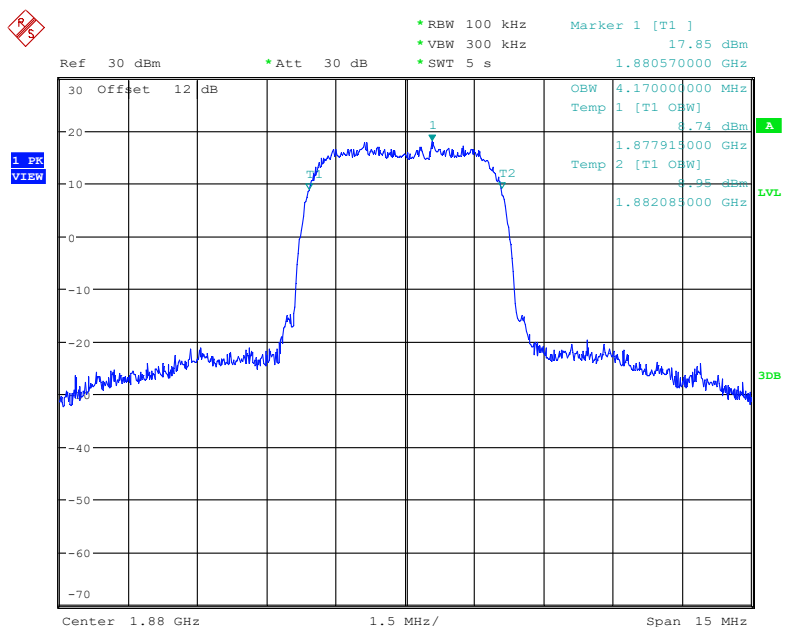


Date: 10.OCT.2022 21:12:20

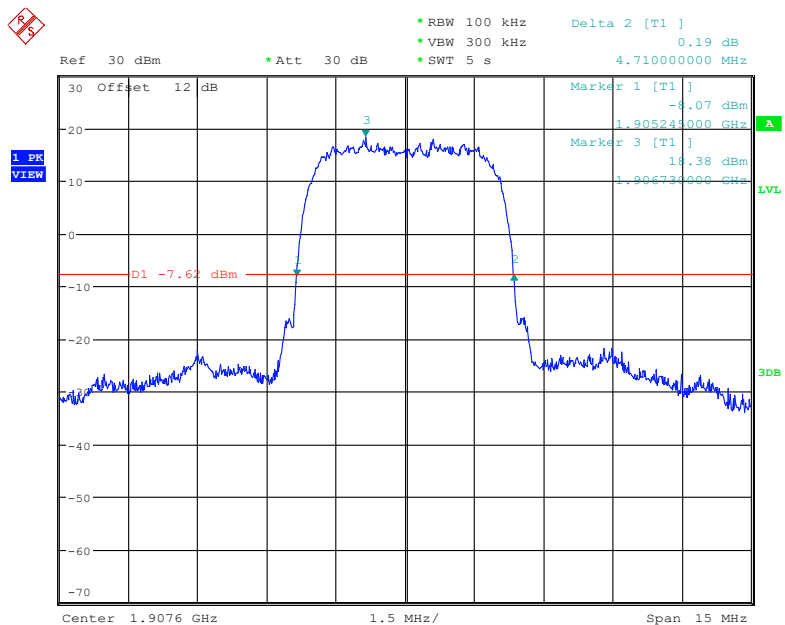
26 dB Emission Bandwidth for HSDPA (16QAM) Mode, Middle channel



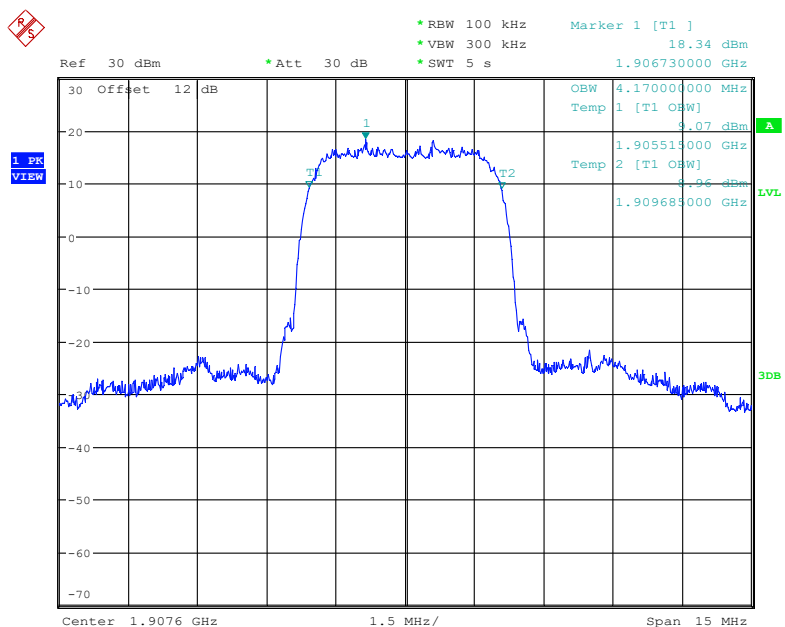
Date: 10.OCT.2022 21:17:51



Date: 10.OCT.2022 21:17:10

26 dB Emission Bandwidth for HSDPA (16QAM) Mode, High channel

Date: 10.OCT.2022 21:22:06



Date: 10.OCT.2022 21:21:25

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	1.110	1.320	1.104	1.302	1.098	1.302
	16QAM	1.098	1.302	1.104	1.314	1.110	1.314
3 MHz	QPSK	2.688	2.868	2.700	2.880	2.688	2.880
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.520	4.940	4.520	4.980	4.500	4.900
	16QAM	4.500	4.920	4.520	4.960	4.520	4.980
10 MHz	QPSK	8.960	9.680	8.960	9.600	8.960	9.640
	16QAM	8.960	9.640	8.960	9.600	8.960	9.600
15 MHz	QPSK	13.560	14.880	13.500	14.820	13.560	15.600
	16QAM	13.500	14.820	13.500	14.820	13.560	14.820
20 MHz	QPSK	18.000	19.280	18.000	19.360	18.000	19.360
	16QAM	18.000	19.440	18.000	19.360	18.000	19.280

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	1.302	1.110	1.302	1.098	1.302
	16QAM	1.092	1.290	1.098	1.308	1.110	1.314
3 MHz	QPSK	2.676	2.868	2.700	2.880	2.688	2.892
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.520	4.920	4.520	5.000	4.500	4.940
	16QAM	4.500	4.940	4.520	4.960	4.520	4.980
10 MHz	QPSK	8.960	9.520	8.960	9.600	8.960	9.640
	16QAM	8.960	9.600	8.960	9.600	8.960	9.560
15 MHz	QPSK	13.560	14.760	13.500	14.700	13.500	14.760
	16QAM	13.560	14.820	13.500	14.820	13.560	14.700
20 MHz	QPSK	18.000	19.280	18.000	19.440	18.000	19.440
	16QAM	18.080	19.360	18.000	19.440	18.000	19.440

LTE Band 5:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.302	1.098	1.296	1.098	1.308
	16QAM	1.092	1.290	1.098	1.296	1.104	1.320
3 MHz	QPSK	2.688	2.880	2.688	2.880	2.688	2.892
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.520	4.960	4.520	4.920	4.500	4.900
	16QAM	4.500	4.920	4.520	4.940	4.500	4.960
10 MHz	QPSK	8.960	9.560	8.960	9.560	8.960	9.680
	16QAM	8.960	9.600	8.960	9.600	8.960	9.640

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	4.920	4.500	5.280	4.520	4.960
	16QAM	4.520	4.940	4.500	5.000	4.500	4.920
10 MHz	QPSK	8.960	9.600	8.960	9.600	8.960	9.640
	16QAM	8.960	9.600	8.960	9.600	8.960	9.640
15 MHz	QPSK	13.560	14.760	13.500	14.940	13.500	14.820
	16QAM	13.560	14.760	13.560	17.940	13.560	14.820
20 MHz	QPSK	17.920	19.360	17.920	19.360	18.000	19.520
	16QAM	17.920	19.360	18.000	19.440	18.000	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	1.110	1.320	1.110	1.302	1.092	1.308
	16QAM	1.098	1.296	1.098	1.302	1.110	1.320
3 MHz	QPSK	2.688	2.880	2.688	2.892	2.688	2.880
	16QAM	2.676	2.880	2.688	2.892	2.688	2.880
5 MHz	QPSK	4.540	5.180	4.520	5.140	4.540	5.400
	16QAM	4.520	5.140	4.520	5.180	4.560	5.240
10 MHz	QPSK	8.960	9.800	8.960	9.920	9.000	10.000
	16QAM	8.960	9.840	8.960	9.920	8.960	9.840

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	5.220	4.540	5.200	4.560	5.220
	16QAM	4.540	5.120	4.540	5.220	4.520	5.160
10 MHz	QPSK	8.960	9.960	8.960	9.840	8.960	9.880
	16QAM	8.960	9.680	8.960	9.920	8.960	9.920

LTE Band 38

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	5.080	4.520	4.980	4.520	4.960
	16QAM	4.500	4.920	4.520	5.220	4.520	5.160
10 MHz	QPSK	8.960	9.640	8.960	9.600	8.960	9.720
	16QAM	8.960	9.520	8.960	9.600	8.960	10.120
15 MHz	QPSK	13.500	15.780	13.620	15.840	13.500	15.120
	16QAM	13.620	16.380	13.620	15.840	13.620	15.600
20 MHz	QPSK	18.000	19.760	18.000	19.760	18.000	19.840
	16QAM	18.000	19.840	18.000	20.240	18.000	19.360

LTE Band 40 Lower: (2305-2315MHz)

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	5.140	4.520	4.940	4.520	5.080
	16QAM	4.520	5.040	4.500	5.000	4.500	4.980
10 MHz	QPSK	/	/	8.960	9.840	/	/
	16QAM	/	/	8.960	9.680	/	/

LTE Band 40 Upper: (2350-2360MHz)

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	4.500	5.080	4.520	5.140	4.520	4.940
	16QAM	4.520	4.940	4.520	5.080	4.520	4.980
10 MHz	QPSK	/	/	9.000	9.880	/	/
	16QAM	/	/	8.960	9.720	/	/

LTE Band 41

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.520	5.020	4.520	5.040	4.520	4.960
	16QAM	4.500	5.220	4.500	4.960	4.520	5.180
10 MHz	QPSK	8.960	9.640	8.960	9.720	9.000	9.600
	16QAM	8.960	9.520	9.000	10.000	8.960	9.560
15 MHz	QPSK	13.560	15.720	13.500	15.720	13.560	15.600
	16QAM	13.620	15.120	13.620	16.620	13.560	16.860
20 MHz	QPSK	18.000	19.600	18.000	19.360	18.000	19.840
	16QAM	18.000	20.080	18.000	19.600	18.000	19.760

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

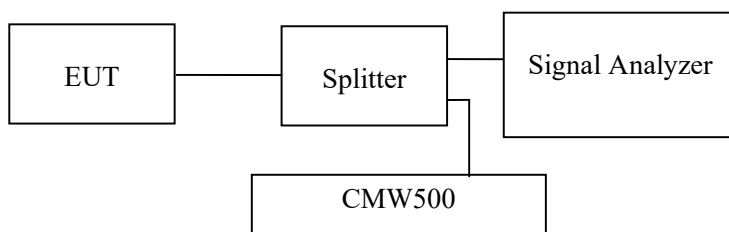
FCC §2.1051, §22.917(a) & §24.238(a)&§27.53.

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

Test Procedure

According to ANSI C63.26-2015 section 5.7.4

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 10th harmonic.



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

Test Data

Environmental Conditions

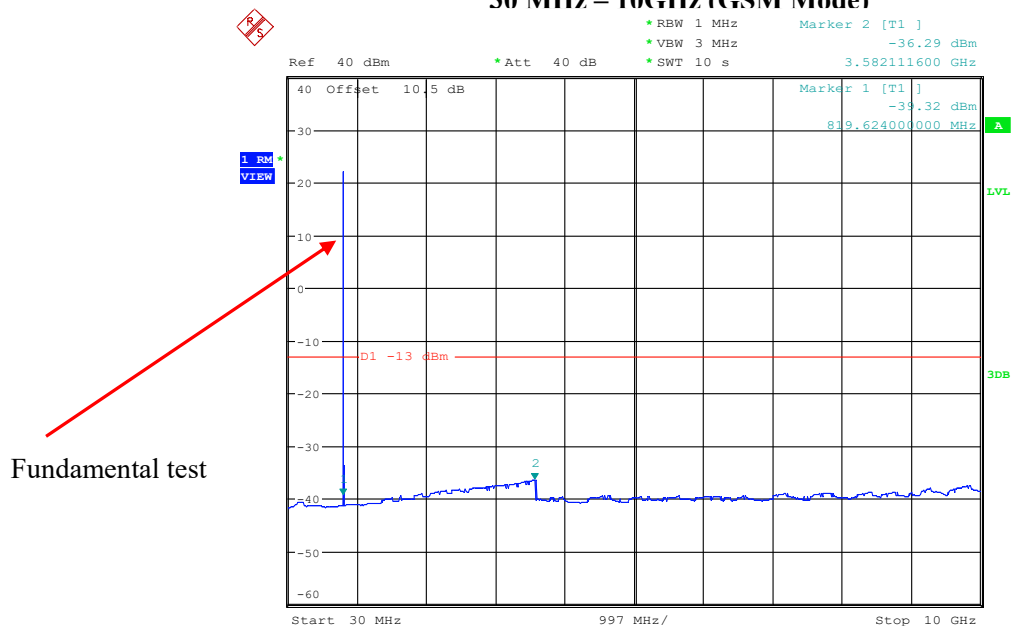
Temperature:	27.2~28℃
Relative Humidity:	33~56.2%
ATM Pressure:	101.0 kPa

The testing was performed by Roger Lin on 2022-10-10 and Andy Yu on 2022-10-11~2022-11-08.

