



TESTREPORT

Applicant Name : Bolt Modus Corp
Address : Oficina N.33 Edificio Ofidepositos Central, Calidonia - Distrito
Federal, Panama
ReportNumber: SZNS220126-03751E-RF-00C
FCC ID: 2APW4MAX2U

Test Standard (s)

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

Sample Description

Product Type: MAX 2 ULTRA
Model No.: MAX 2 ULTRA
Multiple Model(s) No.: N/A
Trade Mark: YEZZ
Date Received: 2022/01/26
Date of Test: 2022/02/16~2022/05/18
Report Date: 2022/05/18

Test Result:	Pass*
--------------	-------

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

Prepared and Checked By:

Fan Yang
EMC Engineer

Approved By:

Robert Li
EMC Engineer

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

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk "★". Customer model name, addresses, names, trademarks etc. are not considered data.

This report cannot be reproduced except in full, without prior written approval of the Company. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

Shenzhen Accurate Technology Co., Ltd.

1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86 755-26503290

Fax: +86 755-26503396

Web: www.atc-lab.com

Version 2: 2021-11-09

Page 1 of 90

FCC -2G,3G,4G

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
SUPPORT CABLE DESCRIPTION	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
TEST EQUIPMENT LIST	8
FCC §1.1307(B)&§2.1093 - RF EXPOSURE INFORMATION.....	10
FCC§2.1047 - MODULATION CHARACTERISTIC	11
FCC § 2.1046,§ 22.913 (A)&§ 24.232(C); §27.50(C)(D)(H)- RF OUTPUT POWER.....	12
APPLICABLE STANDARD	12
TEST PROCEDURE	12
TEST DATA	12
FCC §2.1049, §22.917, §22.905 & §24.238&§27.53 - OCCUPIED BANDWIDTH	29
APPLICABLE STANDARD	29
TEST PROCEDURE	29
TEST DATA	29
FCC §2.1051, §22.917(A) & §24.238(A)& §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	46
APPLICABLE STANDARD	46
TEST PROCEDURE	46
TEST DATA	46
FCC § 2.1053; § 22.917 (A);§ 24.238 (A); §27.53- SPURIOUS RADIATED EMISSIONS.....	62
APPLICABLE STANDARD	62
TEST PROCEDURE	62
TEST DATA	62
FCC§ 22.917 (A);§ 24.238 (A); §27.53(G)(H)(M) - BAND EDGES.....	72
APPLICABLE STANDARD	72
TEST PROCEDURE	72
TEST DATA	72
FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY	81
APPLICABLE STANDARD	81
TEST PROCEDURE	81
TEST DATA	82

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX)
Modulation Technique	2G: GMSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850/WCDMA Band5: -1dBi PCS1900/WCDMA Band 2/ LTE Band 2: -0.5dBi LTE Band 4: -0.5dBi LTE Band 7: 1dBi LTE Band 12/LTE Band 17: -0.1dBi (provided by the applicant)
Voltage Range	DC3.8V from battery or DC 5V from adapter
Sample serial number	SZNS220126-03751E-RF-S2 (RF Conducted Test) SZNS220126-03751E-RF-S1 (for CE&RE) (Assigned by ATC)
Sample/EUT Status	Good condition
Extreme condition*	LV: Low Voltage 3.4V NV: Normal Voltage 3.8V HV: High Voltage 4.39V(provided by the applicant)
Adapter information	Model: CMAX2U Input: AC 100-240V, 50/60Hz, Output: DC 5.0V, 1.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part24-Subpart E, and Subpart 27 of the Federal Communication Commission's rules.

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

Test Methodology

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

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

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

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

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
PCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B5	4.2	826.4	836.6	846.6
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE 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 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	704.0	707.5	711
LTE B17	5	706.5	710	713.5
	10	709	710	711

Equipment Modifications

No modification was made to the EUT.

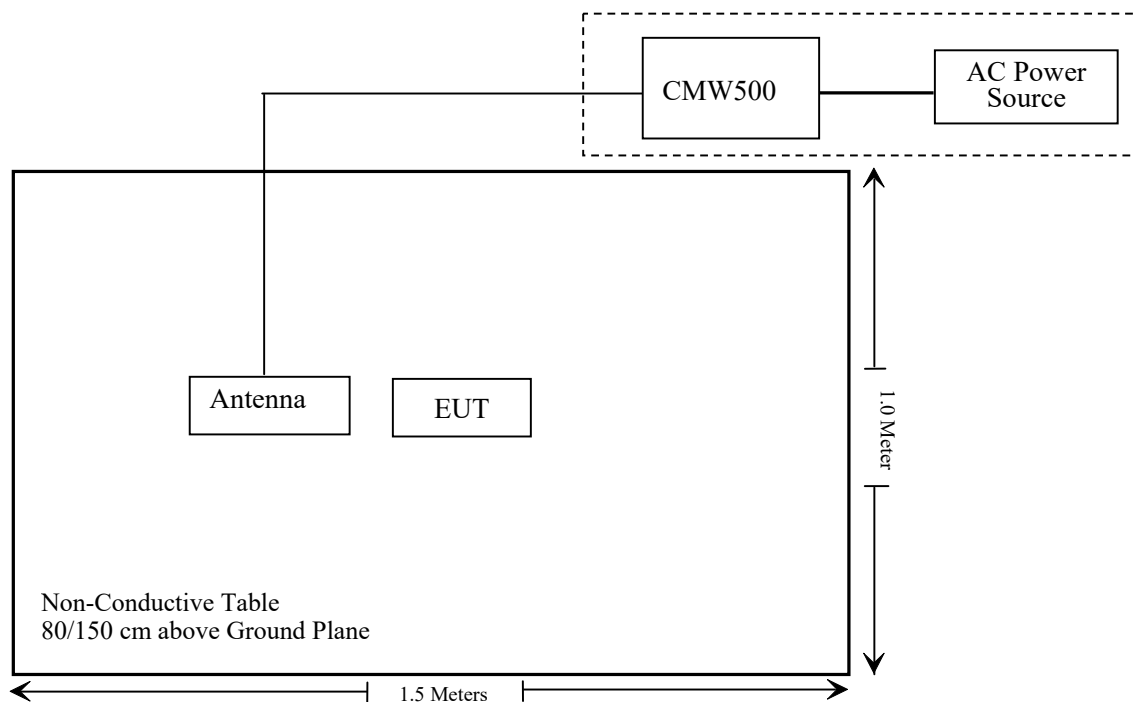
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication tester	CMW500	146520

Support Cable Description

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

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

Note: * Please refer to SAR report number: SZNS220126-03751E-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-1840553 6-J0	15964001002	2021/11/11	2022/11/10
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.15	N600	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.16	N650	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF824-862 MS-1147	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF1850-191 0MS-1148	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF1710-178 5MS-1150	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF2495-257 0MS-1152	201706003	2021/12/14	2022/12/13
Unknown	Band Reject Filter	MSF700-800 MS-1153	201706003	2021/12/14	2022/12/13
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
PASTERNAK	Horn Antenna	PE9852/2F-20	1120	2020/01/05	2023/01/04
PASTERNAK	Horn Antenna	PE9852/2F-20	1120	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	No.16	N200	2021/12/14	2022/12/13
Agilent	Signal Generator	N5183A	MY51040755	2021/12/13	2022/12/12

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

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

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: SZNS220126-03751E-SA.

FCC§2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046,§ 22.913 (a)&§ 24.232(c); §27.50(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(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

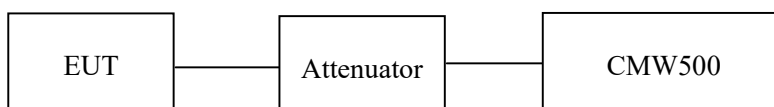
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

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

Test Procedure

Conducted method:

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

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

Temperature:	26.8℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Black Ding from 2022-02-16 to 2022-02-19.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	33.58	29.93	38.45
	190	836.6	33.84	30.19	38.45
	251	848.8	33.81	30.16	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	33.48	32.61	30.43	28.95	29.83	28.96	26.78	25.30	38.45
	190	836.6	33.73	32.92	30.83	29.44	30.08	29.27	27.18	25.79	38.45
	251	848.8	33.71	32.98	30.80	29.45	30.06	29.33	27.15	25.80	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		22.89	23.49	23.33	19.24	19.84	19.68
	HSDPA	1	20.48	20.64	21.18	16.83	16.99	17.53
		2	19.28	19.27	19.12	15.63	15.62	15.47
		3	19.32	19.32	19.07	15.67	15.67	15.42
		4	19.14	18.86	18.96	15.49	15.21	15.31
	HSUPA	1	19.94	20.24	20.01	16.29	16.59	16.36
		2	19.88	19.71	18.89	16.23	16.06	15.24
		3	19.02	19.52	18.95	15.37	15.87	15.30
		4	18.93	19.39	18.77	15.28	15.74	15.12
		5	18.92	19.47	18.86	15.27	15.82	15.21

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

For GSM850 / WCDMA Band5: Antenna Gain = -1.0dBi = -3.15dBd (0dBd=2.15dBi)

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

Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	30.43	29.13	33
	661	1880.0	30.38	29.08	33
	810	1909.8	30.20	28.90	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	30.41	29.61	27.50	26.34	29.11	28.31	26.20	25.04	33
	661	1880.0	30.32	29.58	27.47	26.35	29.02	28.28	26.17	25.05	33
	810	1909.8	30.15	29.45	27.38	26.31	28.85	28.15	26.08	25.01	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		22.58	22.48	22.30	21.28	21.18	21.00
	HSDPA	1	19.89	19.82	19.52	18.59	18.52	18.22
		2	19.69	19.47	19.54	18.39	18.17	18.24
		3	19.51	19.55	19.32	18.21	18.25	18.02
		4	19.68	18.87	18.98	18.38	17.57	17.68
	HSUPA	1	19.48	18.75	18.65	18.18	17.45	17.35
		2	19.33	18.74	18.62	18.03	17.44	17.32
		3	19.12	18.69	18.79	17.82	17.39	17.49
		4	18.93	18.70	18.62	17.63	17.40	17.32
		5	18.97	17.89	18.83	17.67	16.59	17.53

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

For PCS1900 / WCDMA Band2: Antenna Gain = -0.5dBi

Cable Loss=0.8dB*(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	22.67	22.51	22.38	21.37	21.21	21.08
		RB1#3	22.70	22.58	22.46	21.40	21.28	21.16
		RB1#5	22.67	22.52	22.42	21.37	21.22	21.12
		RB3#0	22.76	22.63	22.38	21.46	21.33	21.08
		RB3#3	22.73	22.62	22.43	21.43	21.32	21.13
		RB6#0	21.68	21.51	21.38	20.38	20.21	20.08
	16QAM	RB1#0	21.68	21.66	21.35	20.38	20.36	20.05
		RB1#3	21.73	21.74	21.43	20.43	20.44	20.13
		RB1#5	21.68	21.65	21.37	20.38	20.35	20.07
		RB3#0	21.92	21.58	21.41	20.62	20.28	20.11
		RB3#3	21.95	21.60	21.42	20.65	20.30	20.12
		RB6#0	20.70	20.55	20.28	19.40	19.25	18.98
3.0	QPSK	RB1#0	22.62	22.48	22.35	21.32	21.18	21.05
		RB1#8	22.62	22.51	22.40	21.32	21.21	21.10
		RB1#14	22.58	22.45	22.36	21.28	21.15	21.06
		RB6#0	21.67	21.50	21.33	20.37	20.20	20.03
		RB6#9	21.64	21.48	21.37	20.34	20.18	20.07
		RB15#0	21.67	21.52	21.37	20.37	20.22	20.07
	16QAM	RB1#0	22.18	21.64	21.33	20.88	20.34	20.03
		RB1#8	22.18	21.65	21.34	20.88	20.35	20.04
		RB1#14	22.08	21.61	21.32	20.78	20.31	20.02
		RB6#0	20.72	20.52	20.27	19.42	19.22	18.97
		RB6#9	20.71	20.53	20.27	19.41	19.23	18.97
		RB15#0	20.73	20.49	20.40	19.43	19.19	19.10

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.71	22.54	22.41	21.41	21.24	21.11
		RB1#13	22.68	22.44	22.41	21.38	21.14	21.11
		RB1#24	22.56	22.48	22.37	21.26	21.18	21.07
		RB15#0	21.68	21.45	21.42	20.38	20.15	20.12
		RB15#10	21.63	21.51	21.37	20.33	20.21	20.07
		RB25#0	21.64	21.51	21.36	20.34	20.21	20.06
	16QAM	RB1#0	21.61	21.85	21.47	20.31	20.55	20.17
		RB1#13	21.58	21.76	21.44	20.28	20.46	20.14
		RB1#24	21.48	21.76	21.38	20.18	20.46	20.08
		RB15#0	20.74	20.49	20.44	19.44	19.19	19.14
		RB15#10	20.69	20.51	20.40	19.39	19.21	19.10
		RB25#0	20.70	20.55	20.40	19.40	19.25	19.10
10.0	QPSK	RB1#0	22.42	21.91	21.57	21.12	20.61	20.27
		RB1#25	22.65	22.36	22.11	21.35	21.06	20.81
		RB1#49	22.37	22.43	21.88	21.07	21.13	20.58
		RB25#0	21.65	21.18	20.81	20.35	19.88	19.51
		RB25#25	21.60	21.50	21.27	20.30	20.20	19.97
		RB50#0	21.65	21.40	21.06	20.35	20.10	19.76
	16QAM	RB1#0	21.99	21.01	20.47	20.69	19.71	19.17
		RB1#25	22.15	21.55	21.06	20.85	20.25	19.76
		RB1#49	21.97	21.60	20.94	20.67	20.30	19.64
		RB25#0	20.72	20.31	19.96	19.42	19.01	18.66
		RB25#25	20.68	20.55	20.42	19.38	19.25	19.12
		RB50#0	20.67	20.51	20.14	19.37	19.21	18.84