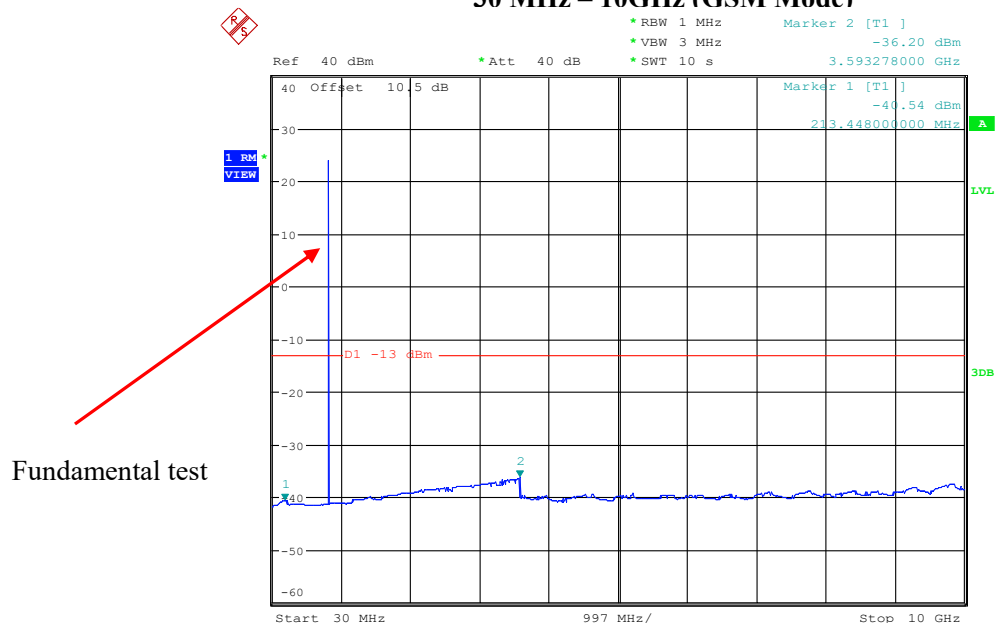
EUT operation mode: Transmitting

Test result: Pass

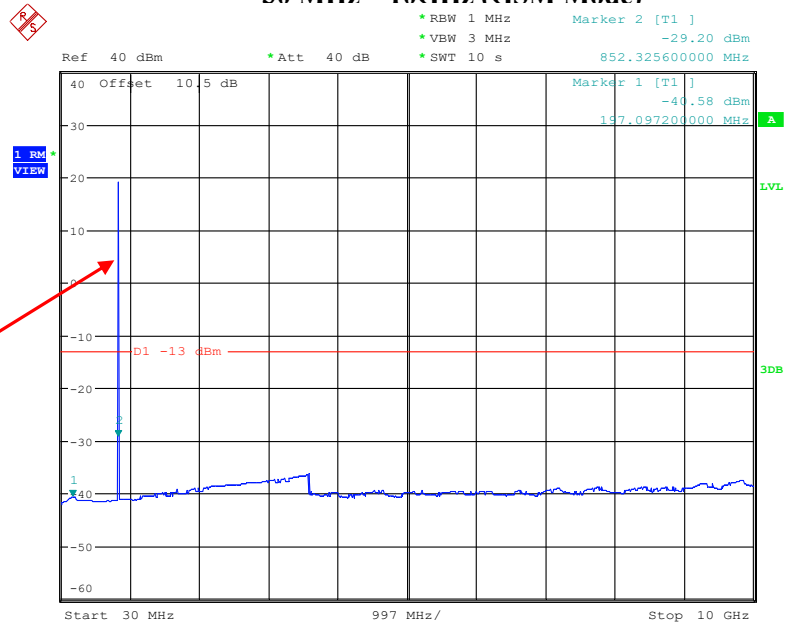
Please refer to the following plots.

Cellular Band (Part 22H)
Low Channel:**30 MHz – 10GHz (GSM Mode)**

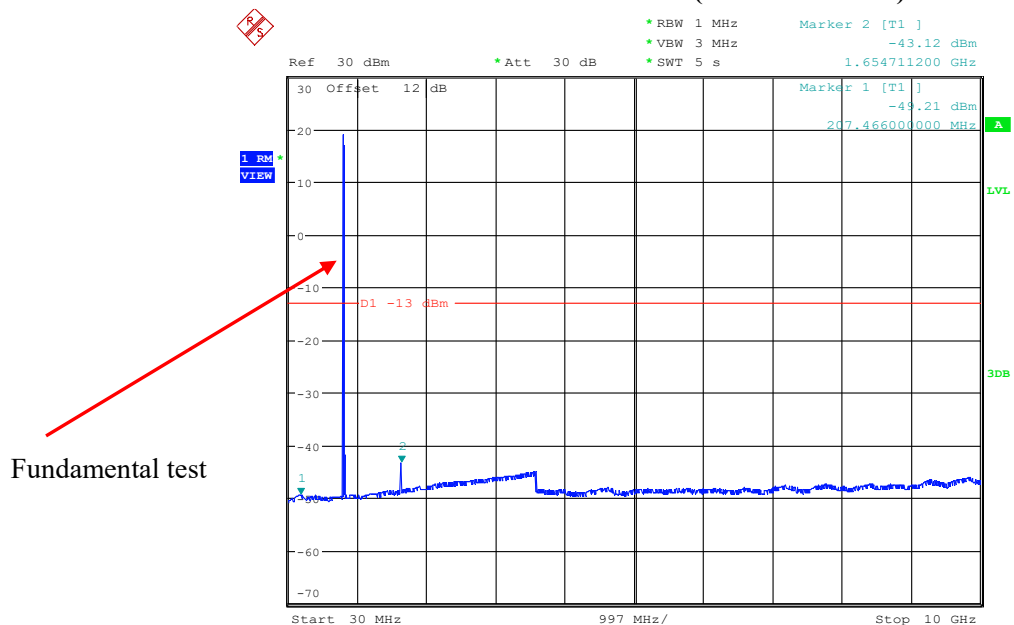
Date: 10.OCT.2022 18:15:37

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

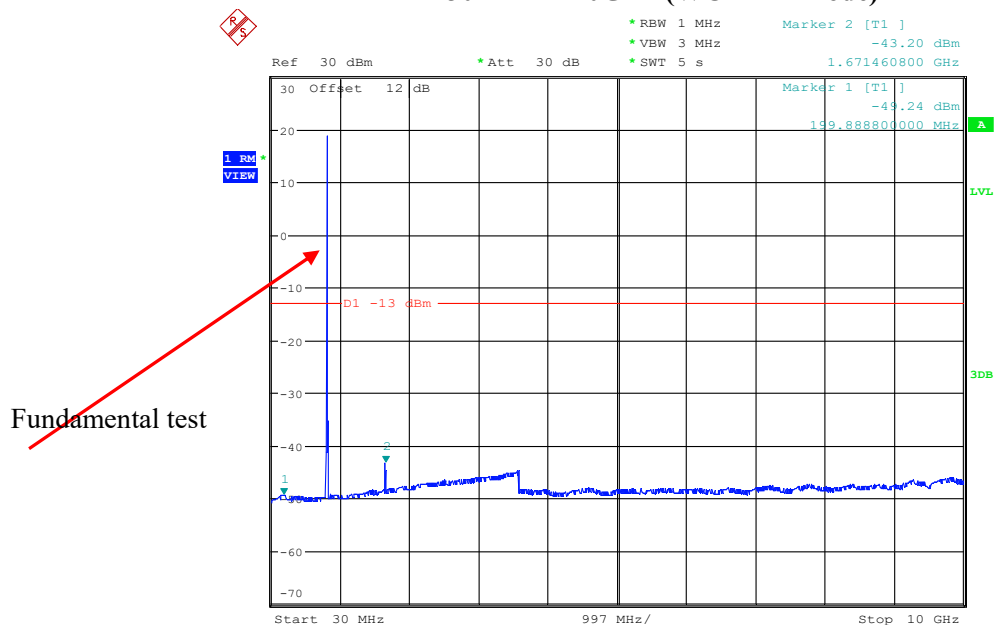
Date: 10.OCT.2022 18:19:39

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

Date: 10.OCT.2022 18:25:04

Low Channel:**30 MHz – 10GHz (WCDMA Mode)**

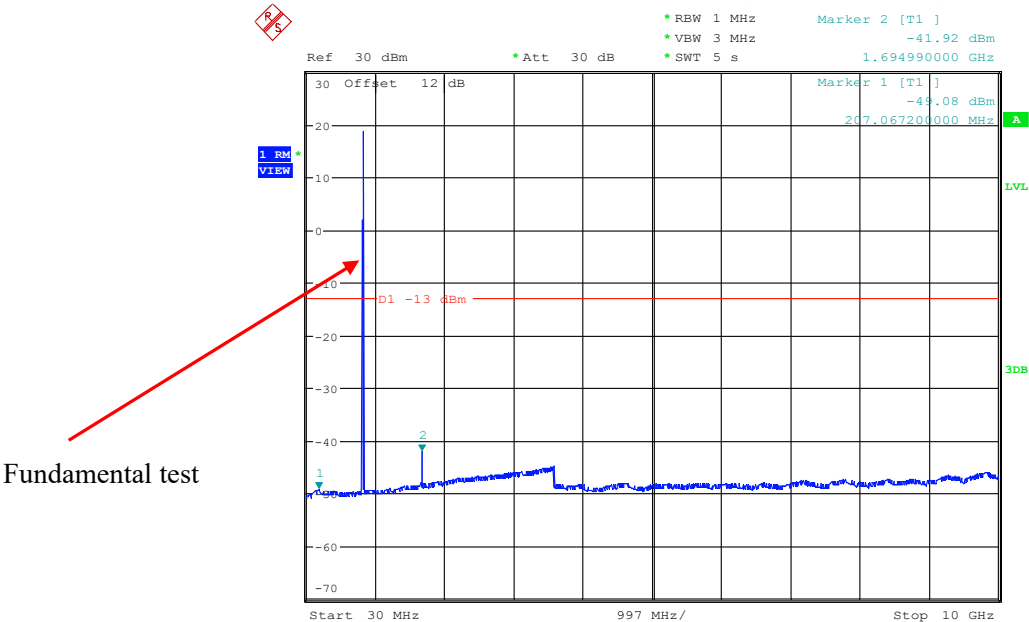
Date: 10.OCT.2022 21:50:07

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

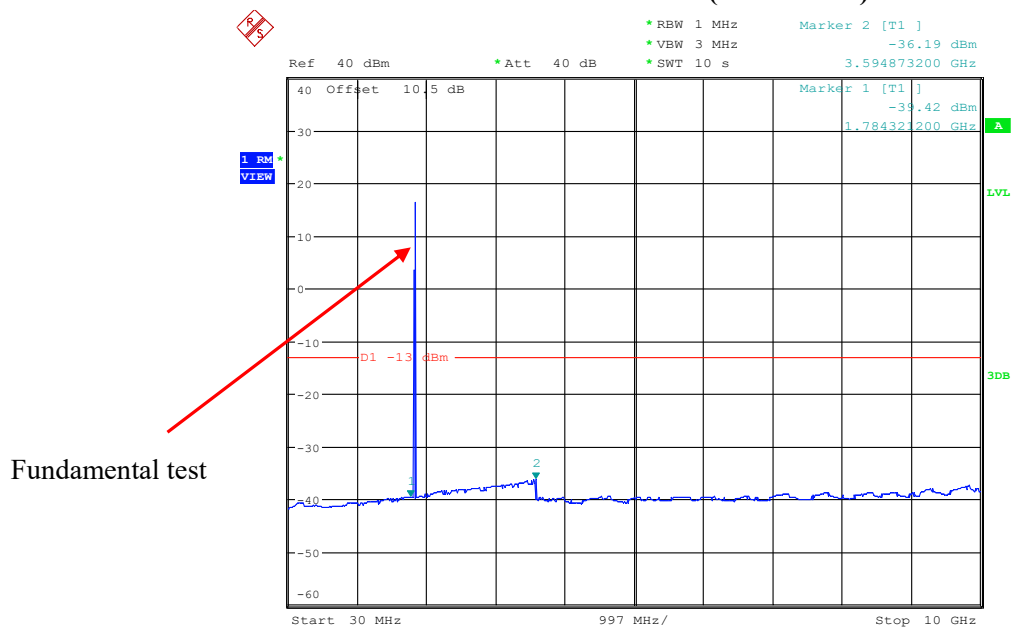
Date: 10.OCT.2022 21:53:16

High Channel:

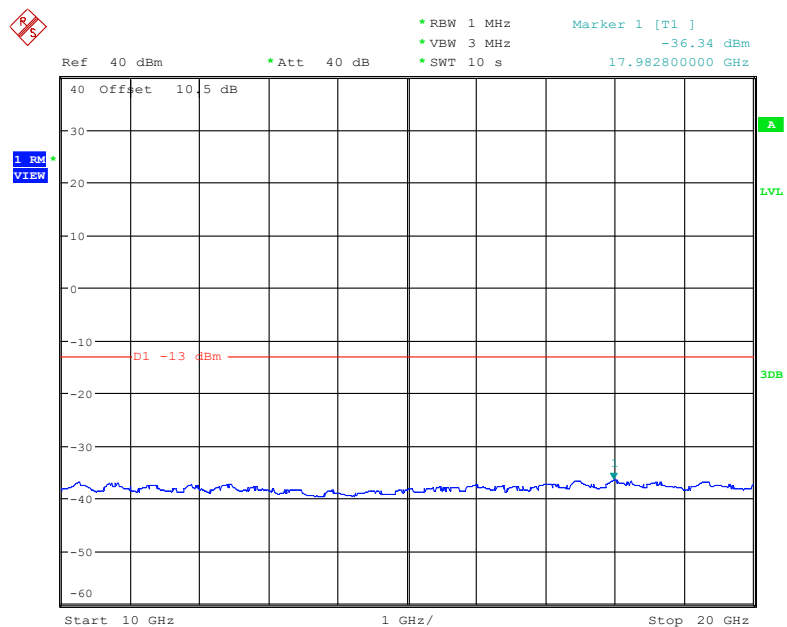
30 MHz – 10GHz RMC (WCDMA Mode)



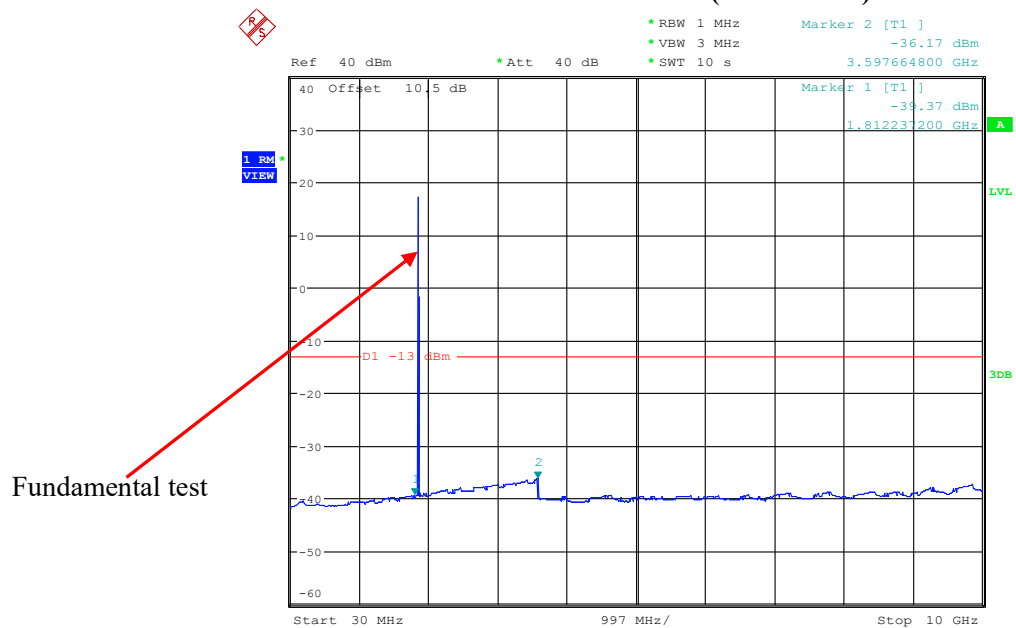
Date: 10.OCT.2022 21:57:19

PCS Band (Part 24E)**Low Channel:****30 MHz – 10GHz (GSM Mode)**

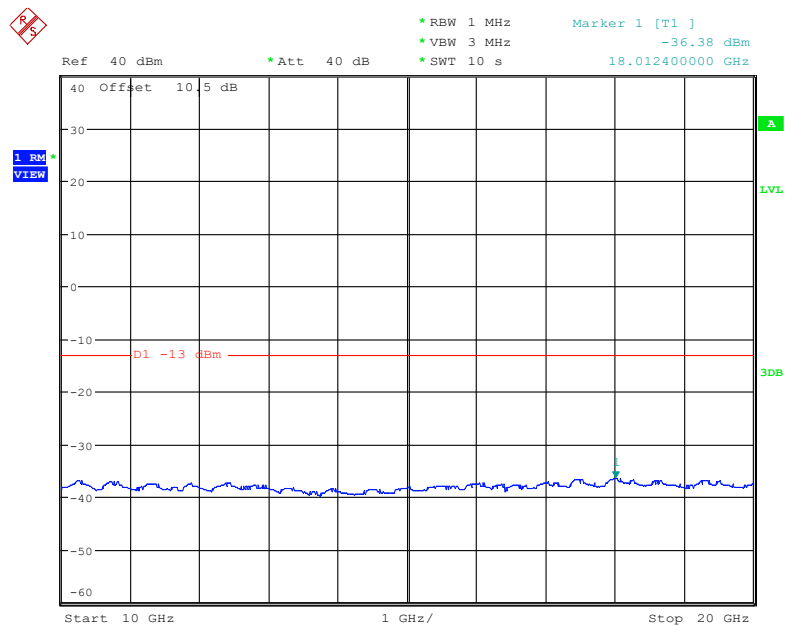
Date: 10.OCT.2022 19:41:02

10 GHz – 20GHz (GSM Mode)

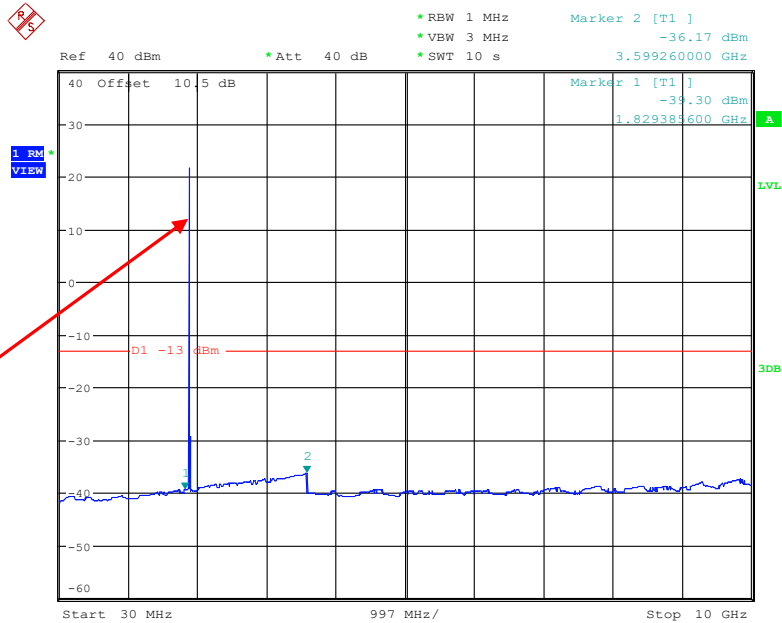
Date: 10.OCT.2022 19:42:14

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

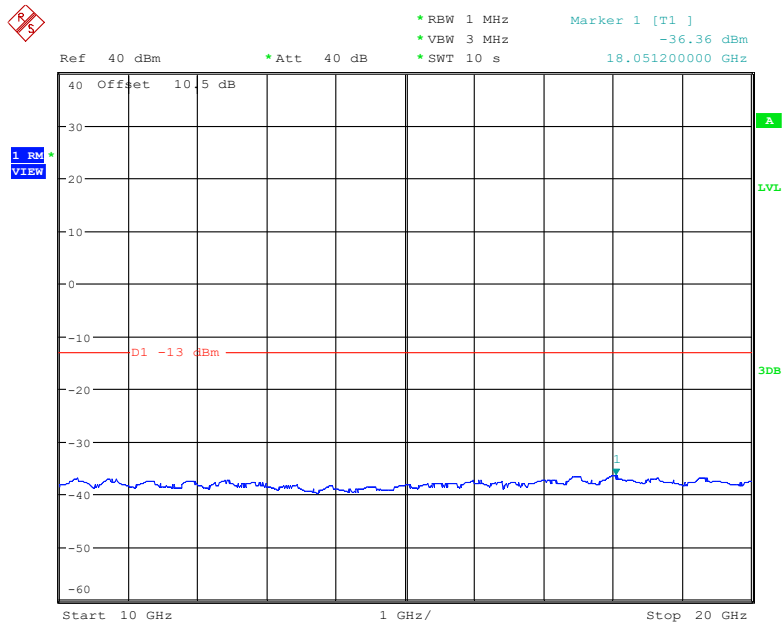
Date: 10.OCT.2022 19:46:22

10 GHz – 20GHz (GSM Mode)

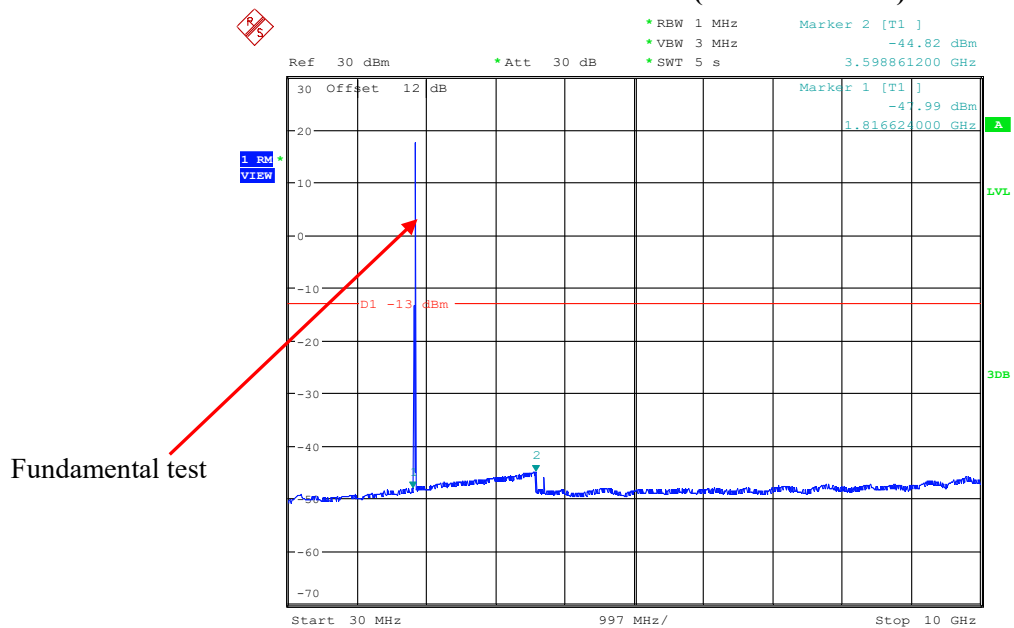
Date: 10.OCT.2022 19:47:34

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

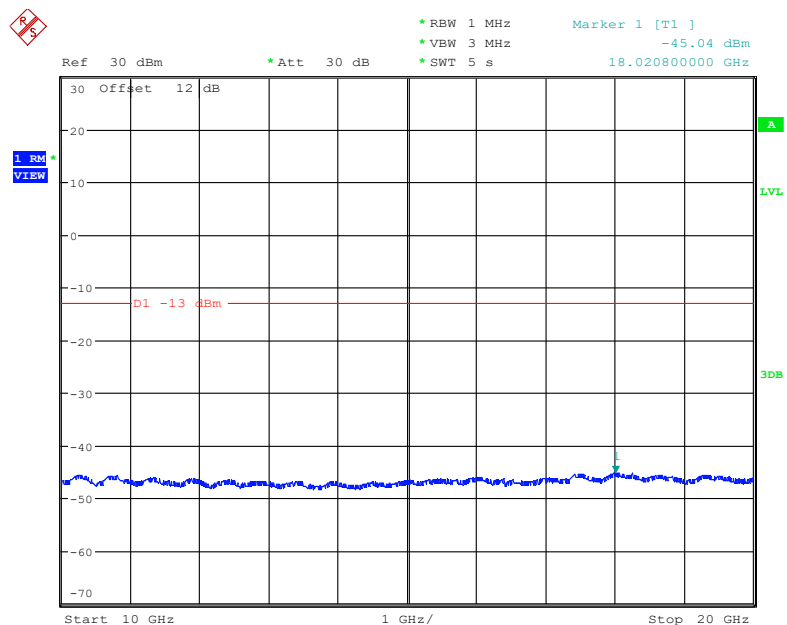
Date: 10.OCT.2022 19:53:32

10 GHz – 20GHz (GSM Mode)

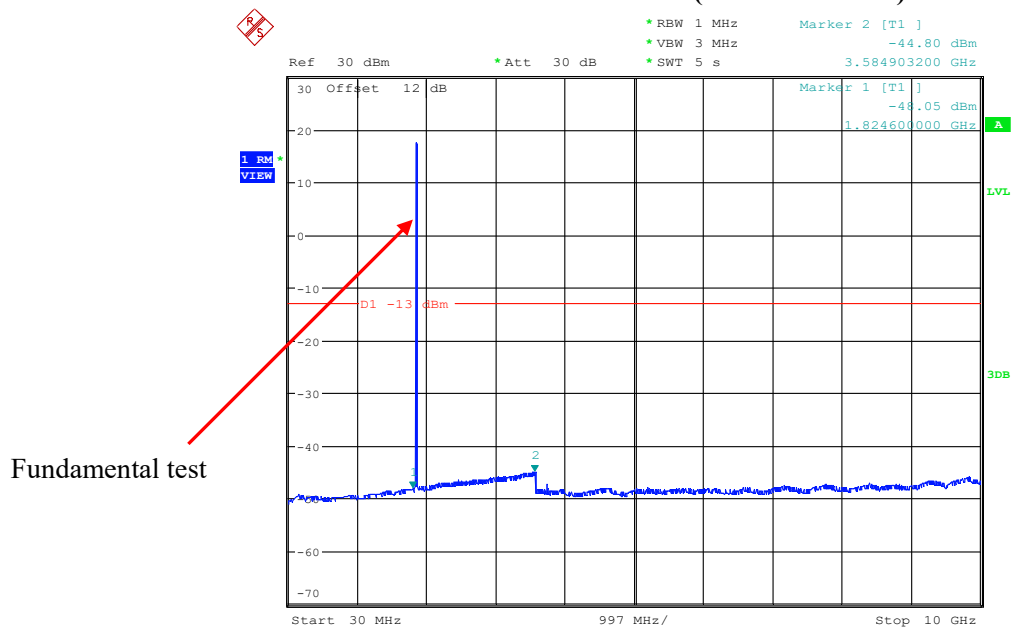
Date: 10.OCT.2022 19:54:44

Low Channel:**30 MHz – 10GHz (WCDMA Mode)**

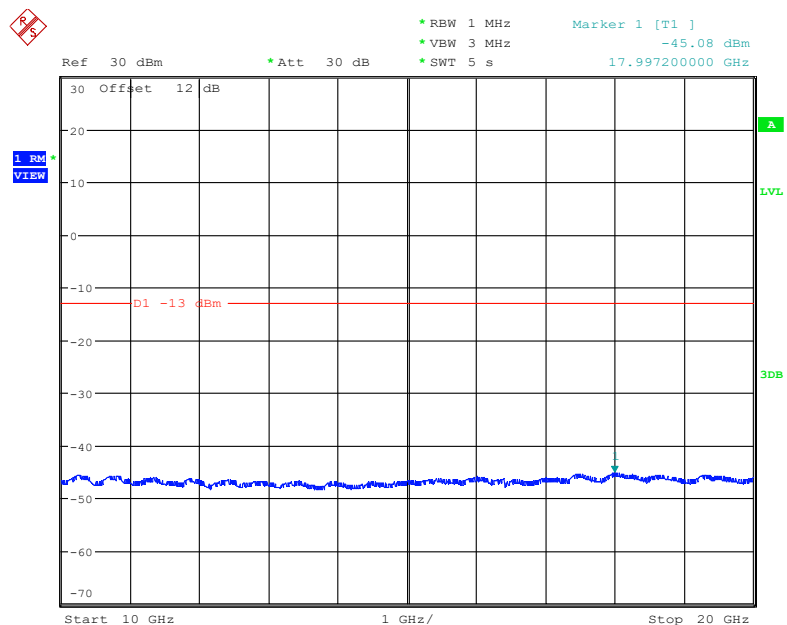
Date: 10.OCT.2022 20:57:31

10 GHz – 20GHz (WCDMA Mode)

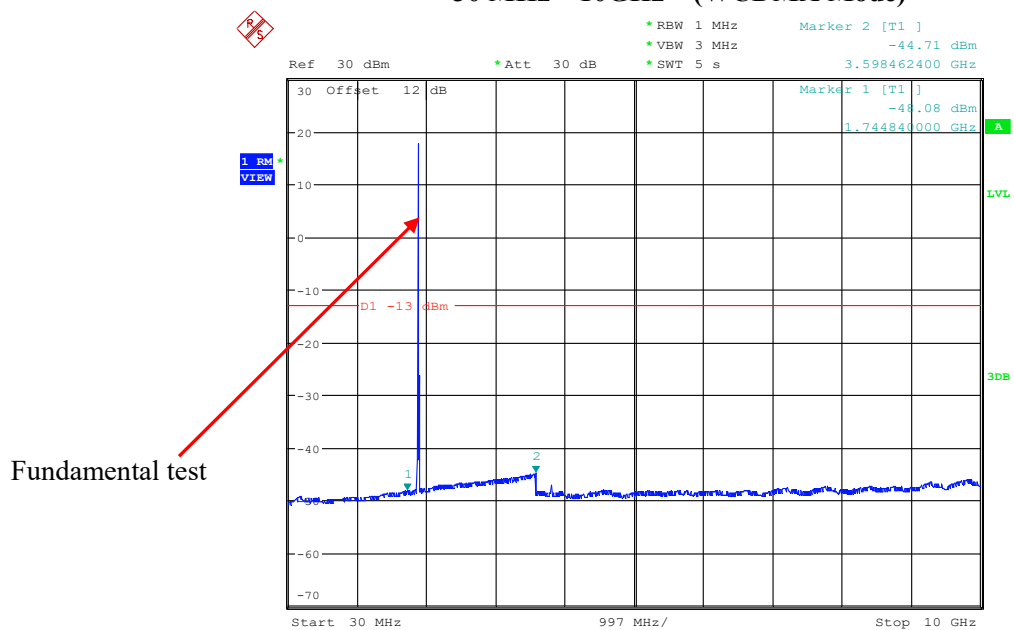
Date: 10.OCT.2022 20:58:13

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

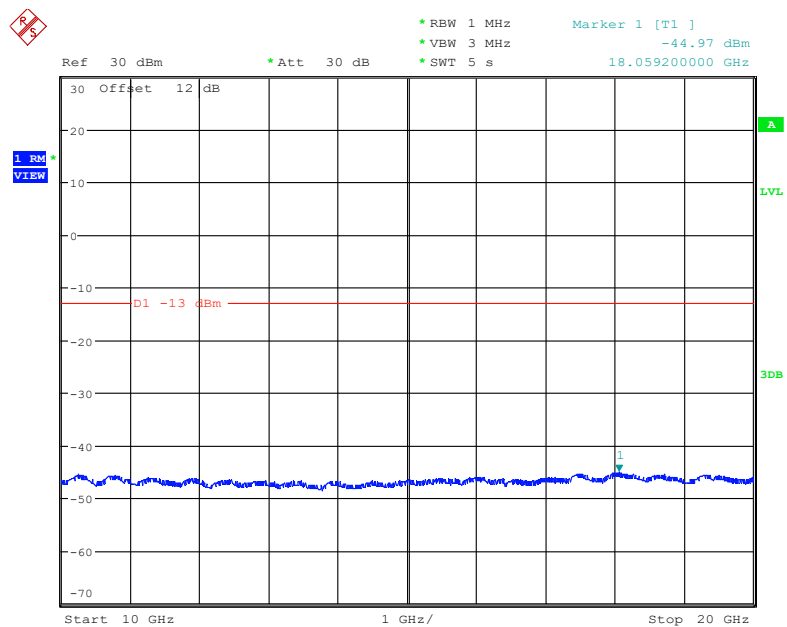
Date: 10.OCT.2022 21:02:07

10 GHz – 20GHz (WCDMA Mode)

Date: 10.OCT.2022 21:02:49

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

Date: 10.OCT.2022 21:07:46

10 GHz – 20GHz (WCDMA Mode)

Date: 10.OCT.2022 21:08:29

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

According to ANSI C63.26-2015 section 5.5

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:	25~26℃
Relative Humidity:	56~58 %
ATM Pressure:	101.0kPa

The testing was performed by Jimi from 2022-10-23 to 2022-10-27.

Test mode: Transmitting (Pre-scan in the X, Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)

The worst case is as below:

30MHz-10GHz:**Cellular Band (Part 22H)**

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
GSM850, Low Channel									
47.51	-64.08	PK	14	2.0	H	6.2	-57.88	-13	-44.88
176.34	-62.35	PK	225	1.0	V	1.38	-60.97	-13	-47.97
1648.4	-59.19	PK	14	2.0	H	3.52	-55.67	-13	-42.67
1648.4	-57.76	PK	225	1.0	V	3.1	-54.66	-13	-41.66
GSM850, Middle Channel									
47.51	-62.35	PK	256	2.1	H	6.2	-56.15	-13	-43.15
176.34	-56.51	PK	293	2.2	V	1.38	-55.13	-13	-42.13
1673.2	-58.34	PK	5	1.1	H	3.78	-54.56	-13	-41.56
1673.2	-56.74	PK	114	1.0	V	3.1	-53.64	-13	-40.64
GSM850, High Channel									
47.51	-62.05	PK	253	1.3	H	6.2	-55.85	-13	-42.85
176.34	-58.13	PK	151	1.8	V	1.38	-56.75	-13	-43.75
1697.6	-57.30	PK	6	1.5	H	4.07	-53.23	-13	-40.23
1697.6	-55.88	PK	256	2.2	V	3.1	-52.78	-13	-39.78

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
WCDMA BAND5, Low Channel									
47.51	-62.15	PK	112	1.0	H	6.2	-55.95	-13	-42.95
176.34	-58.54	PK	226	1.0	V	1.38	-57.16	-13	-44.16
1652.8	-60.65	PK	173	2.0	H	3.53	-57.12	-13	-44.12
1652.8	-61.98	PK	64	1.6	V	3.1	-58.88	-13	-45.88
WCDMA BAND5, Middle Channel									
47.51	-61.87	PK	196	1.2	H	6.2	-55.67	-13	-42.67
176.34	-57.97	PK	107	1.3	V	1.38	-56.59	-13	-43.59
1672.8	-61.15	PK	333	2.2	H	3.78	-57.37	-13	-44.37
1672.8	-61.30	PK	157	1.4	V	3.1	-58.20	-13	-45.20
WCDMA BAND5, High Channel									
47.51	-61.35	PK	61	1.4	H	6.2	-55.15	-13	-42.15
176.34	-56.35	PK	270	2.0	V	1.38	-54.97	-13	-41.97
1693.2	-59.87	PK	90	1.3	H	4.02	-55.85	-13	-42.85
1693.2	-59.75	PK	116	1.5	V	3.1	-56.65	-13	-43.65