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.56	21.88	22.08	21.26	20.58	20.78
		RB1#38	22.58	22.24	21.68	21.28	20.94	20.38
		RB1#74	22.19	22.48	22.16	20.89	21.18	20.86
		RB36#0	21.72	21.06	20.69	20.42	19.76	19.39
		RB36#39	21.56	21.55	21.16	20.26	20.25	19.86
		RB75#0	21.68	21.32	20.87	20.38	20.02	19.57
	16QAM	RB1#0	22.14	20.99	21.36	20.84	19.69	20.06
		RB1#38	22.11	21.45	21.08	20.81	20.15	19.78
		RB1#74	21.82	21.61	21.55	20.52	20.31	20.25
		RB36#0	20.71	20.16	19.76	19.41	18.86	18.46
		RB36#39	20.65	20.56	20.18	19.35	19.26	18.88
		RB75#0	20.67	20.46	19.95	19.37	19.16	18.65
20.0	QPSK	RB1#0	22.67	21.95	22.33	21.37	20.65	21.03
		RB1#50	22.45	22.24	21.51	21.15	20.94	20.21
		RB1#99	21.93	22.52	22.15	20.63	21.22	20.85
		RB50#0	21.67	20.94	20.97	20.37	19.64	19.67
		RB50#50	21.20	21.49	20.97	19.90	20.19	19.67
		RB100#0	21.50	21.28	20.94	20.20	19.98	19.64
	16QAM	RB1#0	21.94	21.11	21.85	20.64	19.81	20.55
		RB1#50	21.84	21.50	21.10	20.54	20.20	19.80
		RB1#99	21.24	21.66	21.81	19.94	20.36	20.51
		RB50#0	20.66	20.05	20.05	19.36	18.75	18.75
		RB50#50	20.35	20.51	20.04	19.05	19.21	18.74
		RB100#0	20.63	20.40	20.09	19.33	19.10	18.79

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

For Band2: Antenna Gain = -0.5dBi

Cable Loss=0.8dB*(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	23.01	22.99	23.08	21.71	21.69	21.78
		RB1#3	23.05	23.06	23.18	21.75	21.76	21.88
		RB1#5	23.01	23.03	23.12	21.71	21.73	21.82
		RB3#0	23.10	23.09	23.17	21.80	21.79	21.87
		RB3#3	23.07	23.08	23.19	21.77	21.78	21.89
		RB6#0	22.03	22.03	22.09	20.73	20.73	20.79
	16QAM	RB1#0	22.06	22.12	22.11	20.76	20.82	20.81
		RB1#3	22.08	22.20	22.21	20.78	20.90	20.91
		RB1#5	22.05	22.15	22.15	20.75	20.85	20.85
		RB3#0	22.27	22.05	22.22	20.97	20.75	20.92
		RB3#3	22.32	22.05	22.23	21.02	20.75	20.93
		RB6#0	21.06	21.08	21.06	19.76	19.78	19.76
3.0	QPSK	RB1#0	23.00	22.99	23.06	21.70	21.69	21.76
		RB1#8	23.00	23.05	23.11	21.70	21.75	21.81
		RB1#14	22.98	23.00	23.07	21.68	21.70	21.77
		RB6#0	22.04	22.02	22.07	20.74	20.72	20.77
		RB6#9	22.01	22.02	22.11	20.71	20.72	20.81
		RB15#0	22.08	22.05	22.11	20.78	20.75	20.81
	16QAM	RB1#0	22.60	22.13	22.10	21.30	20.83	20.80
		RB1#8	22.60	22.17	22.12	21.30	20.87	20.82
		RB1#14	22.54	22.12	22.12	21.24	20.82	20.82
		RB6#0	21.11	21.04	21.02	19.81	19.74	19.72
		RB6#9	21.09	21.08	21.05	19.79	19.78	19.75
		RB15#0	21.16	21.02	21.16	19.86	19.72	19.86

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	23.09	23.07	23.11	21.79	21.77	21.81
		RB1#13	23.09	23.08	23.12	21.79	21.78	21.82
		RB1#24	23.02	23.05	23.10	21.72	21.75	21.80
		RB15#0	22.11	22.08	22.16	20.81	20.78	20.86
		RB15#10	22.09	22.06	22.14	20.79	20.76	20.84
		RB25#0	22.08	22.04	22.12	20.78	20.74	20.82
	16QAM	RB1#0	22.00	22.37	22.20	20.70	21.07	20.90
		RB1#13	22.01	22.39	22.20	20.71	21.09	20.90
		RB1#24	21.95	22.34	22.16	20.65	21.04	20.86
		RB15#0	21.16	21.07	21.19	19.86	19.77	19.89
		RB15#10	21.12	21.04	21.15	19.82	19.74	19.85
		RB25#0	21.13	21.05	21.15	19.83	19.75	19.85
10.0	QPSK	RB1#0	23.08	23.06	23.12	21.78	21.76	21.82
		RB1#25	23.08	23.08	23.13	21.78	21.78	21.83
		RB1#49	23.05	23.05	23.13	21.75	21.75	21.83
		RB25#0	22.06	22.05	22.12	20.76	20.75	20.82
		RB25#25	22.08	22.08	22.14	20.78	20.78	20.84
		RB50#0	22.09	22.06	22.14	20.79	20.76	20.84
	16QAM	RB1#0	22.67	22.22	22.17	21.37	20.92	20.87
		RB1#25	22.66	22.21	22.15	21.36	20.91	20.85
		RB1#49	22.62	22.23	22.14	21.32	20.93	20.84
		RB25#0	21.13	21.08	21.21	19.83	19.78	19.91
		RB25#25	21.14	21.11	21.23	19.84	19.81	19.93
		RB50#0	21.09	21.07	21.17	19.79	19.77	19.87

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	23.04	23.06	23.11	21.74	21.76	21.81
		RB1#38	23.05	23.06	23.14	21.75	21.76	21.84
		RB1#74	23.07	23.11	23.19	21.77	21.81	21.89
		RB36#0	22.12	22.08	22.16	20.82	20.78	20.86
		RB36#39	22.14	22.13	22.20	20.84	20.83	20.90
		RB75#0	22.13	22.12	22.20	20.83	20.82	20.90
	16QAM	RB1#0	22.64	22.19	22.52	21.34	20.89	21.22
		RB1#38	22.62	22.21	22.55	21.32	20.91	21.25
		RB1#74	22.64	22.26	22.54	21.34	20.96	21.24
		RB36#0	21.12	21.09	21.16	19.82	19.79	19.86
		RB36#39	21.14	21.14	21.20	19.84	19.84	19.90
		RB75#0	21.14	21.11	21.18	19.84	19.81	19.88
20.0	QPSK	RB1#0	23.09	23.14	23.05	21.79	21.84	21.75
		RB1#50	23.11	23.13	23.14	21.81	21.83	21.84
		RB1#99	23.12	23.18	23.15	21.82	21.88	21.85
		RB50#0	22.09	22.07	22.13	20.79	20.77	20.83
		RB50#50	22.10	22.12	22.20	20.80	20.82	20.90
		RB100#0	22.07	22.10	22.16	20.77	20.80	20.86
	16QAM	RB1#0	22.41	22.33	22.65	21.11	21.03	21.35
		RB1#50	22.40	22.30	22.70	21.10	21.00	21.40
		RB1#99	22.42	22.39	22.72	21.12	21.09	21.42
		RB50#0	21.09	21.09	21.17	19.79	19.79	19.87
		RB50#50	21.10	21.15	21.21	19.80	19.85	19.91
		RB100#0	21.10	21.12	21.16	19.80	19.82	19.86

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

For Band4: Antenna Gain = -0.5dBi

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

Limit: EIRP≤30dBm

LTE Band 7

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5	QPSK	RB1#0	22.01	21.92	22.16	22.21	22.12	22.36
		RB1#13	21.99	21.98	22.17	22.19	22.18	22.37
		RB1#24	21.91	21.93	22.17	22.11	22.13	22.37
		RB15#0	21.05	20.96	21.20	21.25	21.16	21.40
		RB15#10	21.02	20.95	21.22	21.22	21.15	21.42
		RB25#0	20.98	20.93	21.15	21.18	21.13	21.35
	16QAM	RB1#0	20.88	21.25	21.17	21.08	21.45	21.37
		RB1#13	20.87	21.28	21.21	21.07	21.48	21.41
		RB1#24	20.83	21.23	21.20	21.03	21.43	21.40
		RB15#0	20.10	19.96	20.20	20.30	20.16	20.40
		RB15#10	20.06	19.91	20.22	20.26	20.11	20.42
		RB25#0	20.05	19.94	20.16	20.25	20.14	20.36
10	QPSK	RB1#0	22.00	21.96	22.13	22.20	22.16	22.33
		RB1#25	21.96	21.95	22.19	22.16	22.15	22.39
		RB1#49	21.89	21.97	22.22	22.09	22.17	22.42
		RB25#0	21.01	20.94	21.10	21.21	21.14	21.30
		RB25#25	20.94	20.98	21.18	21.14	21.18	21.38
		RB50#0	20.99	20.96	21.16	21.19	21.16	21.36
	16QAM	RB1#0	21.55	21.11	21.13	21.75	21.31	21.33
		RB1#25	21.51	21.10	21.15	21.71	21.30	21.35
		RB1#49	21.49	21.14	21.19	21.69	21.34	21.39
		RB25#0	20.08	19.98	20.18	20.28	20.18	20.38
		RB25#25	20.03	20.01	20.24	20.23	20.21	20.44
		RB50#0	20.02	19.98	20.19	20.22	20.18	20.39

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15	QPSK	RB1#0	22.03	21.99	22.12	22.23	22.19	22.32
		RB1#38	21.94	21.96	22.12	22.14	22.16	22.32
		RB1#74	21.94	21.97	22.23	22.14	22.17	22.43
		RB36#0	21.08	21.04	21.20	21.28	21.24	21.40
		RB36#39	21.04	21.04	21.26	21.24	21.24	21.46
		RB75#0	21.06	21.03	21.24	21.26	21.23	21.44
	16QAM	RB1#0	21.54	21.15	21.45	21.74	21.35	21.65
		RB1#38	21.52	21.12	21.42	21.72	21.32	21.62
		RB1#74	21.50	21.15	21.54	21.70	21.35	21.74
		RB36#0	20.06	20.03	20.13	20.26	20.23	20.33
		RB36#39	20.04	20.04	20.19	20.24	20.24	20.39
		RB75#0	20.03	20.02	20.16	20.23	20.22	20.36
20	QPSK	RB1#0	22.09	22.03	22.06	22.29	22.23	22.26
		RB1#50	21.94	22.02	22.08	22.14	22.22	22.28
		RB1#99	21.94	22.06	22.21	22.14	22.26	22.41
		RB50#0	21.01	20.99	21.11	21.21	21.19	21.31
		RB50#50	20.97	21.03	21.13	21.17	21.23	21.33
		RB100#0	20.96	20.98	21.10	21.16	21.18	21.30
	16QAM	RB1#0	21.39	21.20	21.64	21.59	21.40	21.84
		RB1#50	21.28	21.20	21.57	21.48	21.40	21.77
		RB1#99	21.26	21.27	21.72	21.46	21.47	21.92
		RB50#0	20.01	19.99	20.10	20.21	20.19	20.30
		RB50#50	19.98	20.04	20.12	20.18	20.24	20.32
		RB100#0	20.00	20.00	20.09	20.20	20.20	20.29

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

Antenna Gain = 1.0dBi

Cable Loss=0.8dB*(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	23.12	23.10	23.04	20.37	20.35	20.29
		RB1#3	23.13	23.10	23.15	20.38	20.35	20.40
		RB1#5	23.09	23.10	23.13	20.34	20.35	20.38
		RB3#0	23.20	23.16	23.14	20.45	20.41	20.39
		RB3#3	23.17	23.15	23.17	20.42	20.40	20.42
		RB6#0	22.11	22.05	22.03	19.36	19.30	19.28
	16QAM	RB1#0	22.12	22.20	22.04	19.37	19.45	19.29
		RB1#3	22.16	22.23	22.17	19.41	19.48	19.42
		RB1#5	22.10	22.19	22.15	19.35	19.44	19.40
		RB3#0	22.34	22.11	22.18	19.59	19.36	19.43
		RB3#3	22.37	22.12	22.21	19.62	19.37	19.46
		RB6#0	21.14	21.09	20.99	18.39	18.34	18.24
3.0	QPSK	RB1#0	23.07	23.09	23.01	20.32	20.34	20.26
		RB1#8	23.11	23.07	23.04	20.36	20.32	20.29
		RB1#14	23.10	23.05	23.06	20.35	20.30	20.31
		RB6#0	22.11	22.06	21.99	19.36	19.31	19.24
		RB6#9	22.11	22.03	22.05	19.36	19.28	19.30
		RB15#0	22.14	22.06	22.05	19.39	19.31	19.30
	16QAM	RB1#0	22.61	22.20	22.01	19.86	19.45	19.26
		RB1#8	22.62	22.18	22.03	19.87	19.43	19.28
		RB1#14	22.60	22.16	22.09	19.85	19.41	19.34
		RB6#0	21.16	21.10	20.96	18.41	18.35	18.21
		RB6#9	21.17	21.09	21.01	18.42	18.34	18.26
		RB15#0	21.21	21.07	21.12	18.46	18.32	18.37