30MHz-20GHz:**PCS Band (Part 24E)**

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
PCS1900, Low Channel									
47.51	-64.48	PK	308	1.9	H	6.2	-58.28	-13	-45.28
176.34	-58.05	PK	186	2.1	V	1.38	-56.67	-13	-43.67
3700.4	-62.79	PK	312	1.5	H	8.11	-54.68	-13	-41.68
3700.4	-62.63	PK	132	1.2	V	7.6	-55.03	-13	-42.03
PCS1900, Middle Channel									
47.51	-62.96	PK	353	2.1	H	6.2	-56.76	-13	-43.76
176.34	-58.63	PK	215	2.2	V	1.38	-57.25	-13	-44.25
3760	-62.11	PK	112	1.7	H	8.84	-53.27	-13	-40.27
3760	-61.15	PK	25	1.1	V	7.96	-53.19	-13	-40.19
PCS1900, High Channel									
47.51	-62.88	PK	206	1.6	H	6.2	-56.68	-13	-43.68
176.34	-57.35	PK	3	1.8	V	1.38	-55.97	-13	-42.97
3819.6	-60.32	PK	81	1.1	H	8.68	-51.64	-13	-38.64
3819.6	-60.37	PK	43	1.4	V	7.96	-52.41	-13	-39.41

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
WCDMA BAND2, Low Channel									
47.51	-64.21	PK	30	1.6	H	6.2	-58.01	-13	-45.01
176.34	-57.64	PK	194	1.2	V	1.38	-56.26	-13	-43.26
3704.8	-62.85	PK	252	2.2	H	8.18	-54.67	-13	-41.67
3704.8	-63.22	PK	211	1.1	V	7.64	-55.58	-13	-42.58
WCDMA BAND2, Middle Channel									
47.51	-64.36	PK	244	1.8	H	6.2	-58.16	-13	-45.16
176.34	-56.51	PK	247	1.6	V	1.38	-55.13	-13	-42.13
3760	-62.06	PK	247	1.6	H	8.84	-53.22	-13	-40.22
3760	-62.21	PK	211	1.8	V	7.96	-54.25	-13	-41.25
WCDMA BAND2, High Channel									
47.51	-62.34	PK	293	1.7	H	6.2	-56.14	-13	-43.14
176.34	-59.09	PK	83	1.2	V	1.38	-57.71	-13	-44.71
3815.2	-61.78	PK	140	1.2	H	8.66	-53.12	-13	-40.12
3815.2	-60.86	PK	254	1.7	V	7.92	-52.94	-13	-39.94

LTE Band: (Pre-scan with all the bandwidth/modulation, and worst case as below)

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
4G BAND2									
Test frequency range: 30MHz-20GHz									
1.4MHz bandwidth, QPSK, Low Channel									
47.51	-63.81	PK	209	1.2	H	6.2	-57.61	-13	-44.61
176.34	-59.39	PK	298	2.2	V	1.38	-58.01	-13	-45.01
3701.4	-62.69	PK	321	1.8	H	8.12	-54.57	-13	-41.57
3701.4	-63.65	PK	333	1.2	V	7.61	-56.04	-13	-43.04
1.4MHz bandwidth, QPSK, Middle Channel									
47.51	-62.92	PK	92	1.2	H	6.2	-56.72	-13	-43.72
176.34	-55.93	PK	82	1.9	V	1.38	-54.55	-13	-41.55
3760	-61.58	PK	358	1.0	H	8.84	-52.74	-13	-39.74
3760	-62.88	PK	339	1.5	V	7.96	-54.92	-13	-41.92
1.4MHz bandwidth, QPSK, High Channel									
47.51	-62.77	PK	207	1.9	H	6.2	-56.57	-13	-43.57
176.34	-58.41	PK	114	1.6	V	1.38	-57.03	-13	-44.03
3818.6	-59.88	PK	51	1.9	H	8.67	-51.21	-13	-38.21
3818.6	-61.18	PK	215	2.1	V	7.95	-53.23	-13	-40.23
4G BAND4									
Test frequency range: 30MHz-20GHz									
1.4MHz bandwidth, QPSK, Low Channel									
47.51	-64.32	PK	99	2.1	H	6.2	-58.12	-13	-45.12
176.34	-58.00	PK	95	1.9	V	1.38	-56.62	-13	-43.62
3421.4	-63.78	PK	114	2.1	H	6.37	-57.41	-13	-44.41
3421.4	-62.22	PK	18	2.0	V	5.7	-56.52	-13	-43.52
1.4MHz bandwidth, QPSK, Middle Channel									
47.51	-63.38	PK	81	1.2	H	6.2	-57.18	-13	-44.18
176.34	-56.05	PK	320	1.0	V	1.38	-54.67	-13	-41.67
3465	-62.98	PK	332	2.2	H	6.96	-56.02	-13	-43.02
3465	-61.65	PK	160	2.1	V	6.22	-55.43	-13	-42.43
1.4MHz bandwidth, QPSK, High Channel									
47.51	-64.46	PK	2	1.3	H	6.2	-58.26	-13	-45.26
176.34	-57.45	PK	296	1.4	V	1.38	-56.07	-13	-43.07
3508.6	-62.14	PK	68	1.1	H	7.78	-54.36	-13	-41.36
3508.6	-60.30	PK	134	1.9	V	6.57	-53.73	-13	-40.73

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
4G BAND5									
Test frequency range: 30MHz-10GHz									
1.4MHz bandwidth, QPSK, Low Channel									
47.51	-63.36	PK	344	1.6	H	6.2	-57.16	-13	-44.16
176.34	-57.20	PK	312	1.7	V	1.38	-55.82	-13	-42.82
1649.4	-54.00	PK	20	1.8	H	3.51	-50.49	-13	-37.49
1649.4	-55.22	PK	64	1.1	V	3.1	-52.12	-13	-39.12
1.4MHz bandwidth, QPSK, Middle Channel									
47.51	-62.94	PK	298	1.7	H	6.2	-56.74	-13	-43.74
176.34	-55.96	PK	144	1.1	V	1.38	-54.58	-13	-41.58
1673	-53.71	PK	242	1.3	H	3.78	-49.93	-13	-36.93
1673	-53.96	PK	335	1.8	V	3.1	-50.86	-13	-37.86
1.4MHz bandwidth, QPSK, High Channel									
47.51	-62.26	PK	282	2.2	H	6.2	-56.06	-13	-43.06
176.34	-58.57	PK	195	1.6	V	1.38	-57.19	-13	-44.19
1696.6	-52.19	PK	105	1.4	H	4.06	-48.13	-13	-35.13
1696.6	-52.53	PK	267	1.3	V	3.1	-49.43	-13	-36.43
4G BAND7									
Test frequency range: 30MHz-26.5GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-64.56	PK	344	1.6	H	6.2	-58.36	-25	-33.36
176.34	-58.63	PK	312	1.7	V	1.38	-57.25	-25	-32.25
5005	-58.40	PK	20	1.8	H	10.83	-47.57	-25	-22.57
5005	-58.65	PK	64	1.1	V	10.16	-48.49	-25	-23.49
5MHz bandwidth, QPSK, Middle Channel									
47.51	-62.34	PK	298	1.7	H	6.2	-56.14	-25	-31.14
176.34	-58.11	PK	144	1.1	V	1.38	-56.73	-25	-31.73
5070	-58.08	PK	242	1.3	H	11.14	-46.94	-25	-21.94
5070	-58.49	PK	335	1.8	V	10.78	-47.71	-25	-22.71
5MHz bandwidth, QPSK, High Channel									
47.51	-64.32	PK	282	2.2	H	6.2	-58.12	-25	-33.12
176.34	-58.95	PK	195	1.6	V	1.38	-57.57	-25	-32.57
5135	-55.57	PK	105	1.4	H	11.34	-44.23	-25	-19.23
5135	-56.40	PK	267	1.3	V	10.76	-45.64	-25	-20.64

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
4G BAND12									
Test frequency range: 30MHz-10GHz									
1.4MHz bandwidth, QPSK, Low Channel									
47.51	-62.44	PK	145	2.0	H	6.2	-56.24	-13	-43.24
176.34	-59.64	PK	266	1.1	V	1.38	-58.26	-13	-45.26
1399.4	-64.94	PK	3	1.9	H	5.91	-59.03	-13	-46.03
1399.4	-64.16	PK	270	1.9	V	5.9	-58.26	-13	-45.26
1.4MHz bandwidth, Middle Channel									
47.51	-61.38	PK	143	2.0	H	6.2	-55.18	-13	-42.18
176.34	-58.92	PK	160	1.4	V	1.38	-57.54	-13	-44.54
1415	-62.80	PK	199	1.5	H	5.66	-57.14	-13	-44.14
1415	-62.75	PK	259	1.4	V	5.36	-57.39	-13	-44.39
1.4MHz bandwidth, High Channel									
47.51	-62.52	PK	173	1.7	H	6.2	-56.32	-13	-43.32
176.34	-57.19	PK	169	1.2	V	1.38	-55.81	-13	-42.81
1430.6	-61.85	PK	233	1.0	H	5.41	-56.44	-13	-43.44
1430.6	-59.95	PK	191	1.9	V	4.8	-55.15	-13	-42.15
4G BAND17									
Test frequency range: 30MHz-10GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-63.71	PK	313	1.4	H	6.2	-57.51	-13	-44.51
176.34	-58.07	PK	269	1.9	V	1.38	-56.69	-13	-43.69
1413	-61.42	PK	330	1.8	H	5.69	-55.73	-13	-42.73
1413	-63.80	PK	336	1.8	V	5.43	-58.37	-13	-45.37
5MHz bandwidth, QPSK, Middle Channel									
47.51	-64.32	PK	116	1.8	H	6.2	-58.12	-13	-45.12
176.34	-58.25	PK	286	1.4	V	1.38	-56.87	-13	-43.87
1420	-60.50	PK	42	1.5	H	5.58	-54.92	-13	-41.92
1420	-62.64	PK	317	1.4	V	5.18	-57.46	-13	-44.46
5MHz bandwidth, QPSK, High Channel									
47.51	-64.43	PK	343	1.1	H	6.2	-58.23	-13	-45.23
176.34	-57.65	PK	32	1.4	V	1.38	-56.27	-13	-43.27
1427	-58.32	PK	19	1.9	H	5.47	-52.85	-13	-39.85
1427	-60.08	PK	188	1.8	V	4.93	-55.15	-13	-42.15

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
4G BAND38									
Test frequency range: 30MHz-26.5GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-60.36	PK	313	1.4	H	6.2	-54.16	-25	-29.16
176.34	-55.25	PK	269	1.9	V	1.38	-53.87	-25	-28.87
5145	-62.45	PK	330	1.8	H	11.38	-51.07	-25	-26.07
5145	-63.35	PK	336	1.8	V	10.72	-52.63	-25	-27.63
5MHz bandwidth, QPSK, Middle Channel									
47.51	-61.06	PK	336	1.5	H	6.2	-54.86	-25	-29.86
176.34	-56.50	PK	55	2.5	V	1.38	-55.12	-25	-30.12
5190	-60.05	PK	42	1.5	H	10.52	-49.53	-25	-24.53
5190	-61.55	PK	317	1.4	V	9.98	-51.57	-25	-26.57
5MHz bandwidth, QPSK, High Channel									
47.51	-62.25	PK	343	1.1	H	6.2	-56.05	-25	-31.05
176.34	-57.20	PK	32	1.4	V	1.38	-55.82	-25	-30.82
5235	-58.38	PK	19	1.9	H	9.67	-48.71	-25	-23.71
5235	-58.68	PK	188	1.8	V	9.24	-49.44	-25	-24.44
4G BAND40 Lower									
Test frequency range: 30MHz-25GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-62.84	PK	66	1.1	H	6.2	-56.64	-40	-16.64
176.34	-58.95	PK	211	2.2	V	1.38	-57.57	-40	-17.57
4615	-53.77	PK	65	1.1	H	10.46	-43.31	-40	-3.31
4615	-54.26	PK	28	1.7	V	10.1	-44.16	-40	-4.16
5MHz bandwidth, QPSK, Middle Channel									
47.51	-61.78	PK	8	1.1	H	6.2	-55.58	-40	-15.58
176.34	-55.75	PK	14	1.3	V	1.38	-54.37	-40	-14.37
4620	-60.38	PK	142	1.3	H	10.48	-49.90	-40	-9.90
4620	-60.71	PK	153	1.7	V	10.1	-50.61	-40	-10.61
5MHz bandwidth, QPSK, High Channel									
47.51	-60.45	PK	302	1.2	H	6.2	-54.25	-40	-14.25
176.34	-57.85	PK	175	1.4	V	1.38	-56.47	-40	-16.47
4625	-55.15	PK	66	1.5	H	10.5	-44.65	-40	-4.65
4625	-54.53	PK	185	1.1	V	10.1	-44.43	-40	-4.43

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
4G BAND40 Upper									
Test frequency range: 30MHz-25GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-62.84	PK	95	2.0	H	6.2	-56.64	-40	-16.64
176.34	-58.95	PK	97	1.6	V	1.38	-57.57	-40	-17.57
4705	-54.40	PK	310	2.0	H	10.9	-43.50	-40	-3.50
4705	-56.33	PK	356	2.0	V	10.01	-46.32	-40	-6.32
5MHz bandwidth, QPSK, Middle Channel									
47.51	-61.78	PK	181	1.6	H	6.2	-55.58	-40	-15.58
176.34	-55.75	PK	108	1.7	V	1.38	-54.37	-40	-14.37
4710	-55.69	PK	131	1.2	H	10.9	-44.79	-40	-4.79
4710	-55.59	PK	334	1.9	V	10.02	-45.57	-40	-5.57
5MHz bandwidth, QPSK, High Channel									
47.51	-60.45	PK	226	2.2	H	6.2	-54.25	-40	-14.25
176.34	-57.85	PK	112	1.8	V	1.38	-56.47	-40	-16.47
4715	-56.46	PK	175	2.2	H	10.9	-45.56	-40	-5.56
4715	-56.26	PK	299	2.1	V	10.03	-46.23	-40	-6.23
4G BAND41									
Test frequency range: 30MHz-26.5GHz									
5MHz bandwidth, QPSK, Low Channel									
47.51	-62.03	PK	261	1.9	H	6.2	-55.83	-25	-30.83
176.34	-58.39	PK	19	1.0	V	1.38	-57.01	-25	-32.01
5155	-61.89	PK	355	1.6	H	11.4	-50.49	-25	-25.49
5155	-62.26	PK	342	1.6	V	10.7	-51.56	-25	-26.56
5MHz bandwidth, QPSK, Middle Channel									
47.51	-62.86	PK	321	1.7	H	6.2	-56.66	-25	-31.66
176.34	-55.97	PK	308	1.7	V	1.38	-54.59	-25	-29.59
5210	-62.20	PK	175	2.0	H	10.12	-52.08	-25	-27.08
5210	-62.51	PK	39	1.6	V	9.64	-52.87	-25	-27.87
5MHz bandwidth, QPSK, High Channel									
47.51	-61.55	PK	239	2.1	H	6.2	-55.35	-25	-30.35
176.34	-56.19	PK	149	1.5	V	1.38	-54.81	-25	-29.81
5265	-62.00	PK	356	2.2	H	9.48	-52.52	-25	-27.52
5265	-61.83	PK	125	1.7	V	8.92	-52.91	-25	-27.91

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Absolute Level -Limit

FCC§ 22.917 (a);§ 24.238 (a); §27.53(a)(g)(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(a), For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

- (i) By a factor of not less than: $43 + 10 \log(P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log(P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log(P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log(P)$ dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log(P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log(P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log(P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log(P)$ dB below 2288 MHz;
- (iii) By a factor of not less than $43 + 10 \log(P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log(P)$ dB above 2365 MHz.

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

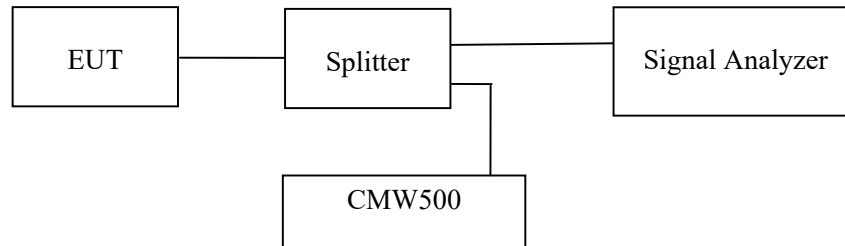
According to FCC §27.53(m), For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Test Procedure

According to ANSI C63.26-2015 section 5.7.3

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



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

Test Data

Environmental Conditions

Temperature:	27.2~28℃
Relative Humidity:	33~56.2%
ATM Pressure:	101.0 kPa

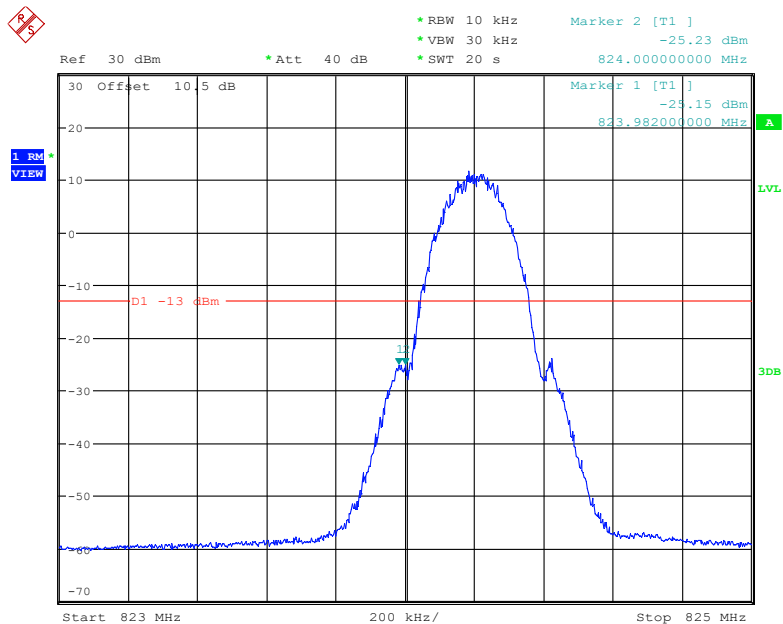
The testing was performed by Roger Lin on 2022-10-10 and Andy Yu on 2022-10-11~2022-11-08.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

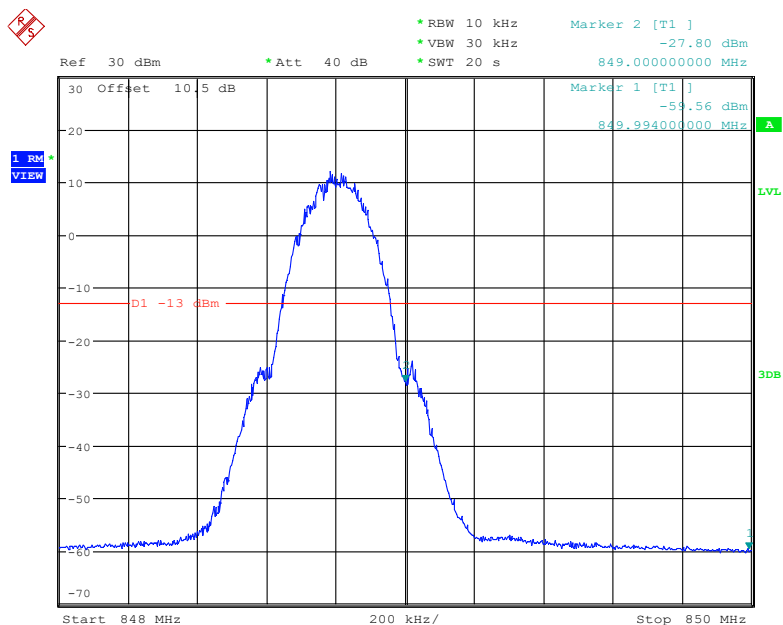
Please refer to the following plots.