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	23.18	23.19	23.05	20.43	20.44	20.30
		RB1#13	23.18	23.11	23.06	20.43	20.36	20.31
		RB1#24	23.13	23.05	23.12	20.38	20.30	20.37
		RB15#0	22.14	22.09	22.09	19.39	19.34	19.34
		RB15#10	22.13	22.05	22.09	19.38	19.30	19.34
		RB25#0	22.12	22.08	22.04	19.37	19.33	19.29
	16QAM	RB1#0	22.05	22.47	22.08	19.30	19.72	19.33
		RB1#13	22.05	22.38	22.11	19.30	19.63	19.36
		RB1#24	22.04	22.34	22.17	19.29	19.59	19.42
		RB15#0	21.19	21.09	21.11	18.44	18.34	18.36
		RB15#10	21.18	21.06	21.12	18.43	18.31	18.37
		RB25#0	21.17	21.12	21.09	18.42	18.37	18.34
10.0	QPSK	RB1#0	23.15	23.18	23.15	20.40	20.43	20.40
		RB1#25	23.14	23.12	23.05	20.39	20.37	20.30
		RB1#49	23.07	23.04	23.15	20.32	20.29	20.40
		RB25#0	22.10	22.13	22.08	19.35	19.38	19.33
		RB25#25	22.13	22.08	22.07	19.38	19.33	19.32
		RB50#0	22.12	22.09	22.10	19.37	19.34	19.35
	16QAM	RB1#0	22.65	22.32	22.16	19.90	19.57	19.41
		RB1#25	22.70	22.24	22.03	19.95	19.49	19.28
		RB1#49	22.63	22.18	22.13	19.88	19.43	19.38
		RB25#0	21.19	21.16	21.17	18.44	18.41	18.42
		RB25#25	21.19	21.10	21.19	18.44	18.35	18.44
		RB50#0	21.15	21.12	21.13	18.40	18.37	18.38

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)

For Band12: Antenna Gain = -0.1dBi = -2.25dBd (0dBd=2.15dBi)

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

Limit: ERP≤34.77dBm

LTE Band 17

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.22	23.16	23.08	20.47	20.41	20.33
		RB1#13	23.19	23.12	23.11	20.44	20.37	20.36
		RB1#24	23.09	23.06	23.12	20.34	20.31	20.37
		RB15#0	22.20	22.10	22.11	19.45	19.35	19.36
		RB15#10	22.12	22.06	22.10	19.37	19.31	19.35
		RB25#0	22.13	22.08	22.07	19.38	19.33	19.32
	16QAM	RB1#0	22.10	22.43	22.10	19.35	19.68	19.35
		RB1#13	22.08	22.40	22.16	19.33	19.65	19.41
		RB1#24	22.00	22.31	22.18	19.25	19.56	19.43
		RB15#0	21.25	21.11	21.15	18.50	18.36	18.40
		RB15#10	21.18	21.09	21.14	18.43	18.34	18.39
		RB25#0	21.18	21.09	21.12	18.43	18.34	18.37
10.0	QPSK	RB1#0	23.21	23.19	23.23	20.46	20.44	20.48
		RB1#25	23.13	23.12	23.11	20.38	20.37	20.36
		RB1#49	23.07	23.05	23.15	20.32	20.30	20.40
		RB25#0	22.16	22.14	22.13	19.41	19.39	19.38
		RB25#25	22.10	22.11	22.11	19.35	19.36	19.36
		RB50#0	22.15	22.13	22.14	19.40	19.38	19.39
	16QAM	RB1#0	22.77	22.36	22.23	20.02	19.61	19.48
		RB1#25	22.66	22.24	22.09	19.91	19.49	19.34
		RB1#49	22.61	22.26	22.14	19.86	19.51	19.39
		RB25#0	21.23	21.19	21.23	18.48	18.44	18.48
		RB25#25	21.18	21.12	21.21	18.43	18.37	18.46
		RB50#0	21.16	21.14	21.17	18.41	18.39	18.42

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)

For Band17: Antenna Gain = -0.1dBi = -2.25dBd (0dBd=2.15dBi)

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

Limit: ERP≤34.77dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.13	13
	Middle	3.38	13
	High	3.22	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.17	13
	Middle	3.32	13
	High	3.29	13
HSDPA (16QAM)	Low	4.27	13
	Middle	3.85	13
	High	3.77	13
HSUPA (BPSK)	Low	3.49	13
	Middle	3.67	13
	High	3.63	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.35	13
	Middle	3.27	13
	High	3.75	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.25	13
	Middle	3.29	13
	High	2.97	13
HSDPA (16QAM)	Low	3.68	13
	Middle	4.12	13
	High	4.37	13
HSUPA (BPSK)	Low	3.65	13
	Middle	3.78	13
	High	3.67	13

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.46	5.19	4.71	13	Pass
QPSK (100RB Size)	5.45	5.61	5.54	13	Pass
16QAM (1RB Size)	5.58	6.15	5.87	13	Pass
16QAM (100RB Size)	6.22	6.51	6.41	13	Pass

LTE Band 4 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.62	4.62	4.52	13	Pass
QPSK (100RB Size)	5.54	5.67	5.54	13	Pass
16QAM (1RB Size)	5.42	5.71	5.77	13	Pass
16QAM (100RB Size)	6.41	6.41	6.41	13	Pass

LTE Band 7 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.85	4.04	3.78	13	Pass
QPSK (100RB Size)	5.51	5.54	5.45	13	Pass
16QAM (1RB Size)	5.06	4.97	4.84	13	Pass
16QAM (100RB Size)	6.47	6.41	6.31	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.39	4.81	4.58	13	Pass
QPSK (50RB Size)	5.77	5.71	5.51	13	Pass
16QAM (1RB Size)	5.45	5.77	5.80	13	Pass
16QAM (50RB Size)	6.60	6.51	6.44	13	Pass

LTE Band 17 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.87	4.71	4.65	13	Pass
QPSK (50RB Size)	5.54	5.51	5.61	13	Pass
16QAM (1RB Size)	5.83	5.83	5.90	13	Pass
16QAM (50RB Size)	6.47	6.38	6.44	13	Pass

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

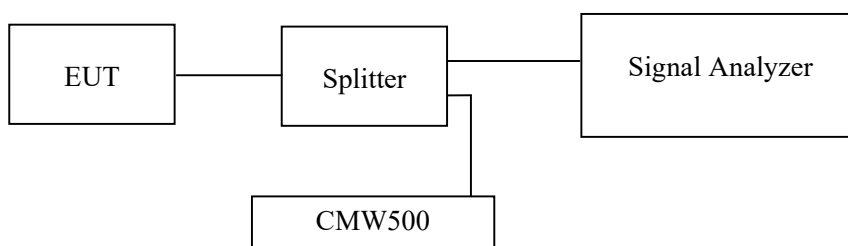
Applicable Standard

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

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	26.8℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Black Ding from 2022-02-16 to 2022-03-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Cellular Band (Part 22H)

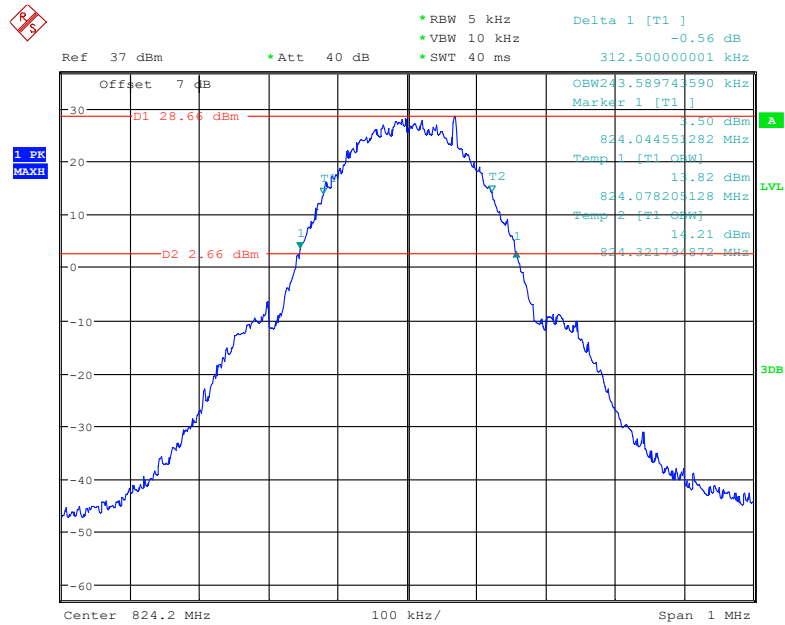
Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	128	824.2	243.59	312.50
	190	836.6	245.19	310.90
	251	848.8	245.19	314.10

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.21	4.86
	836.6	4.21	4.86
	846.6	4.21	4.89
HSDPA	826.4	4.21	4.87
	836.6	4.21	4.86
	846.6	4.23	4.87
HSUPA	826.4	4.21	4.86
	836.6	4.23	4.84
	846.6	4.21	4.87

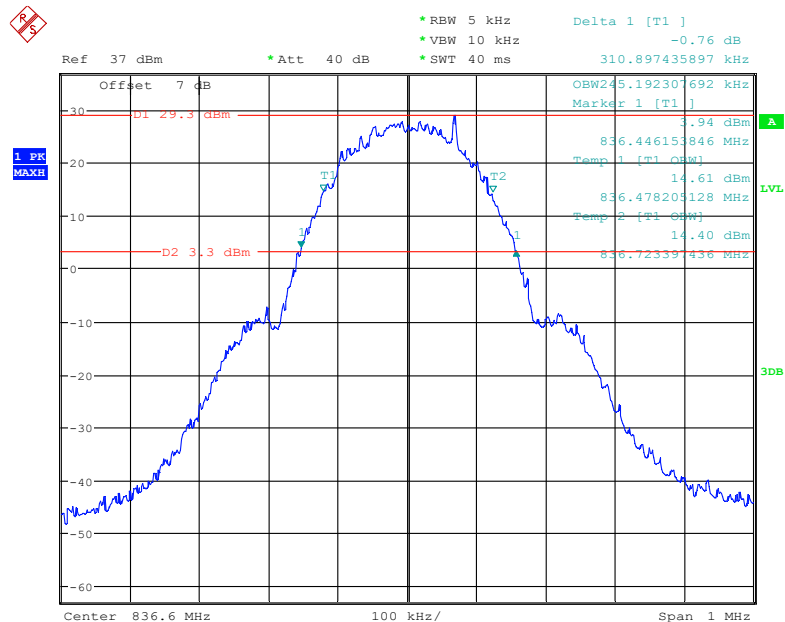
PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	246.80	310.90
	661	1880.0	246.79	314.10
	810	1909.8	243.59	315.71

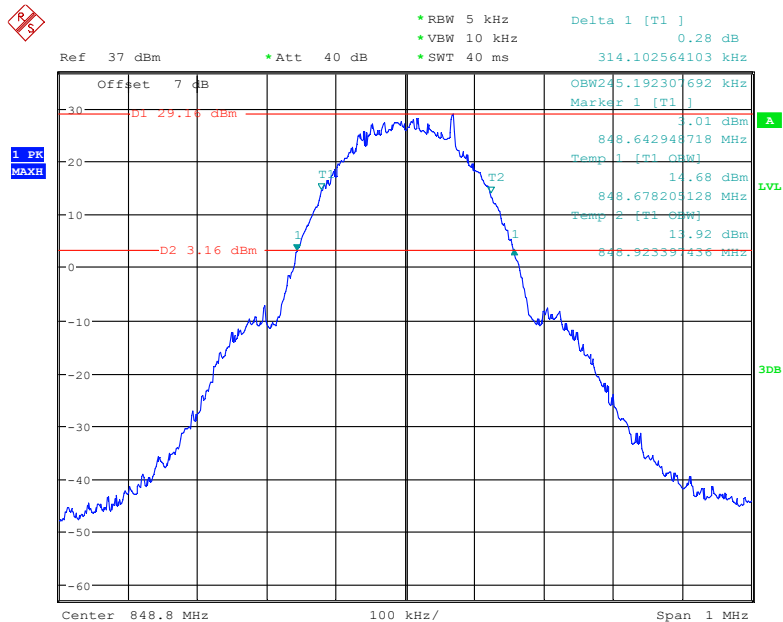
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.21	4.87
	1880.0	4.21	4.89
	1907.6	4.20	4.87
HSDPA	1852.4	4.20	4.87
	1880.0	4.21	4.86
	1907.6	4.21	4.89
HSUPA	1852.4	4.21	4.87
	1880.0	4.21	4.87
	1907.6	4.20	4.87

Cellular Band (Part 22H)**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**

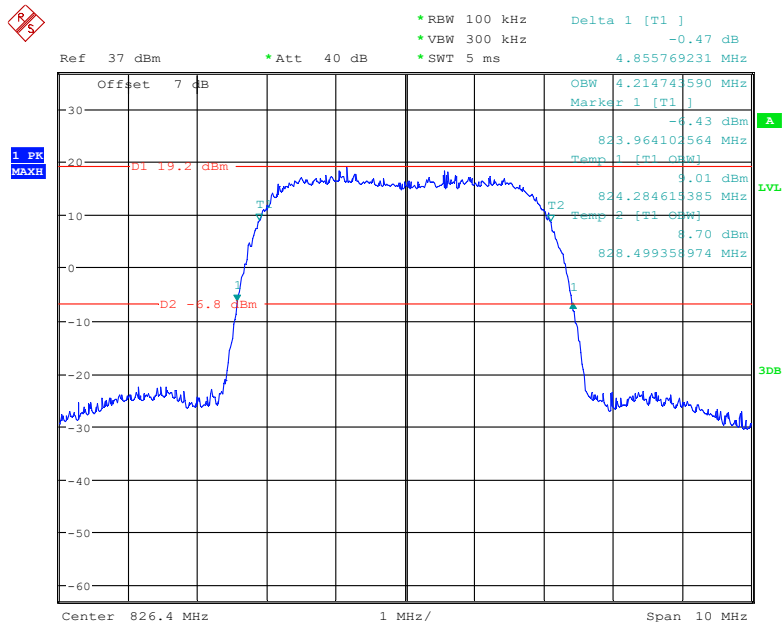
Date: 16.FEB.2022 11:32:58

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

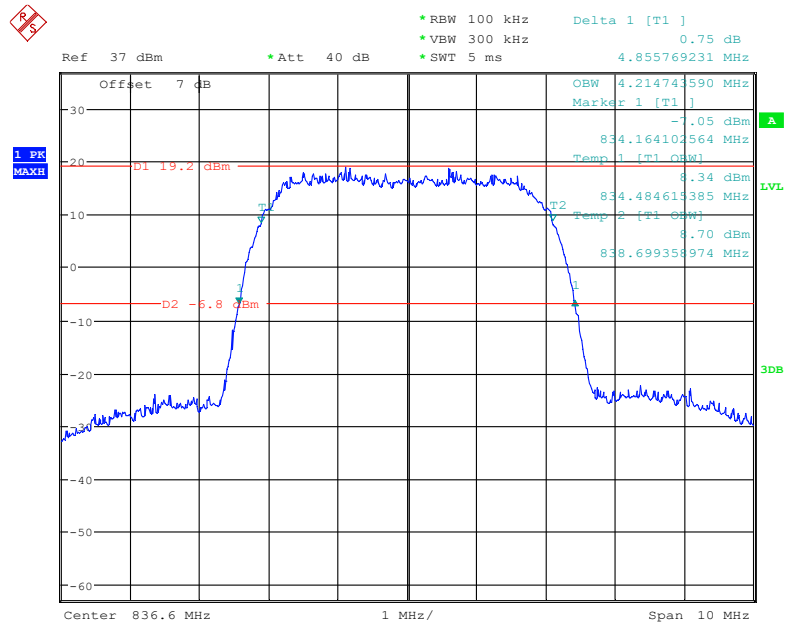
Date: 16.FEB.2022 11:42:50

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

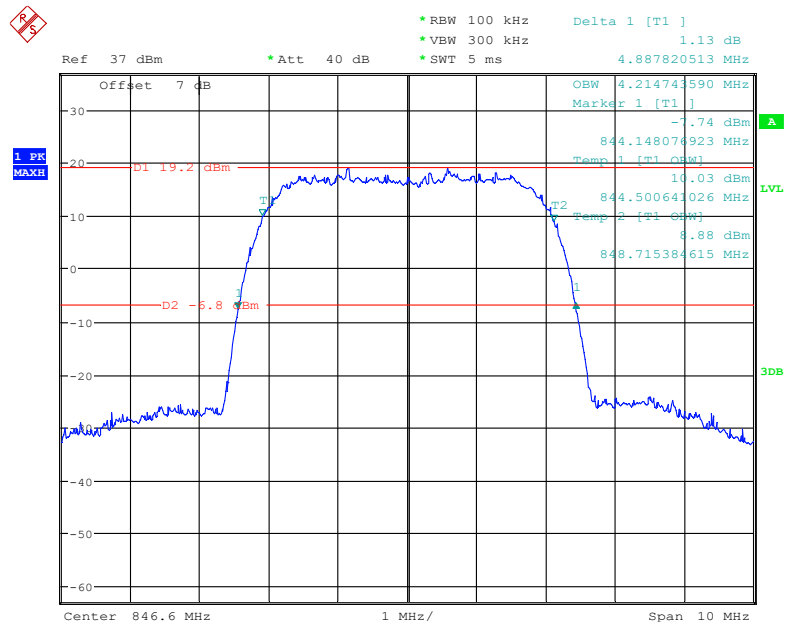
Date: 16.FEB.2022 11:45:41

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

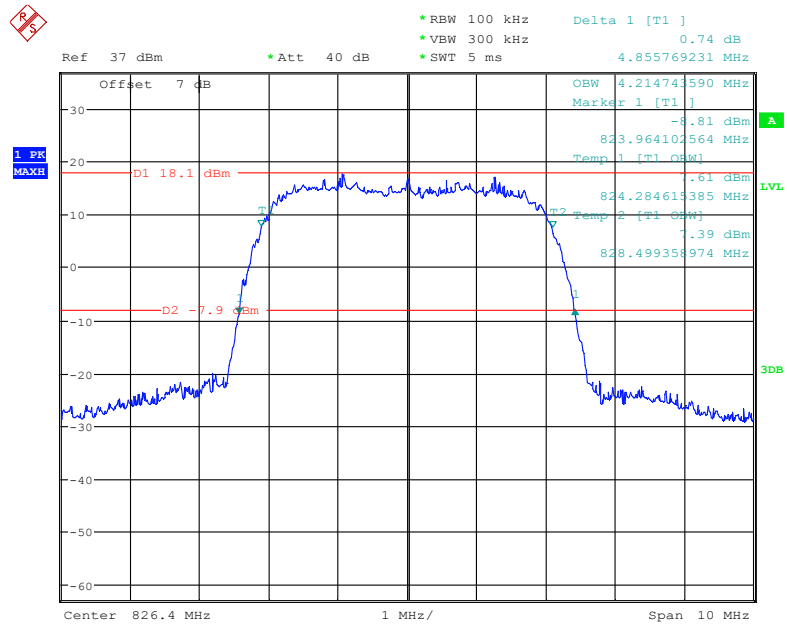
Date: 16.FEB.2022 17:35:44

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

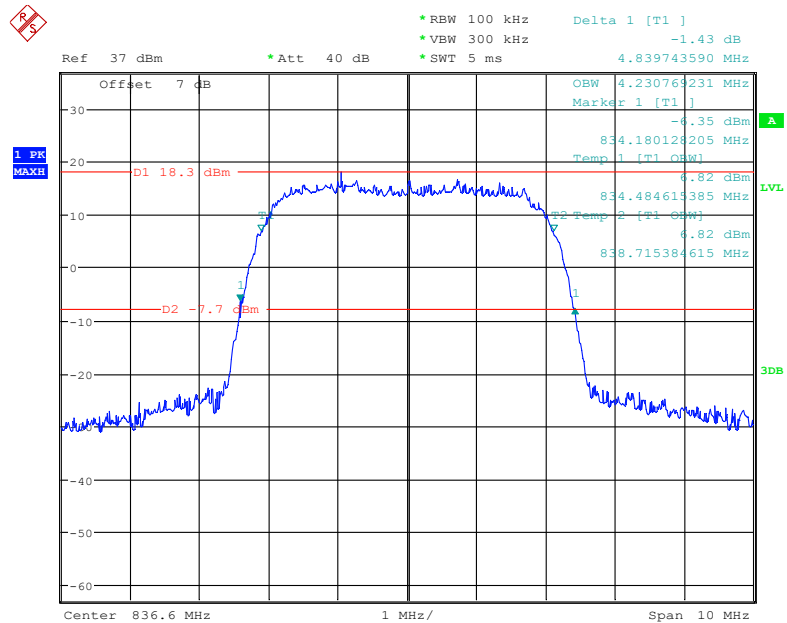
Date: 16.FEB.2022 17:34:48

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

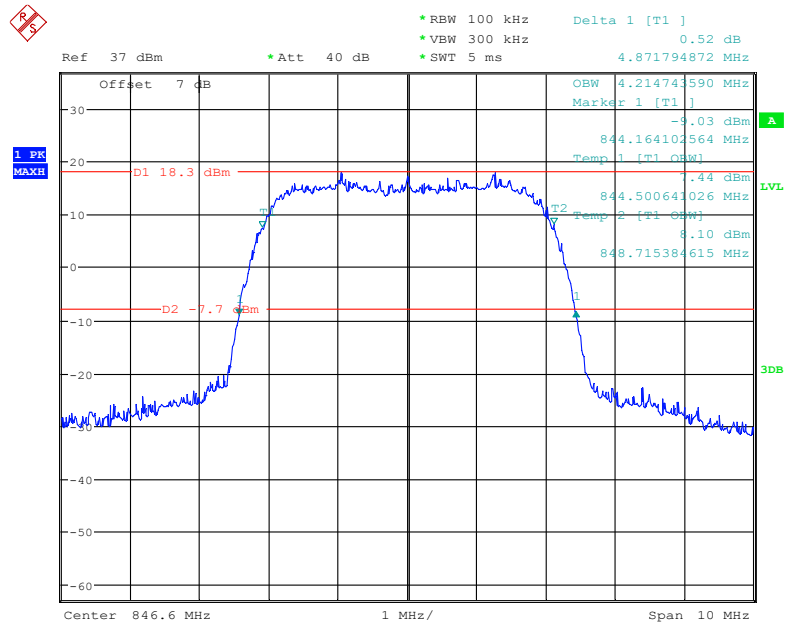
Date: 16.FEB.2022 17:33:06

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

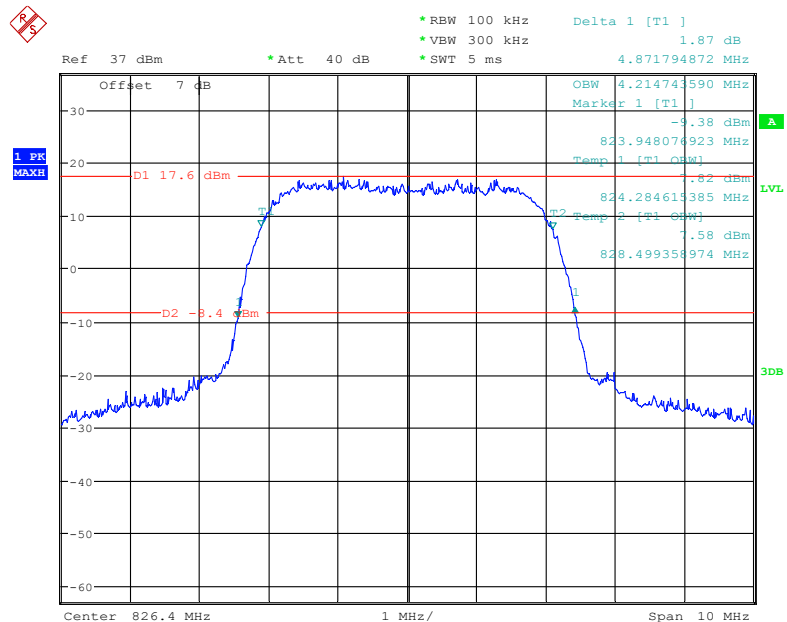
Date: 16.FEB.2022 18:13:32

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

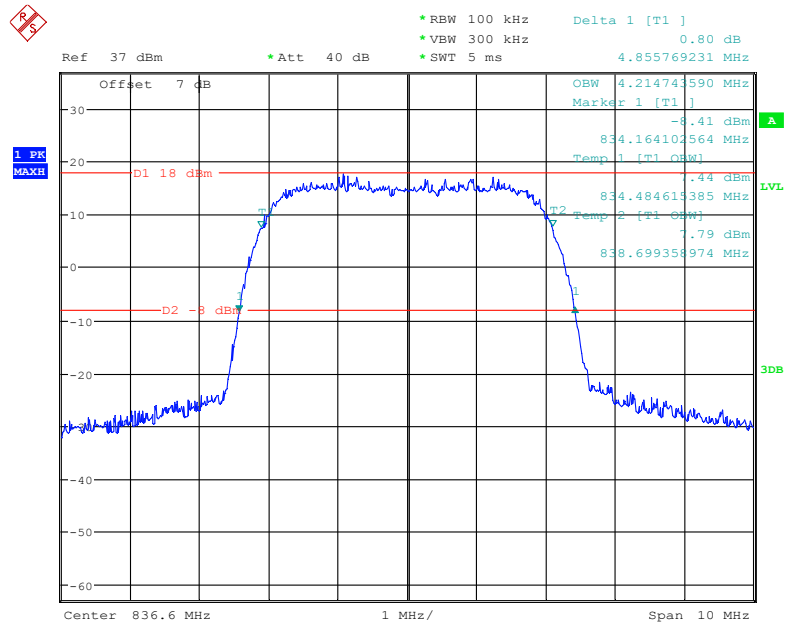
Date: 16.FEB.2022 18:10:17

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

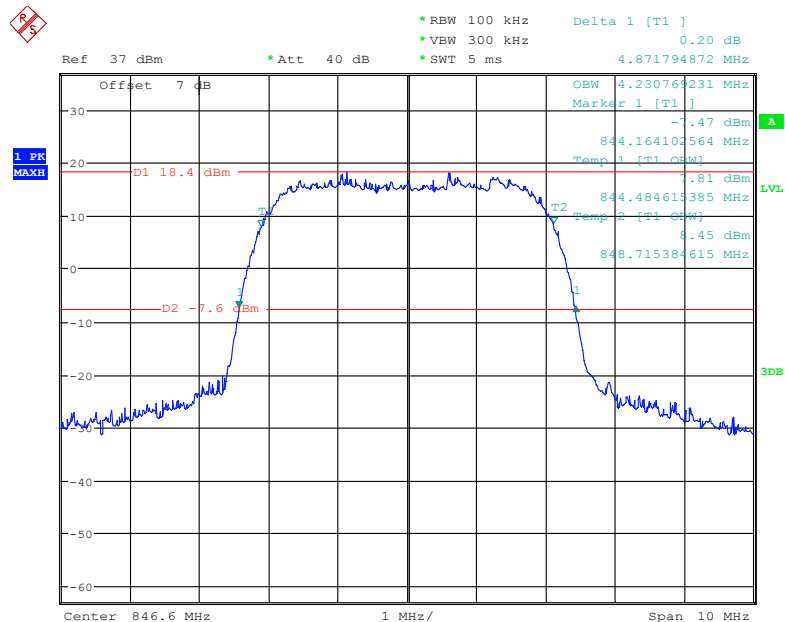
Date: 16.FEB.2022 18:07:33

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

Date: 16.FEB.2022 17:57:50

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

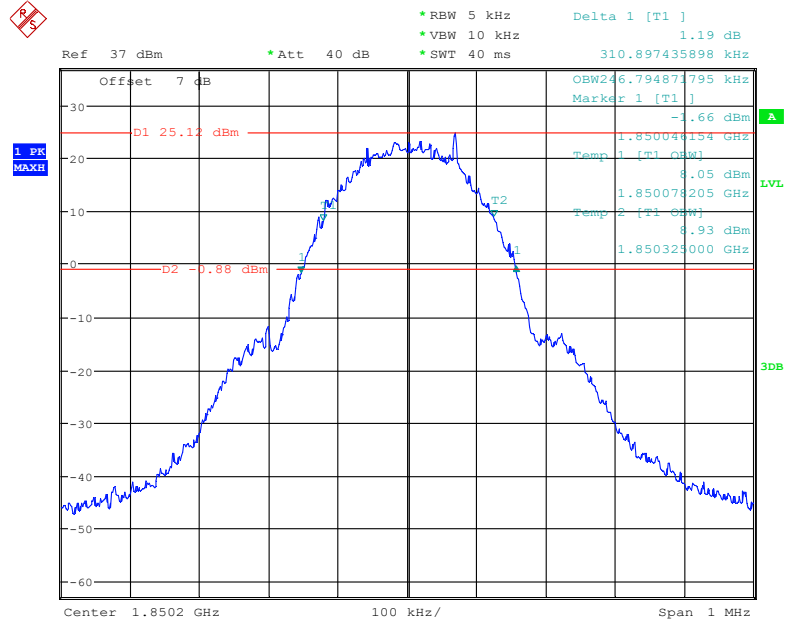
Date: 16.FEB.2022 18:00:12

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

Date: 16.FEB.2022 18:04:01

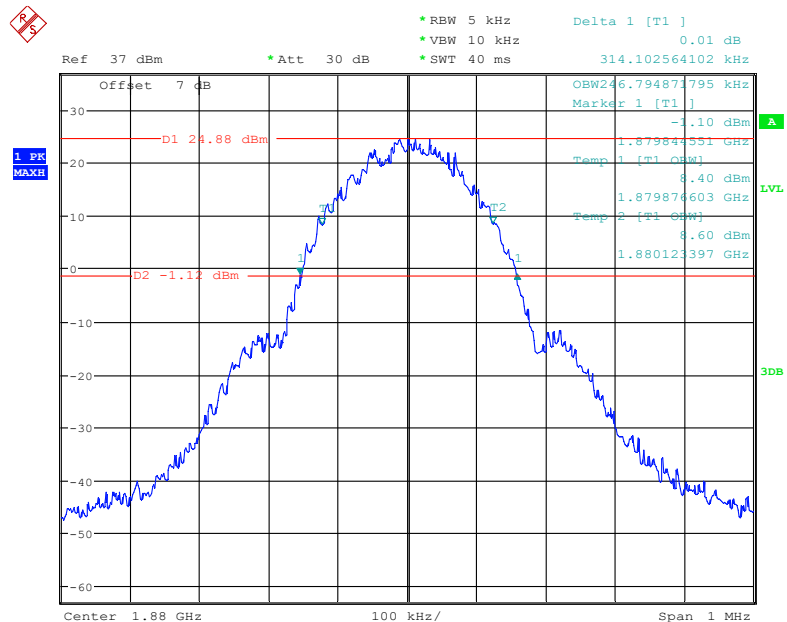
PCS Band (Part 24E)

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

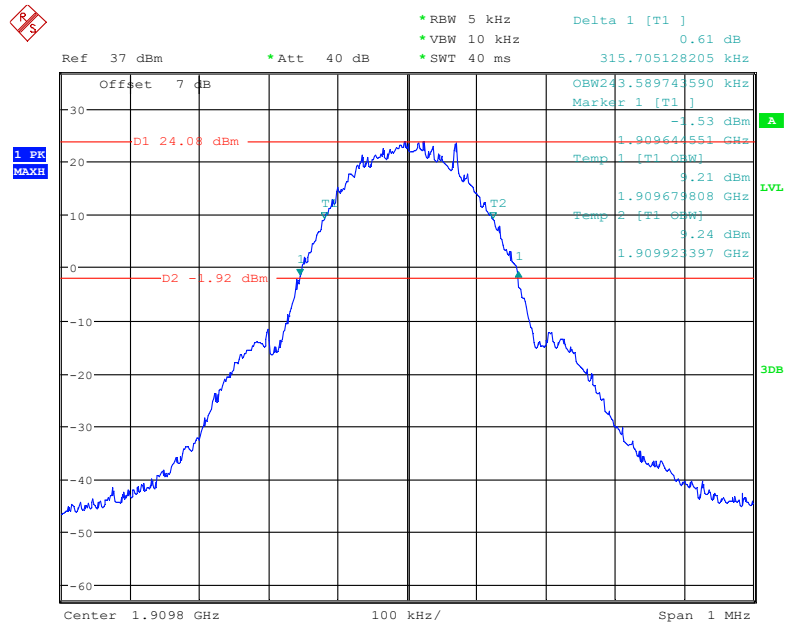


Date: 16.FEB.2022 14:27:55

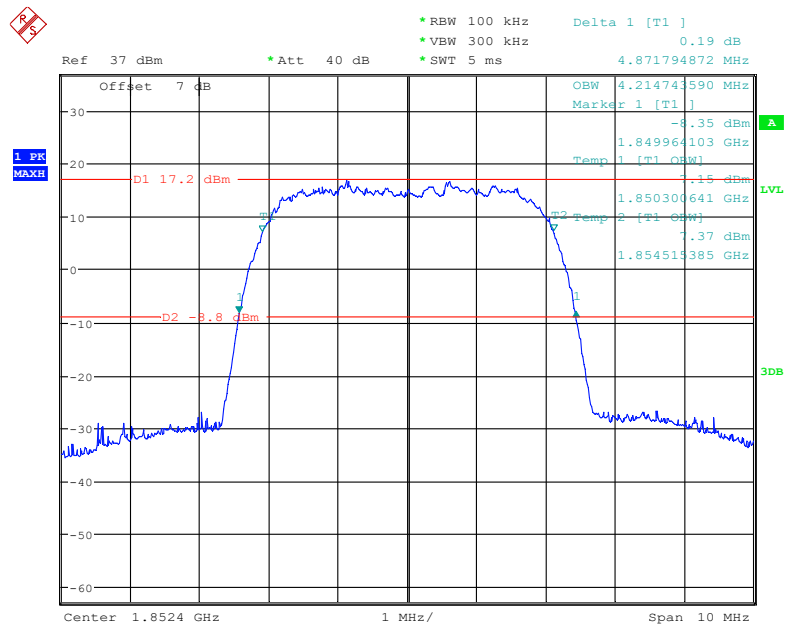
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