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



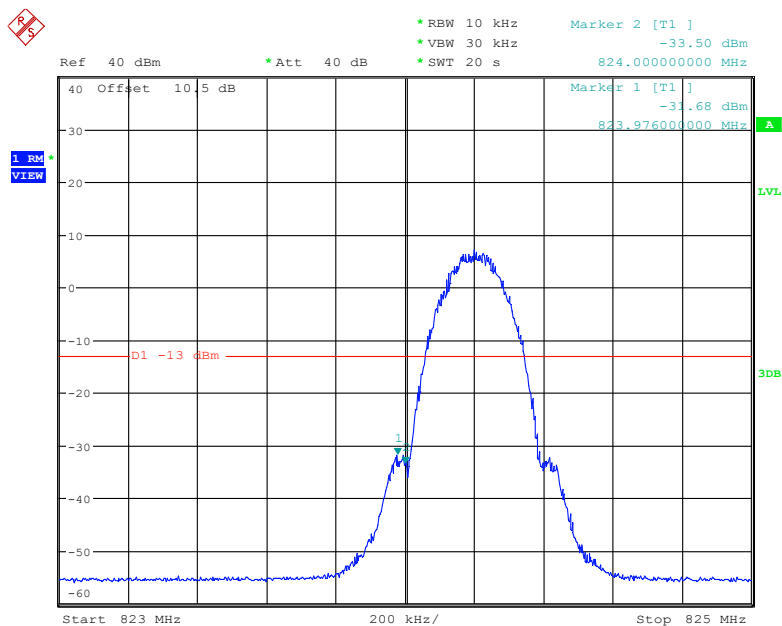
Date: 10.OCT.2022 18:14:25

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



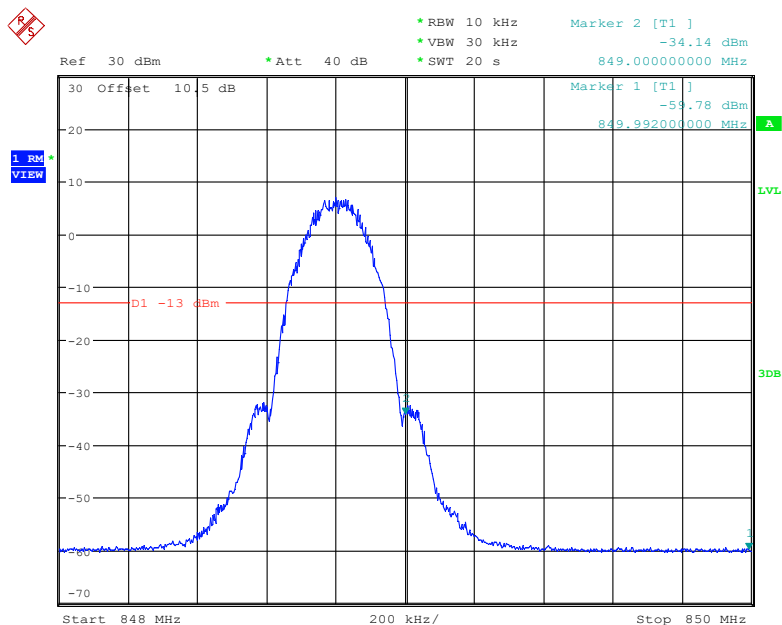
Date: 10.OCT.2022 18:23:53

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



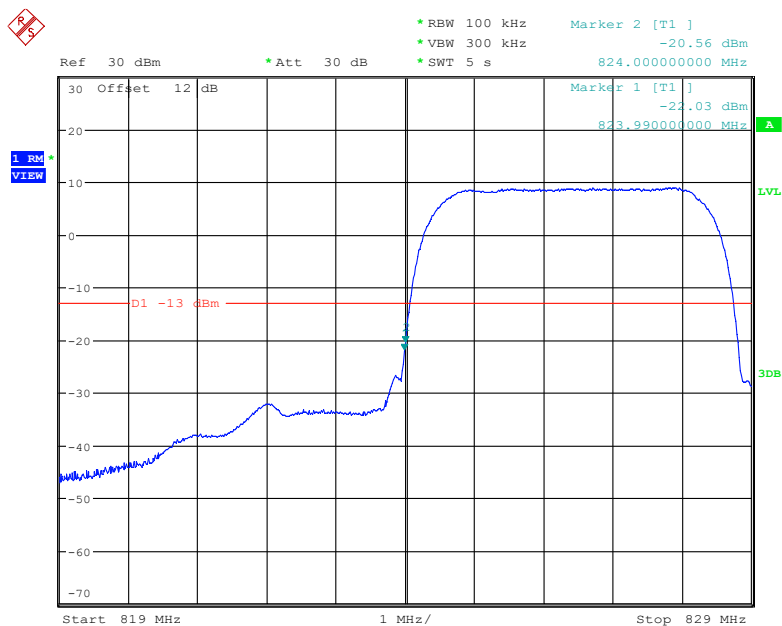
Date: 10.OCT.2022 19:04:37

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



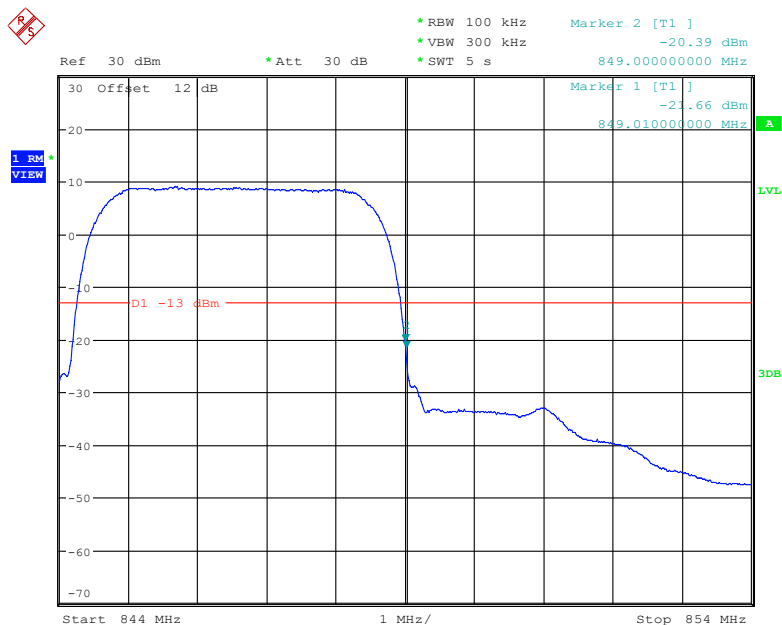
Date: 10.OCT.2022 19:21:57

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

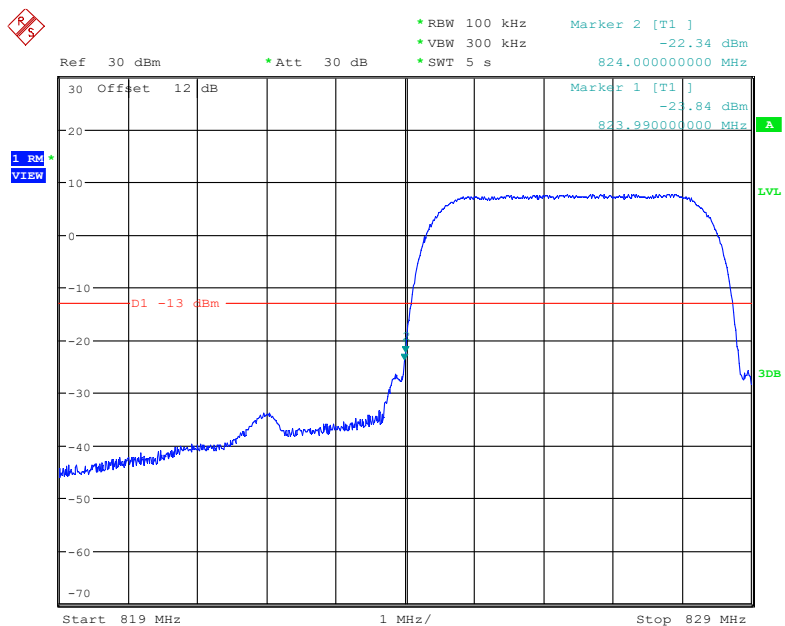


Date: 10.OCT.2022 21:49:26

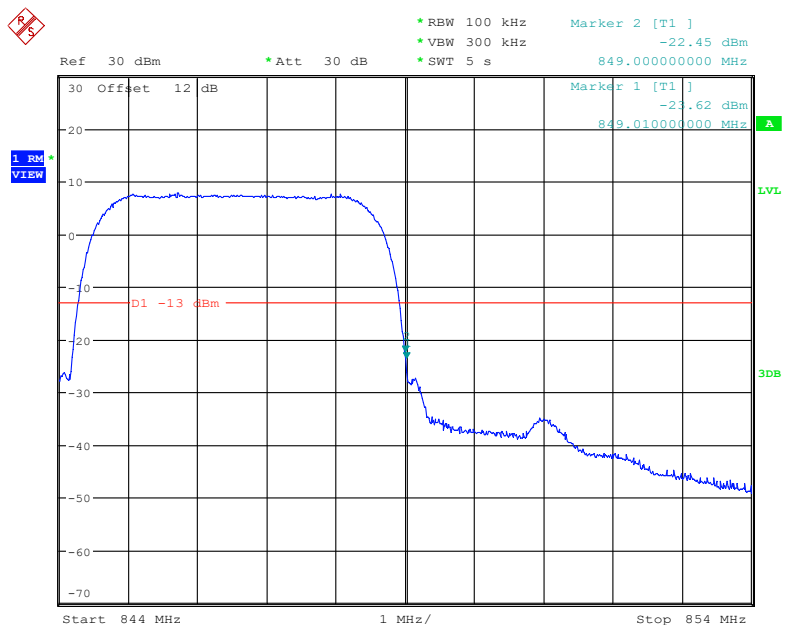
Cellular Band, Right Band Edge for RMC (BPSK) Mode



Date: 10.OCT.2022 21:56:39

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

Date: 10.OCT.2022 22:03:36

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

Date: 10.OCT.2022 22:10:59

Ref 30 dBm * Att 30 dB * RBW 100 kHz VBW 300 kHz SWT 5 s Marker 1 [T1] -24.32 dBm Marker 2 [T1] -22.74 dBm 824.000000000 MHz

30 Offset 12 dB D1 -13 dBm LVL 3DB

Start 819 MHz 1 MHz/ Stop 829 MHz

Date: 10.OCT.2022 22:16:06

Ref 30 dBm * Att 30 dB * RBW 100 kHz * VBW 300 kHz * SWT 5 s Marker 2 [T1] -22.82 dBm 849.00000000 MHz

30 Offset 12 dB

20

10

0

-10

-20

-30

-40

-50

-60

-70

D1 -13 dBm

Marker 1 [T1] -24.11 dBm 849.01000000 MHz

1 RM VIEW

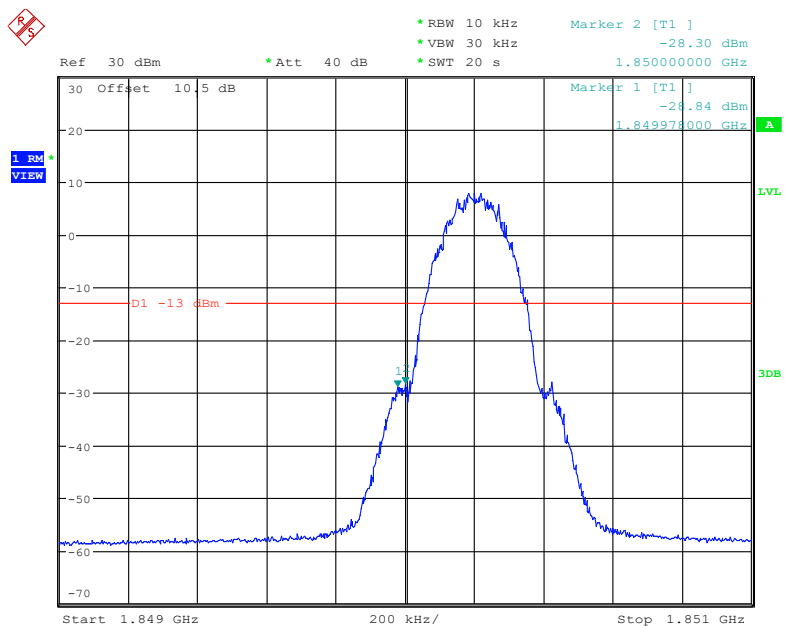
LVL

3DB

Start 844 MHz 1 MHz/ Stop 854 MHz

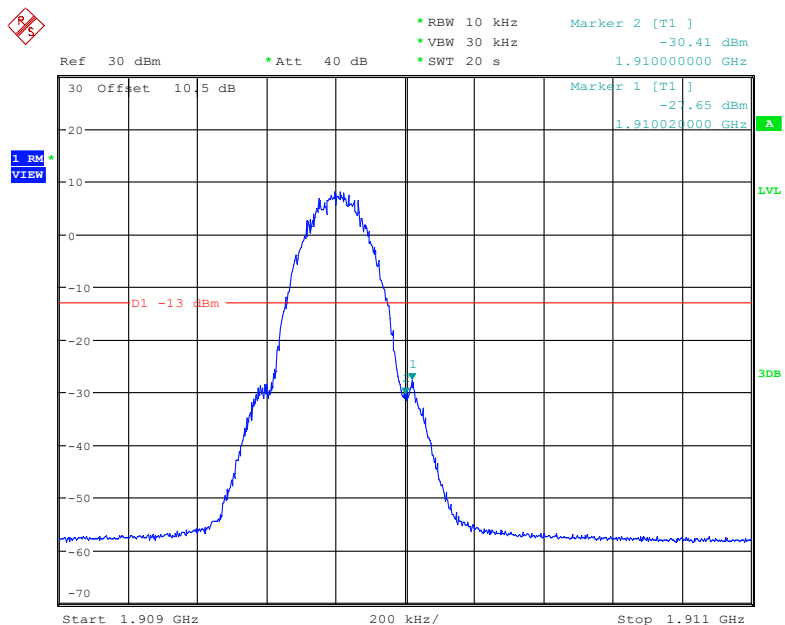
Date: 10.OCT.2022 22:23:19

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

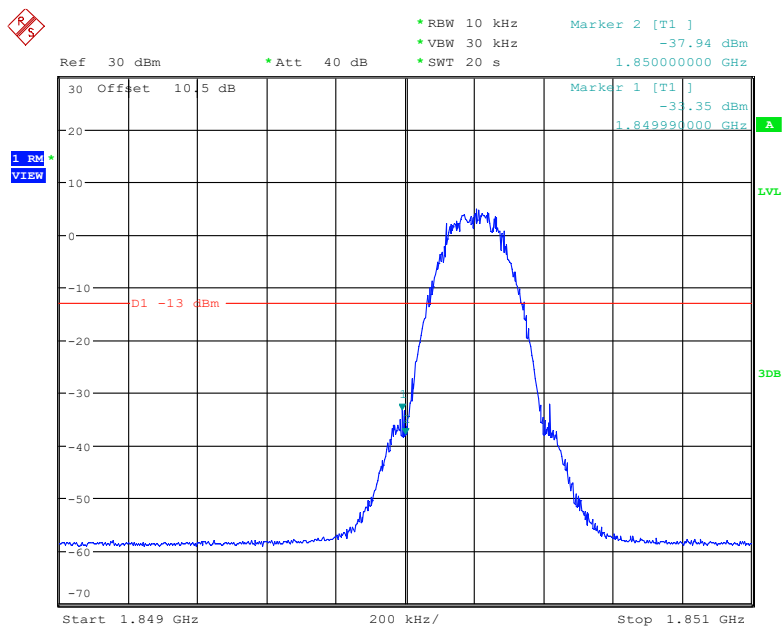


Date: 10.OCT.2022 19:39:51

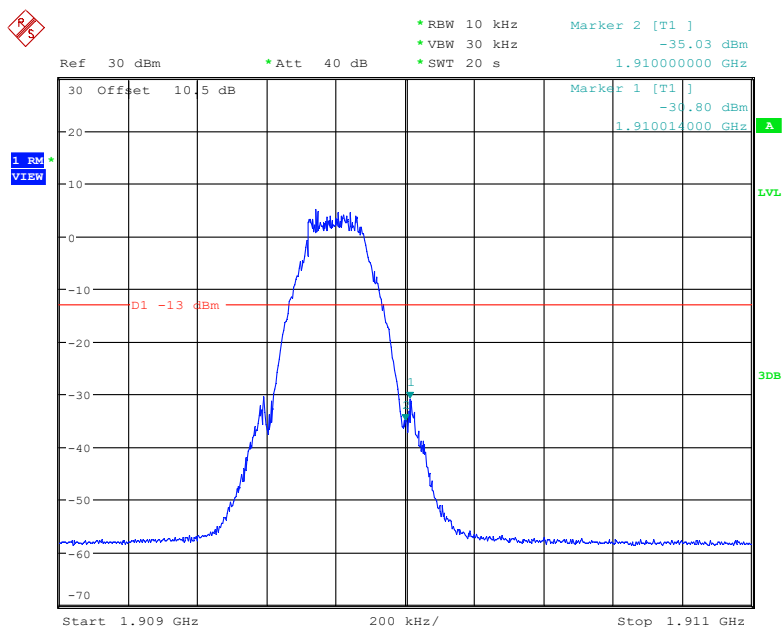
PCS Band, Right Band Edge for GSM (GMSK) Mode



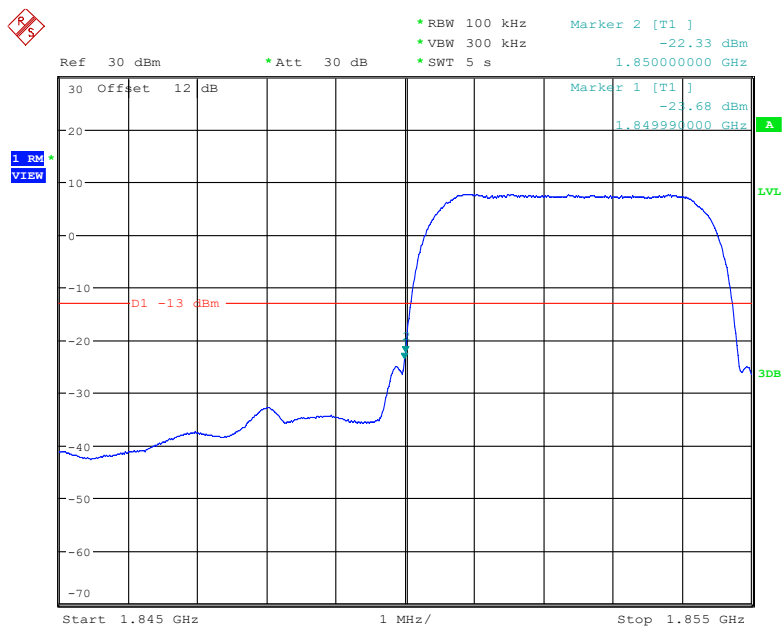
Date: 10.OCT.2022 19:52:21

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

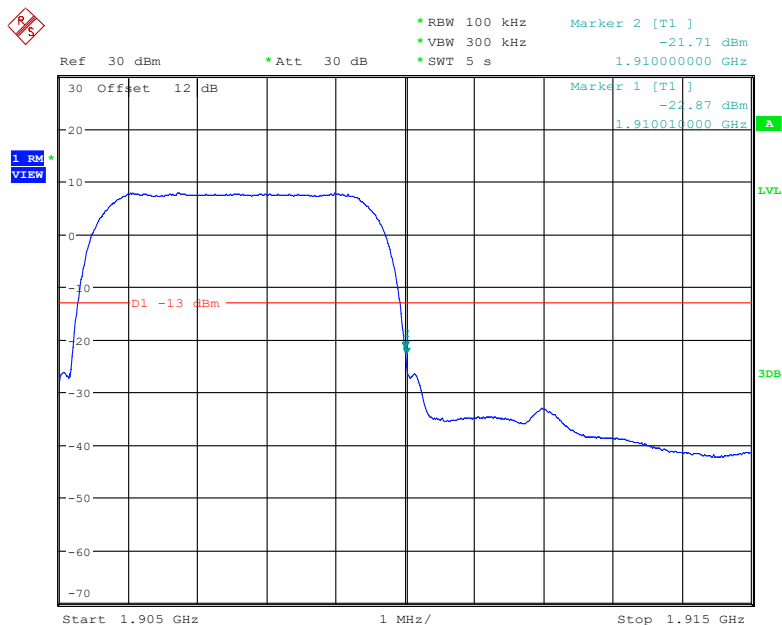
Date: 10.OCT.2022 20:17:00

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

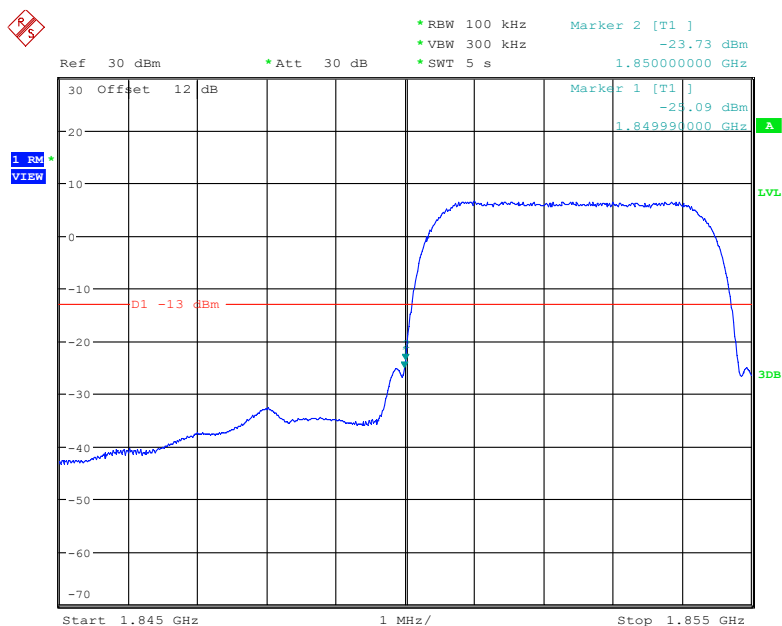
Date: 10.OCT.2022 20:40:38

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

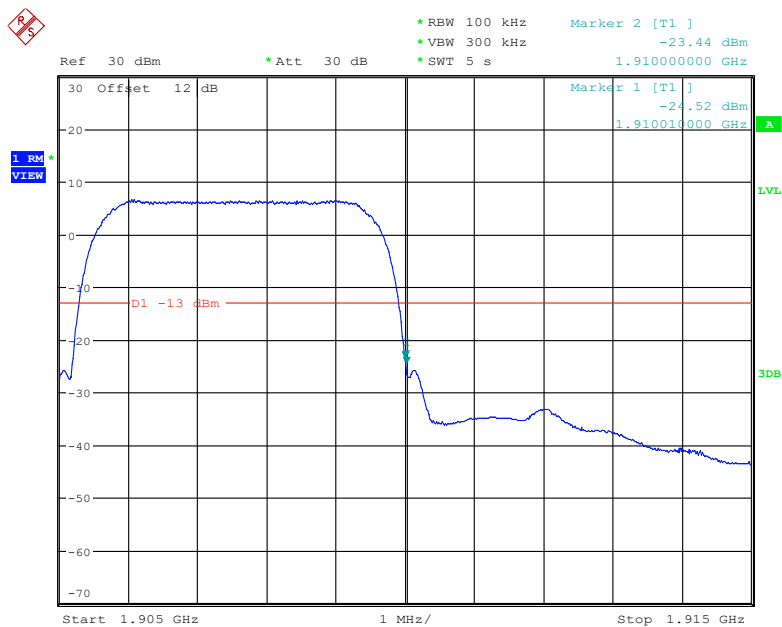
Date: 10.OCT.2022 20:56:51

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

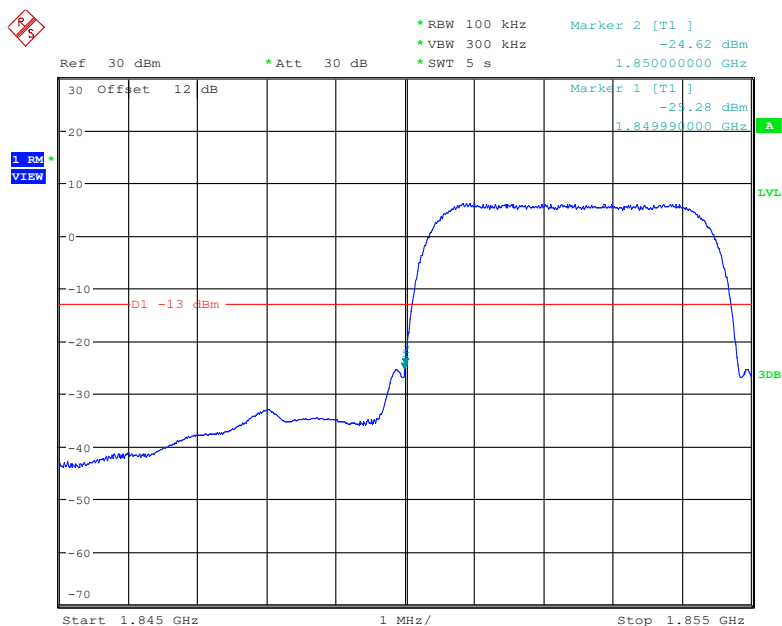
Date: 10.OCT.2022 21:07:05

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

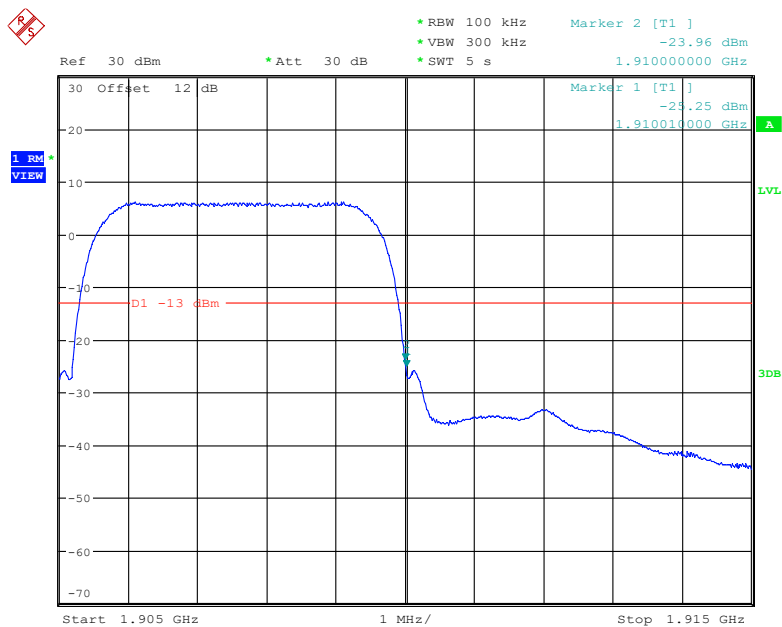
Date: 10.OCT.2022 21:13:41

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

Date: 10.OCT.2022 21:22:46

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

Date: 10.OCT.2022 21:33:28

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

Date: 10.OCT.2022 21:42:06

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.