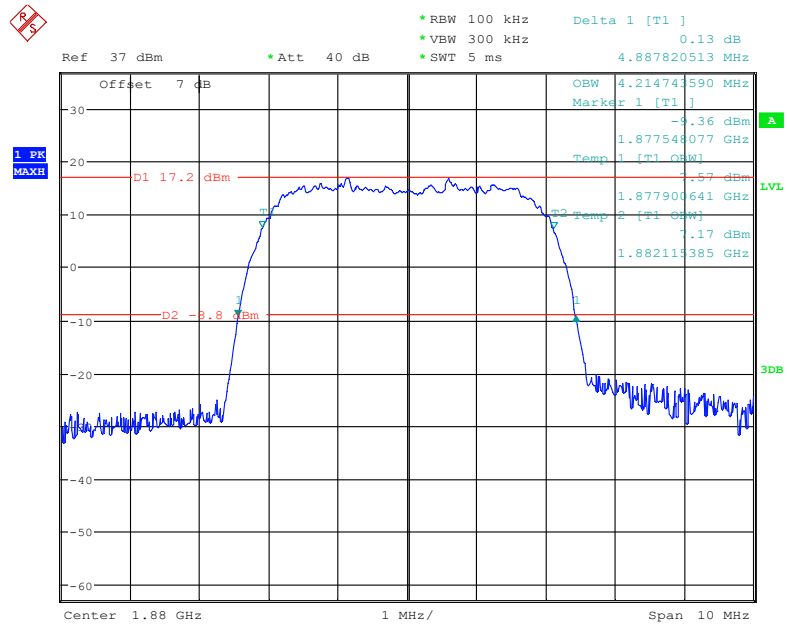
Date: 11.MAR.2022 00:10:16

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

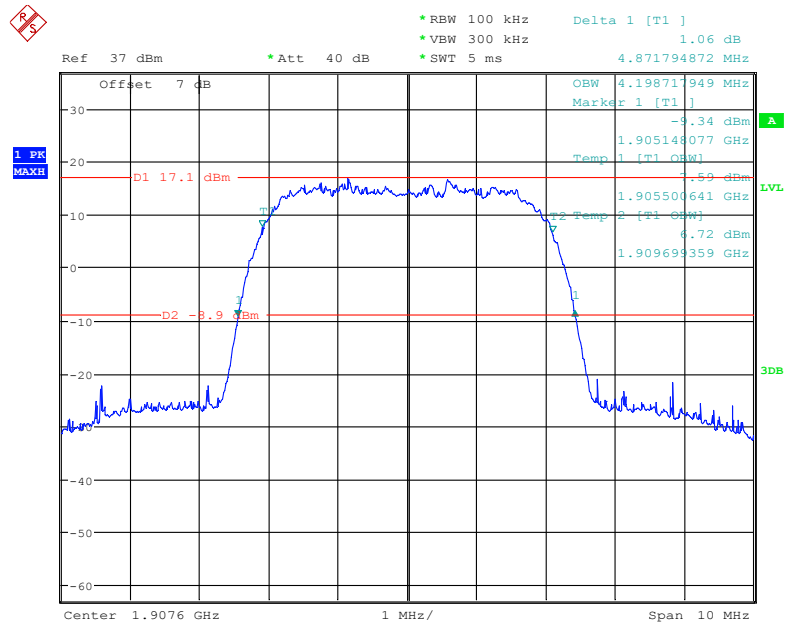
Date: 16.FEB.2022 14:34:05

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

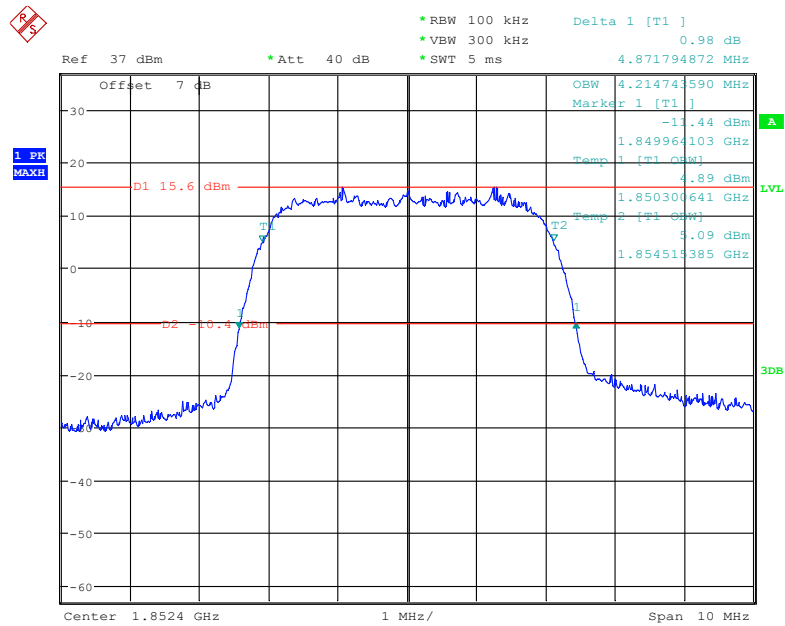
Date: 16.FEB.2022 14:49:49

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

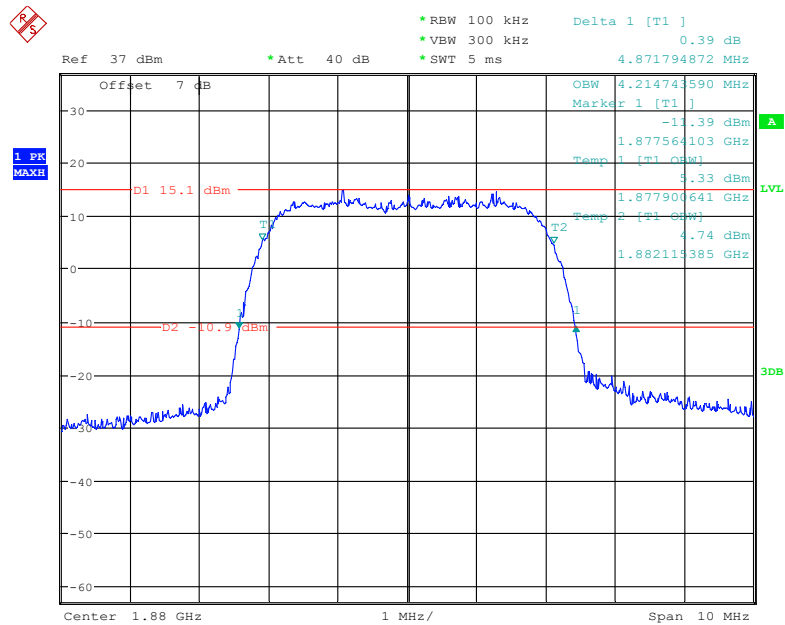
Date: 16.FEB.2022 15:42:40

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

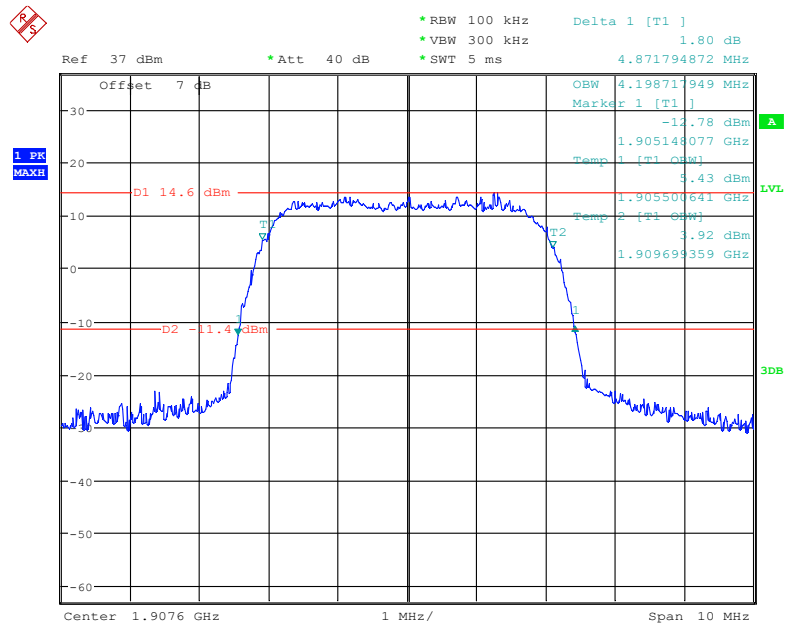
Date: 16.FEB.2022 15:47:16

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

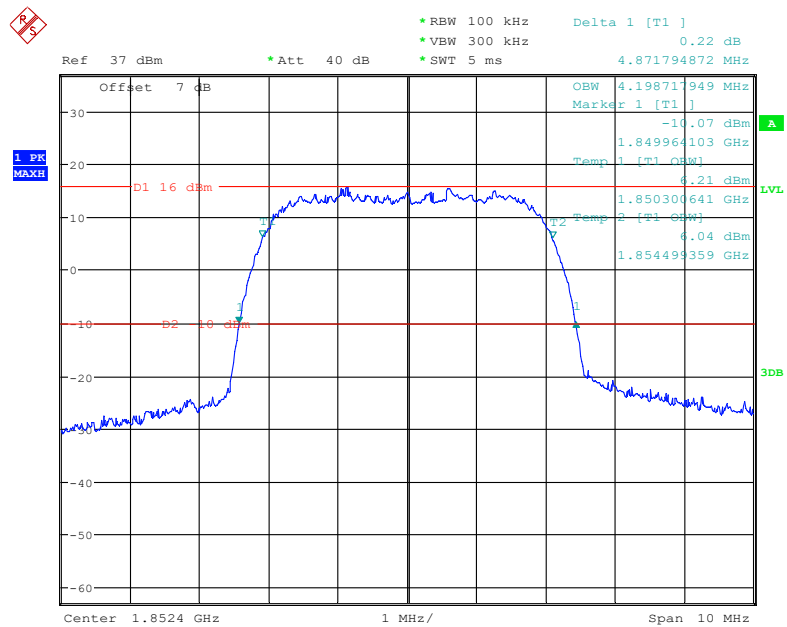
Date: 16.FEB.2022 17:10:22

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

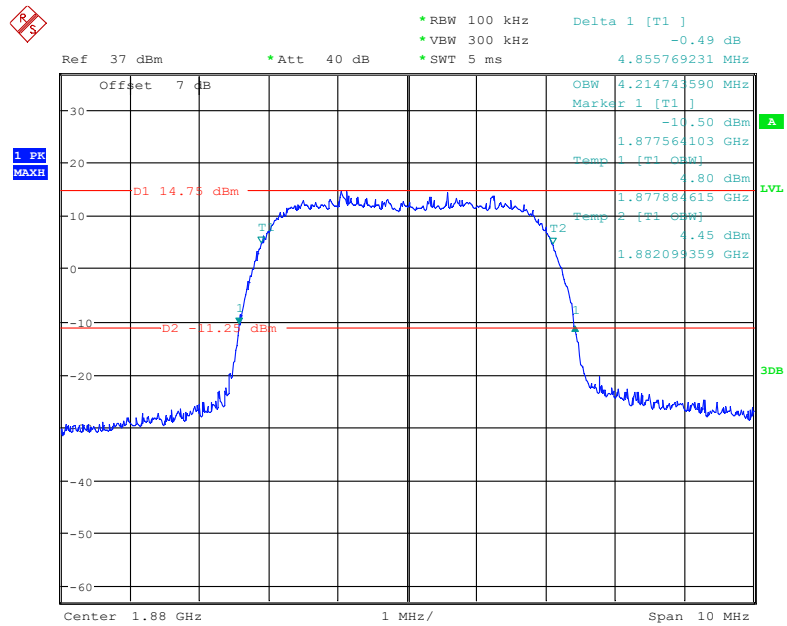
Date: 16.FEB.2022 17:14:47

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

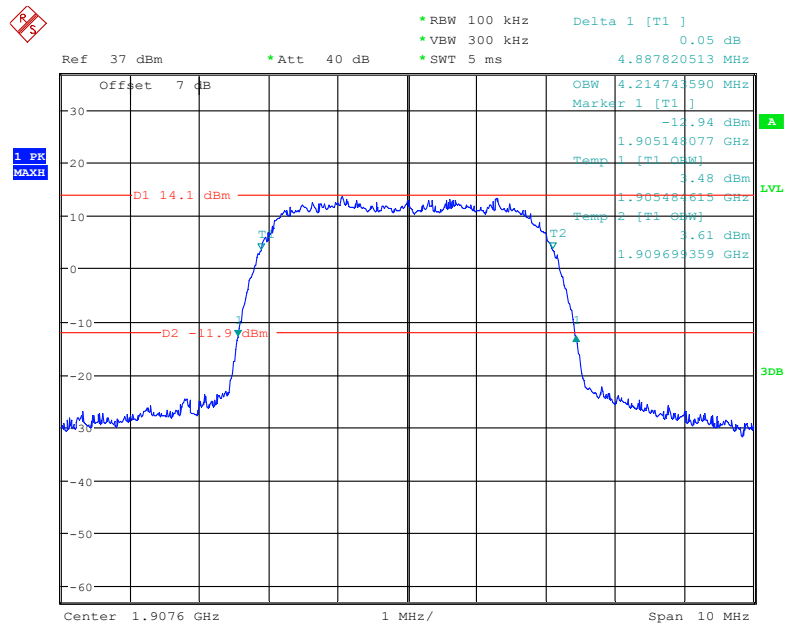
Date: 16.FEB.2022 17:18:33

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

Date: 16.FEB.2022 17:06:57

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

Date: 16.FEB.2022 16:58:34

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

Date: 16.FEB.2022 16:54:24

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	1.290	1.110	1.278	1.104	1.278
	16QAM	1.092	1.260	1.104	1.278	1.110	1.290
3 MHz	QPSK	2.700	2.916	2.700	2.928	2.688	2.928
	16QAM	2.700	2.952	2.688	2.940	2.688	2.928
5 MHz	QPSK	4.520	5.060	4.540	5.080	4.520	5.020
	16QAM	4.520	5.060	4.540	5.100	4.540	5.120
10 MHz	QPSK	8.960	9.800	8.960	9.720	8.960	9.760
	16QAM	8.960	9.680	8.960	9.800	8.960	9.680
15 MHz	QPSK	13.560	15.000	13.560	14.940	13.620	14.940
	16QAM	13.500	14.940	13.560	14.820	13.500	14.820
20 MHz	QPSK	18.000	19.360	17.920	19.360	18.000	19.600
	16QAM	17.920	19.360	18.000	19.360	18.000	19.600

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	1.272	1.110	1.290	1.104	1.272
	16QAM	1.104	1.284	1.098	1.272	1.104	1.284
3 MHz	QPSK	2.700	2.940	2.688	2.928	2.688	2.940
	16QAM	2.688	2.940	2.688	2.940	2.688	2.916
5 MHz	QPSK	4.540	5.060	4.520	5.060	4.520	5.060
	16QAM	4.540	5.040	4.540	5.080	4.520	5.040
10 MHz	QPSK	8.960	9.720	8.960	9.720	8.960	9.760
	16QAM	8.920	9.640	8.960	9.760	8.960	9.680
15 MHz	QPSK	13.560	14.940	13.500	14.880	13.560	15.000
	16QAM	13.560	15.000	13.560	15.000	13.500	14.760
20 MHz	QPSK	18.000	19.360	18.000	19.600	18.000	19.520
	16QAM	17.920	19.600	18.000	19.600	18.000	19.520

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	4.540	5.080	4.540	5.080	4.520	5.060
	16QAM	4.520	5.020	4.540	5.080	4.540	5.100
10 MHz	QPSK	9.000	9.800	8.960	9.680	8.960	9.760
	16QAM	8.960	9.720	8.960	9.720	8.960	9.720
15 MHz	QPSK	13.560	14.880	13.500	14.940	13.500	15.060
	16QAM	13.500	14.820	13.560	14.940	13.500	14.760
20 MHz	QPSK	18.000	19.440	17.920	19.440	18.000	19.600
	16QAM	18.000	19.680	18.000	19.440	18.000	19.520

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	1.104	1.272	1.104	1.296	1.110	1.278
	16QAM	1.104	1.290	1.098	1.278	1.104	1.278
3 MHz	QPSK	2.700	2.916	2.700	2.928	2.688	2.940
	16QAM	2.688	2.940	2.688	2.940	2.688	2.928
5 MHz	QPSK	4.560	5.080	4.540	5.040	4.540	5.040
	16QAM	4.540	5.040	4.540	5.060	4.540	5.080
10 MHz	QPSK	9.000	9.840	8.960	9.680	8.960	9.720
	16QAM	8.960	9.760	8.960	9.760	8.960	9.680

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	4.540	5.100	4.520	5.060	4.540	5.040
	16QAM	4.520	5.040	4.540	5.040	4.560	5.060
10 MHz	QPSK	8.960	9.840	8.960	9.600	8.960	9.680
	16QAM	8.960	9.680	8.960	9.600	8.960	9.760

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

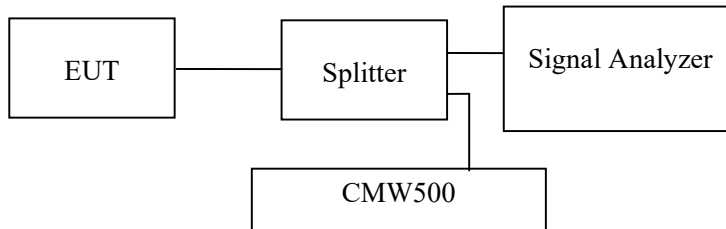
Applicable Standard

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

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.



Test Data

Environmental Conditions

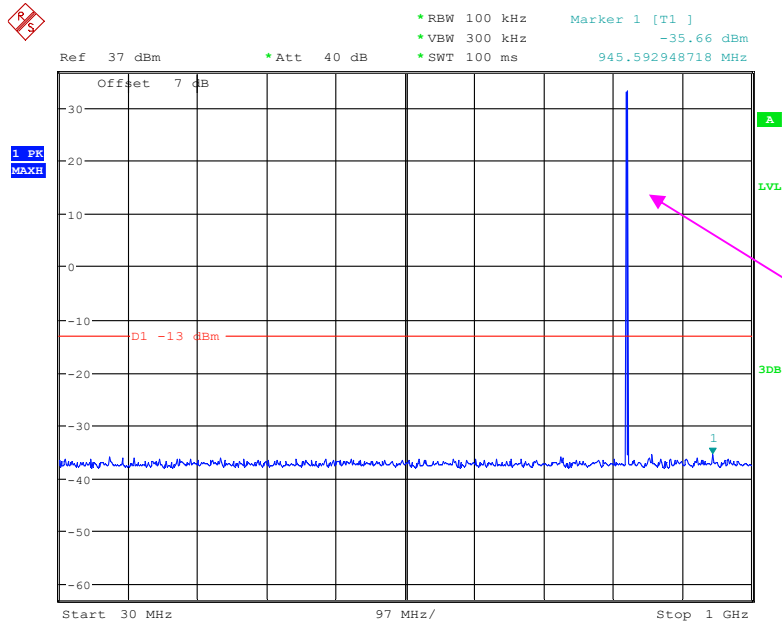
Temperature:	26.8℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Black Ding from 2022-02-16 to 2022-02-18.