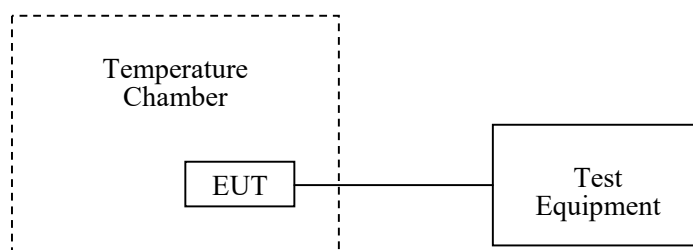
Test Procedure

According to ANSI C63.26-2015 section 5.6

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC 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 DC 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:	27.2~28℃
Relative Humidity:	33~56.2%
ATM Pressure:	101.0 kPa

The testing was performed by Roger Lin on 2022-10-10 and Andy Yu on 2022-10-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

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

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-4.97	-0.0059	2.5
-20		-10.71	-0.0128	2.5
-10		-14.75	-0.0176	2.5
0		-11.64	-0.0139	2.5
10		-14.52	-0.0174	2.5
20		-17.00	-0.0203	2.5
30		-14.35	-0.0172	2.5
40		-7.47	-0.0089	2.5
50		-13.97	-0.0167	2.5
20	L.V.	-13.21	-0.0158	2.5
	H.V.	-12.72	-0.0152	2.5

EDGE Mode

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

WCDMA Mode

Middle Channel, $f_0=836.4\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-12	-0.0143	2.5
-20		4	0.0048	2.5
-10		5	0.0060	2.5
0		-6	-0.0072	2.5
10		-5	-0.0060	2.5
20		-6	-0.0072	2.5
30		5	0.0060	2.5
40		-6	-0.0072	2.5
50		-6	-0.0072	2.5
20	L.V.	6	0.0072	2.5
	H.V.	-7	-0.0084	2.5

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

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.1039	1909.9098	1850	1910
-20		1850.0663	1909.9196	1850	1910
-10		1850.1044	1909.8848	1850	1910
0		1850.0816	1909.8958	1850	1910
10		1850.0865	1909.9084	1850	1910
20		1850.1089	1909.9299	1850	1910
30		1850.0634	1909.9106	1850	1910
40		1850.1333	1909.9082	1850	1910
50		1850.0703	1909.9079	1850	1910
20	L.V.	1850.0859	1909.9123	1850	1910
	H.V.	1850.1044	1909.8946	1850	1910

EDGE Mode

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0917	1909.9292	1850	1910
-20		1850.1191	1909.9236	1850	1910
-10		1850.0852	1909.8953	1850	1910
0		1850.1151	1909.8893	1850	1910
10		1850.1259	1909.8986	1850	1910
20		1850.0889	1909.8673	1850	1910
30		1850.1018	1909.9444	1850	1910
40		1850.0821	1909.9034	1850	1910
50		1850.1089	1909.9063	1850	1910
20	L.V.	1850.1135	1909.8930	1850	1910
	H.V.	1850.0986	1909.9165	1850	1910

WCDMA Mode

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0844	1909.9030	1850	1910
-20		1850.0942	1909.9153	1850	1910
-10		1850.0821	1909.9093	1850	1910
0		1850.0952	1909.8969	1850	1910
10		1850.1092	1909.9215	1850	1910
20		1850.0971	1909.9204	1850	1910
30		1850.1080	1909.9059	1850	1910
40		1850.0819	1909.8884	1850	1910
50		1850.0884	1909.9316	1850	1910
20	L.V.	1850.0977	1909.8959	1850	1910
	H.V.	1850.0824	1909.9173	1850	1910

LTE:
QPSK:
Band 2:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0739	1909.9202	1850	1910
-20		1850.1051	1909.9004	1850	1910
-10		1850.1111	1909.8959	1850	1910
0		1850.1014	1909.9134	1850	1910
10		1850.0759	1909.9112	1850	1910
20		1850.0882	1909.8854	1850	1910
30		1850.0925	1909.8651	1850	1910
40		1850.0929	1909.8779	1850	1910
50		1850.1125	1909.9375	1850	1910
20	L.V.	1850.1390	1909.9268	1850	1910
	H.V.	1850.0898	1909.9034	1850	1910

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.1166	1754.8738	1710	1755
-20		1710.1158	1754.8736	1710	1755
-10		1710.1152	1754.8737	1710	1755
0		1710.1154	1754.8738	1710	1755
10		1710.1147	1754.8757	1710	1755
20		1710.1142	1754.8755	1710	1755
30		1710.1139	1754.8754	1710	1755
40		1710.1130	1754.8756	1710	1755
50		1710.1129	1754.8749	1710	1755
20	L.V.	1710.1128	1754.8748	1710	1755
	H.V.	1710.1024	1754.8742	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-4.08	-0.0049	2.5
-20		-5.11	-0.0061	2.5
-10		6.32	0.0076	2.5
0		7.24	0.0087	2.5
10		9.72	0.0116	2.5
20		-7.72	-0.0092	2.5
30		9.22	0.0110	2.5
40		-6.99	-0.0084	2.5
50		-8.43	-0.0101	2.5
20	L.V.	-8.34	-0.0100	2.5
	H.V.	-7.36	-0.0088	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2500.2796	2569.8862	2500	2570
-20		2500.2792	2569.8842	2500	2570
-10		2500.2788	2569.8856	2500	2570
0		2500.2786	2569.8834	2500	2570
10		2500.2787	2569.8858	2500	2570
20		2500.2779	2569.8833	2500	2570
30		2500.2757	2569.8849	2500	2570
40		2500.2756	2569.8838	2500	2570
50		2500.2762	2569.8827	2500	2570
20	L.V.	2500.2728	2569.8826	2500	2570
	H.V.	2500.2731	2569.8854	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.2633	715.7772	699	716
-20		699.2641	715.7728	699	716
-10		699.2623	715.7758	699	716
0		699.2627	715.7732	699	716
10		699.2632	715.7717	699	716
20		699.2621	715.7784	699	716
30		699.2689	715.7623	699	716
40		699.2647	715.7614	699	716
50		699.2632	715.7654	699	716
20	L.V.	699.2672	715.7672	699	716
	H.V.	699.2674	715.7678	699	716

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	704.2795	715.7836	704	716
-20		704.2729	715.7825	704	716
-10		704.2768	715.7825	704	716
0		704.2718	715.7898	704	716
10		704.2726	715.7875	704	716
20		704.2765	715.7894	704	716
30		704.2735	715.7872	704	716
40		704.2732	715.7881	704	716
50		704.2710	715.7847	704	716
20	L.V.	704.2747	715.7826	704	716
	H.V.	704.2735	715.7899	704	716

Band 38:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2570.2678	2619.8726	2570	2620
-20		2570.2655	2619.8714	2570	2620
-10		2570.2646	2619.8731	2570	2620
0		2570.2635	2619.8757	2570	2620
10		2570.2626	2619.8725	2570	2620
20		2570.2633	2619.8721	2570	2620
30		2570.2614	2619.8734	2570	2620
40		2570.2629	2619.8744	2570	2620
50		2570.2622	2619.8724	2570	2620
20	L.V.	2570.2624	2619.8722	2570	2620
	H.V.	2570.2617	2619.8711	2570	2620

Band 40 Lower:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2305.2758	2314.7871	2305	2315
-20		2305.2778	2314.7852	2305	2315
-10		2305.2741	2314.7866	2305	2315
0		2305.2725	2314.7832	2305	2315
10		2305.2727	2314.7856	2305	2315
20		2305.2712	2314.7838	2305	2315
30		2305.2759	2314.7851	2305	2315
40		2305.2757	2314.7837	2305	2315
50		2305.2724	2314.7865	2305	2315
20	L.V.	2305.2731	2314.7841	2305	2315
	H.V.	2305.2717	2314.7812	2305	2315

Band 40 Upper:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2350.2522	2359.7855	2350	2360
-20		2350.2516	2359.7843	2350	2360
-10		2350.2523	2359.7826	2350	2360
0		2350..2514	2359.7832	2350	2360
10		2350.2526	2359.7861	2350	2360
20		2350.2521	2359.7852	2350	2360
30		2350.2539	2359.7848	2350	2360
40		2350.2544	2359.7837	2350	2360
50		2350.2530	2359.7834	2350	2360
20	L.V.	2350.2528	2359.7821	2350	2360
	H.V.	2350.2511	2359.7818	2350	2360

Band 41:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2575.2758	2634.7871	2575	2635
-20		2575.2778	2634.7852	2575	2635
-10		2575.2765	2634.7866	2575	2635
0		2575.2725	2634.7852	2575	2635
10		2575.2727	2634.7847	2575	2635
20		2575.2728	2634.7838	2575	2635
30		2575.2759	2634.7851	2575	2635
40		2575.2757	2634.7837	2575	2635
50		2575.2739	2634.7865	2575	2635
20	L.V.	2575.2722	2634.7832	2575	2635
	H.V.	2575.2724	2634.7812	2575	2635

Note: the applicant declared the operating range is 2575-2635MHz.

16QAM:**Band 2:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0927	1909.9071	1850	1910
-20		1850.1188	1909.9222	1850	1910
-10		1850.1046	1909.9304	1850	1910
0		1850.0776	1909.9040	1850	1910
10		1850.0769	1909.9144	1850	1910
20		1850.0849	1909.8975	1850	1910
30		1850.1098	1909.9088	1850	1910
40		1850.0883	1909.9152	1850	1910
50		1850.0626	1909.8948	1850	1910
20	L.V.	1850.0990	1909.8847	1850	1910
	H.V.	1850.0695	1909.8998	1850	1910

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.2966	1754.7672	1710	1755
-20		1710.2958	1754.7562	1710	1755
-10		1710.2751	1754.7672	1710	1755
0		1710.2652	1754.7452	1710	1755
10		1710.2633	1754.7435	1710	1755
20		1710.2643	1754.7626	1710	1755
30		1710.2572	1754.7625	1710	1755
40		1710.2658	1754.7652	1710	1755
50		1710.2636	1754.7752	1710	1755
20	L.V.	1710.2621	1754.7536	1710	1755
	H.V.	1710.2715	1754.7524	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-4.86	-0.0058	2.5
-20		8.31	0.0099	2.5
-10		5.30	0.0063	2.5
0		9.41	0.0112	2.5
10		-7.45	-0.0089	2.5
20		9.54	0.0114	2.5
30		6.52	0.0078	2.5
40		-9.16	-0.011	2.5
50		-5.19	-0.0062	2.5
20	L.V.	-6.04	-0.0072	2.5
	H.V.	7.84	0.0094	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2500.2456	2569.8376	2500	2570
-20		2500.2428	2569.8351	2500	2570
-10		2500.2441	2569.8325	2500	2570
0		2500.2455	2569.8337	2500	2570
10		2500.2426	2569.8385	2500	2570
20		2500.2439	2569.8329	2500	2570
30		2500.2451	2569.8336	2500	2570
40		2500.2427	2569.8326	2500	2570
50		2500.2426	2569.8357	2500	2570
20	L.V.	2500.2435	2569.8352	2500	2570
	H.V.	2500.2444	2569.8338	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.3125	715.7364	699	716
-20		699.3133	715.7325	699	716
-10		699.3115	715.7354	699	716
0		699.3119	715.7324	699	716
10		699.3124	715.7309	699	716
20		699.3113	715.7376	699	716
30		699.3181	715.7315	699	716
40		699.3139	715.7306	699	716
50		699.3134	715.7346	699	716
20	L.V.	699.3164	715.7364	699	716
	H.V.	699.3166	715.7376	699	716

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	704.2887	715.8328	704	716
-20		704.2821	715.8317	704	716
-10		704.2862	715.8317	704	716
0		704.2813	715.8394	704	716
10		704.2818	715.8367	704	716
20		704.2857	715.8386	704	716
30		704.2827	715.8364	704	716
40		704.2824	715.8373	704	716
50		704.2824	715.8339	704	716
20	L.V.	704.2839	715.8318	704	716
	H.V.	704.2820	715.8391	704	716

Band 38:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2570.2377	2619.8756	2570	2620
-20		2570.2328	2619.8769	2570	2620
-10		2570.2325	2619.8795	2570	2620
0		2570.2331	2619.8756	2570	2620
10		2570.2336	2619.8792	2570	2620
20		2570.2326	2619.8745	2570	2620
30		2570.2312	2619.8794	2570	2620
40		2570.2375	2619.8713	2570	2620
50		2570.2387	2619.8725	2570	2620
20	L.V.	2570.2378	2619.8785	2570	2620
	H.V.	2570.2334	2619.8743	2570	2620

Band 40 Lower:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2305.2556	2314.7855	2305	2315
-20		2305.2842	2314.7882	2305	2315
-10		2305.2572	2314.7886	2305	2315
0		2305.2566	2314.7875	2305	2315
10		2305.2538	2314.7884	2305	2315
20		2305.2575	2314.7882	2305	2315
30		2305.2588	2314.7887	2305	2315
40		2305.2582	2314.7886	2305	2315
50		2305.2529	2314.7882	2305	2315
20	L.V.	2305.2518	2314.7865	2305	2315
	H.V.	2305.2572	2314.7844	2305	2315

Band 40 Upper:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2350.3511	2359.7839	2350	2360
-20		2350.3523	2359.7814	2350	2360
-10		2350.3522	2359.7864	2350	2360
0		2350.3546	2359.7828	2350	2360
10		2350.3564	2359.7849	2350	2360
20		2350.3588	2359.7827	2350	2360
30		2350.3563	2359.7833	2350	2360
40		2350.3527	2359.7829	2350	2360
50		2350.3534	2359.7811	2350	2360
20	L.V.	2350.3549	2359.7824	2350	2360
	H.V.	2350.3521	2359.7837	2350	2360

Band 41:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2575.3556	2634.7455	2575	2635
-20		2575.3542	2634.7482	2575	2635
-10		2575.3572	2634.7486	2575	2635
0		2575.3566	2634.7475	2575	2635
10		2575.3538	2634.7484	2575	2635
20		2575.3575	2634.7482	2575	2635
30		2575.3588	2634.7487	2575	2635
40		2575.3582	2634.7486	2575	2635
50		2575.3529	2634.7482	2575	2635
20	L.V.	2575.3518	2634.7465	2575	2635
	H.V.	2575.3572	2634.7444	2575	2635

Note: the applicant declared the operating range is 2575-2635MHz.

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