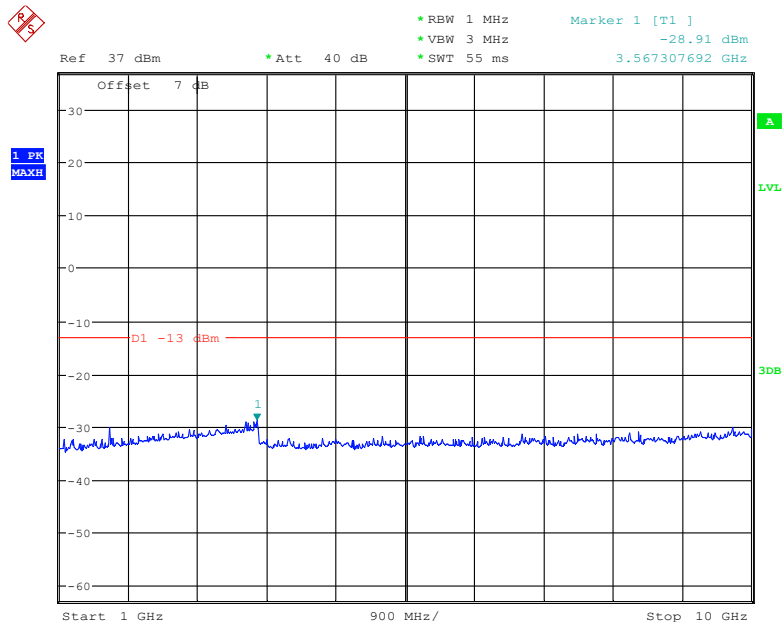
EUT operation mode: Transmitting

Test result: Pass

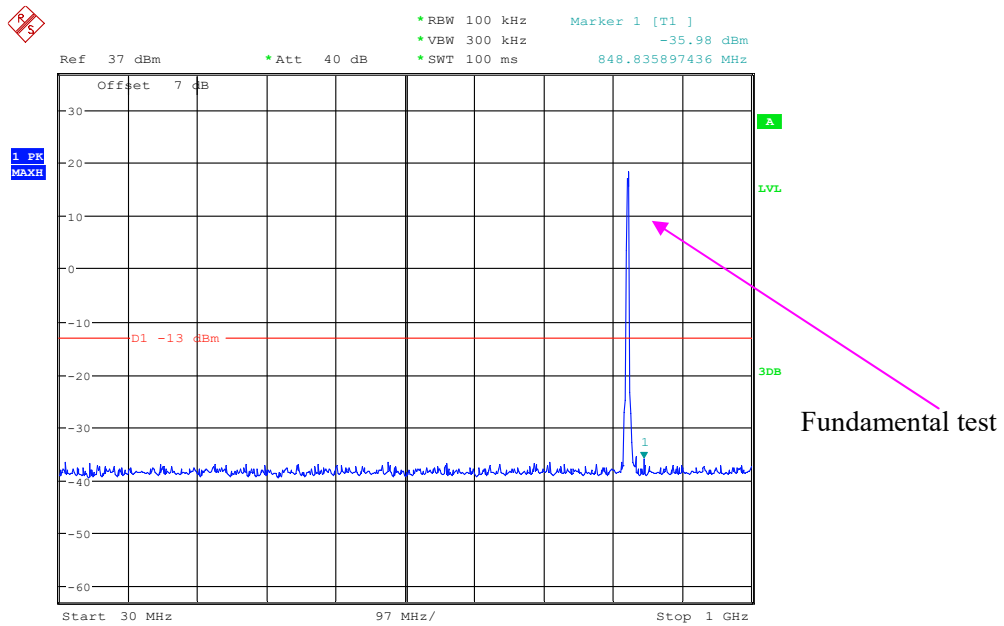
Please refer to the following plots.

Cellular Band (Part 22H)**Low Channel:****30 MHz – 1 GHz (GSM Mode)**

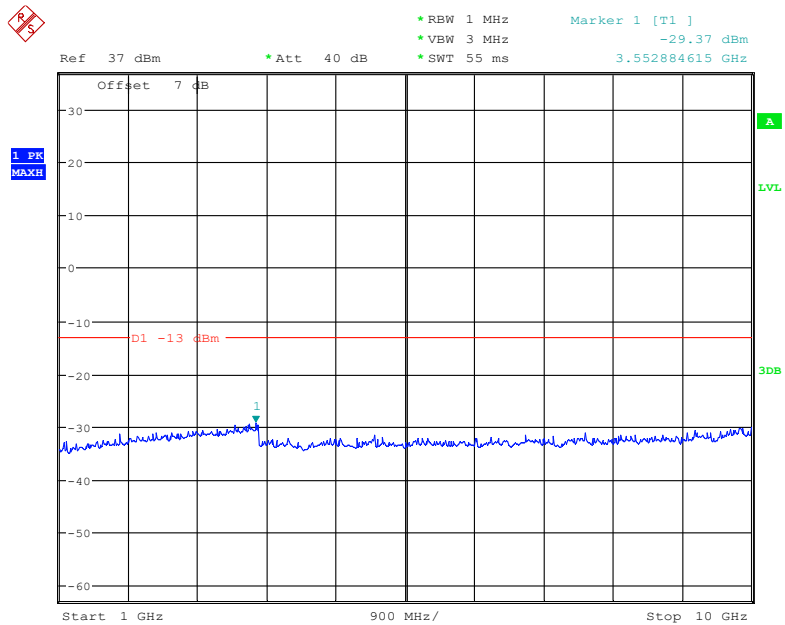
Date: 16.FEB.2022 13:11:15

1 GHz – 10 GHz (GSM Mode)

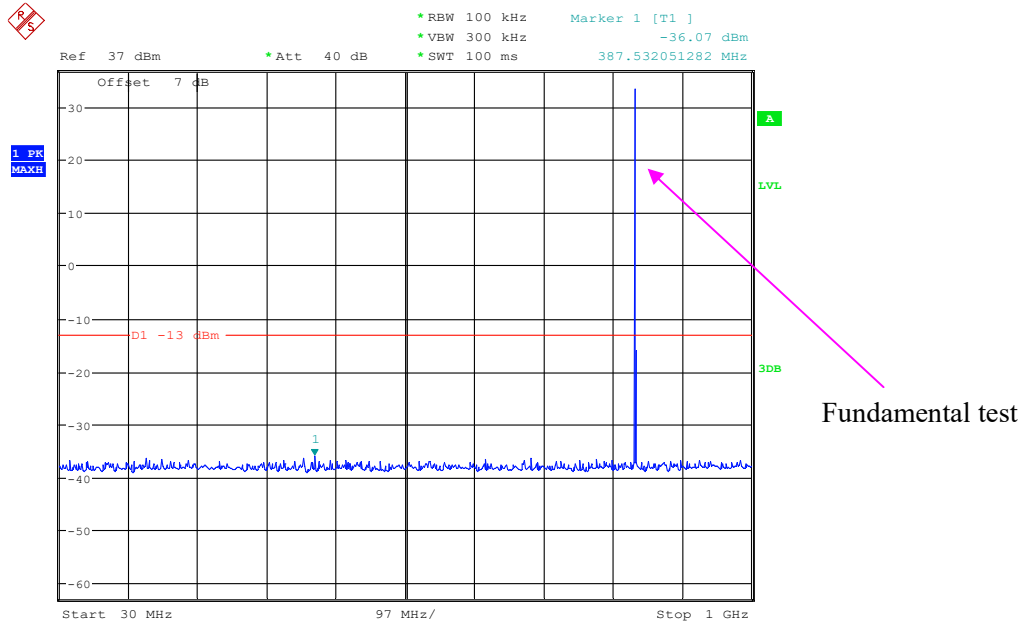
Date: 16.FEB.2022 13:12:50

30 MHz – 1 GHz (WCDMA Mode)

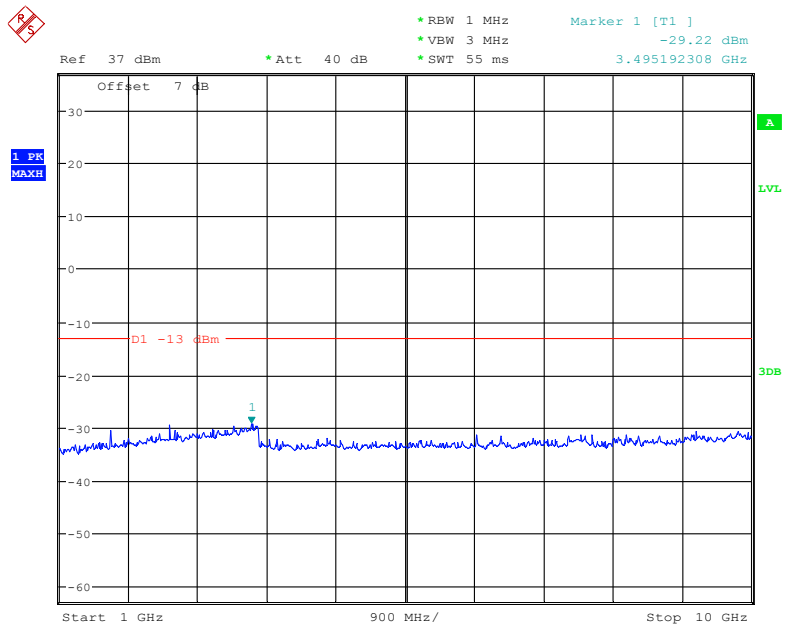
Date: 16.FEB.2022 17:36:59

1 GHz – 10 GHz (WCDMA Mode)

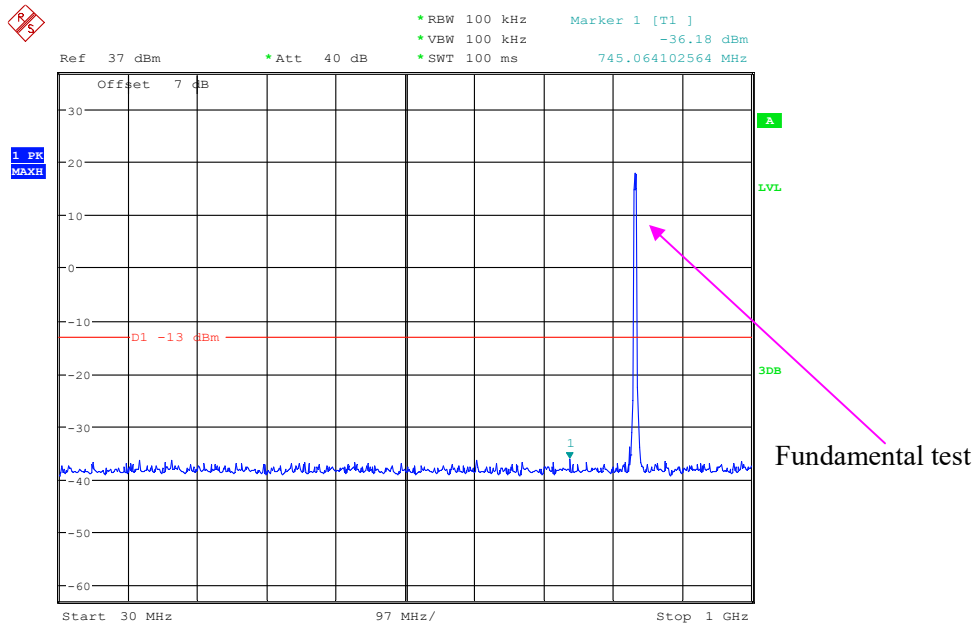
Date: 18.FEB.2022 09:15:59

Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

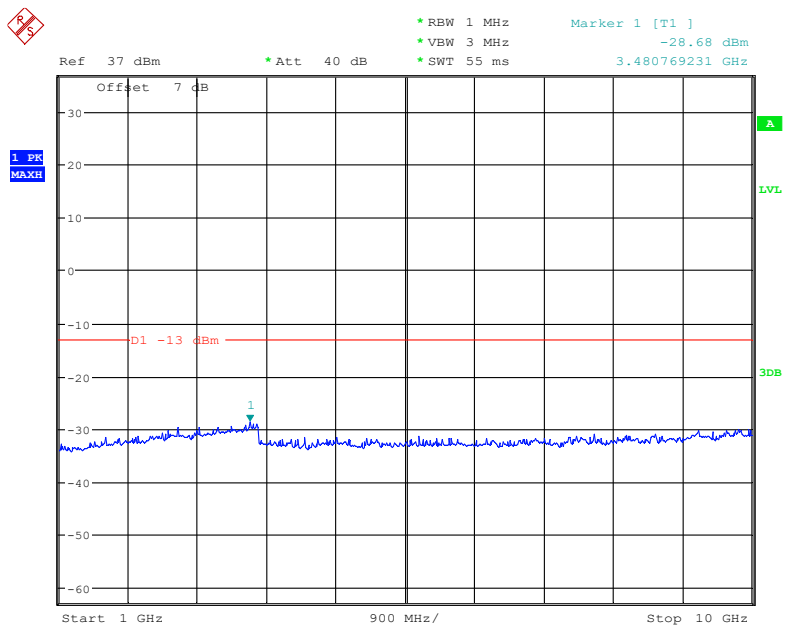
Date: 16.FEB.2022 13:15:22

1 GHz – 10 GHz (GSM Mode)

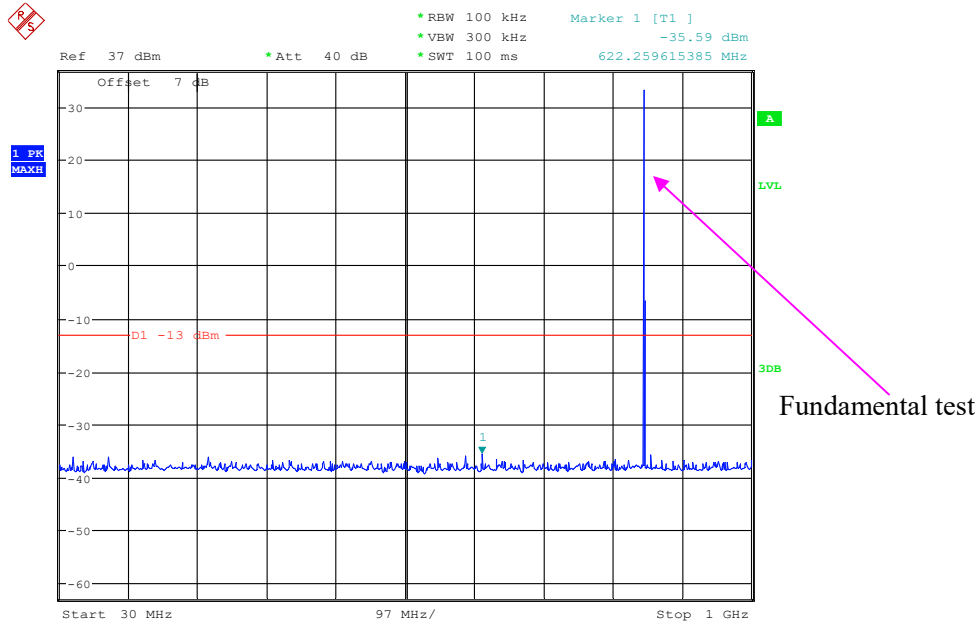
Date: 16.FEB.2022 13:14:08

30 MHz – 1 GHz (WCDMA Mode)

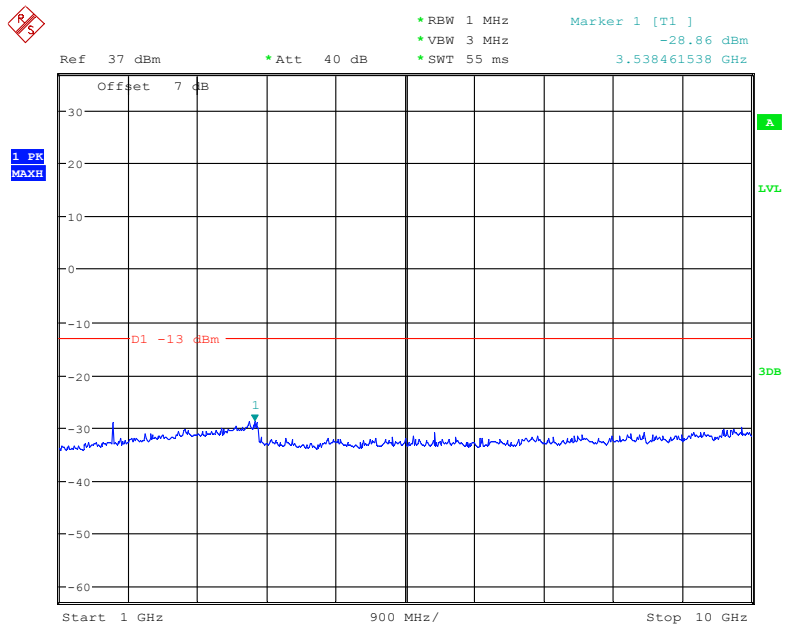
Date: 16.FEB.2022 17:46:35

1 GHz – 10 GHz (WCDMA Mode)

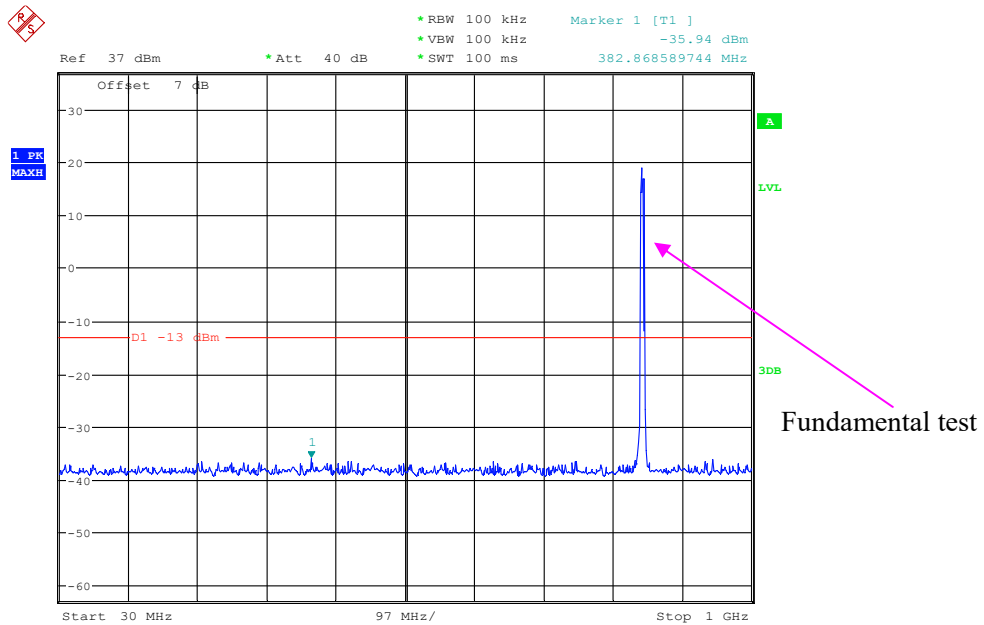
Date: 18.FEB.2022 09:14:35

High Channel:**30 MHz – 1 GHz (GSM Mode)**

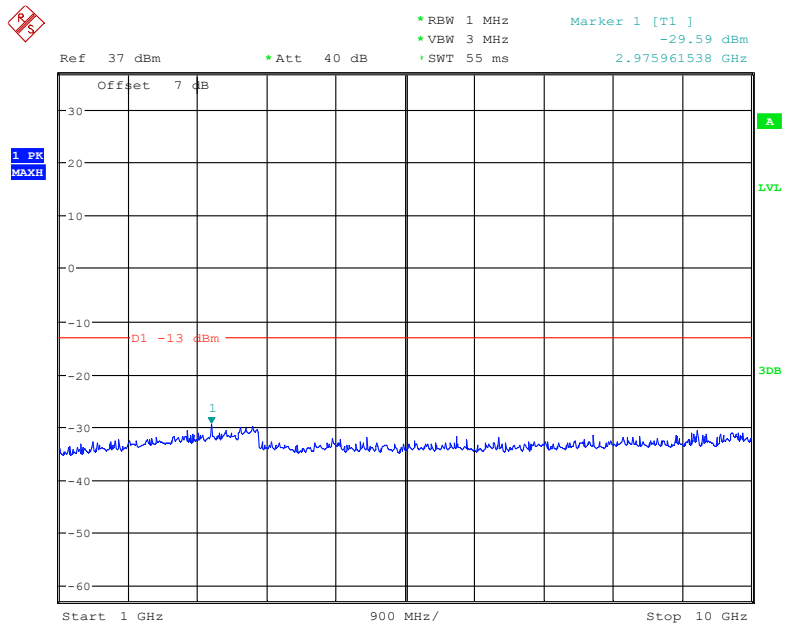
Date: 16.FEB.2022 13:16:18

1 GHz – 10 GHz (GSM Mode)

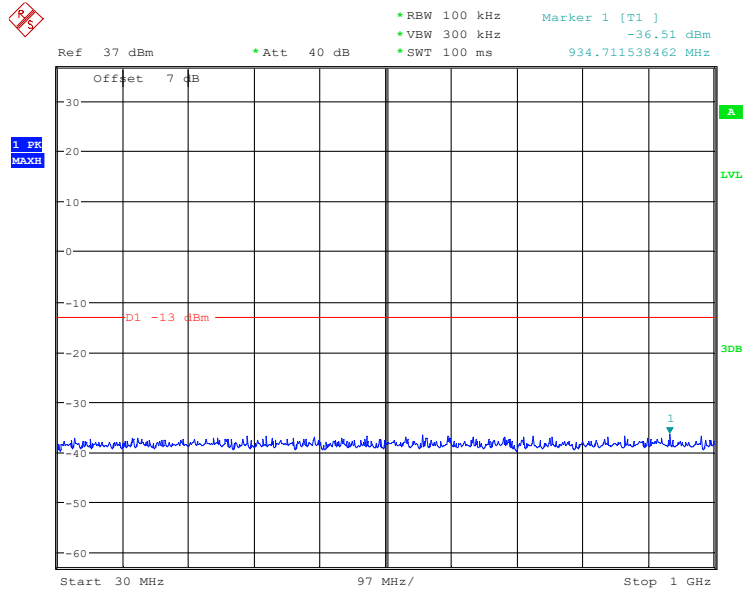
Date: 16.FEB.2022 13:18:15

30 MHz – 1 GHz (WCDMA Mode)

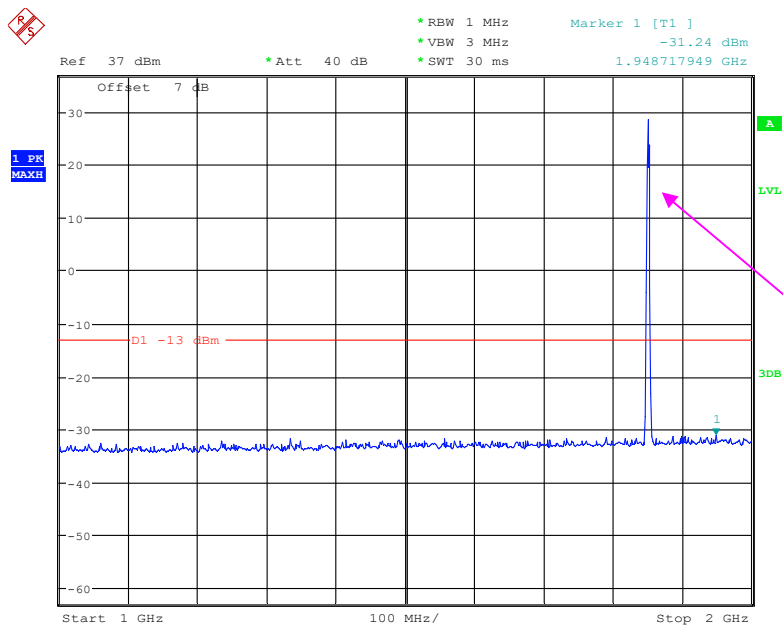
Date: 16.FEB.2022 17:48:17

1 GHz – 10 GHz (WCDMA Mode)

Date: 18.FEB.2022 10:37:01

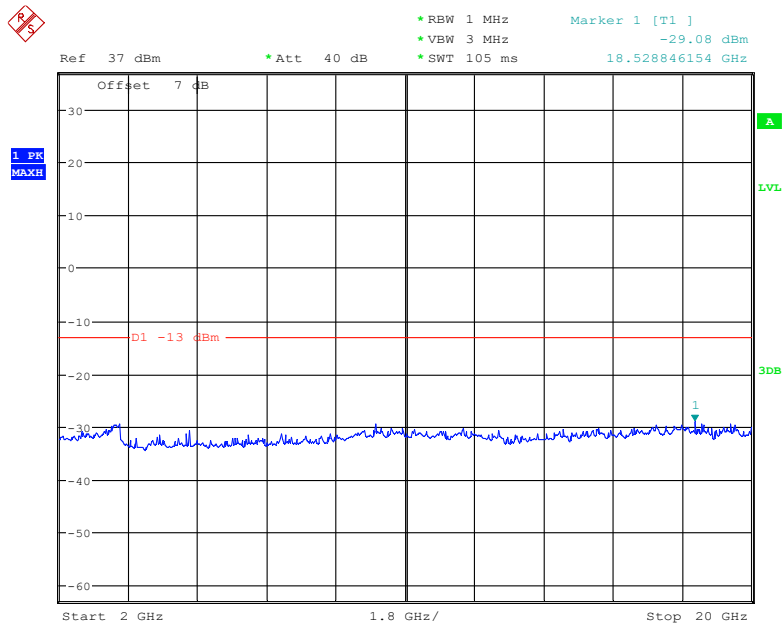
**PCS Band (Part 24E)
Low Channel:****30 MHz – 1 GHz (GSM Mode)**

Date: 16.FEB.2022 13:23:47

1 GHz – 2 GHz (GSM Mode)

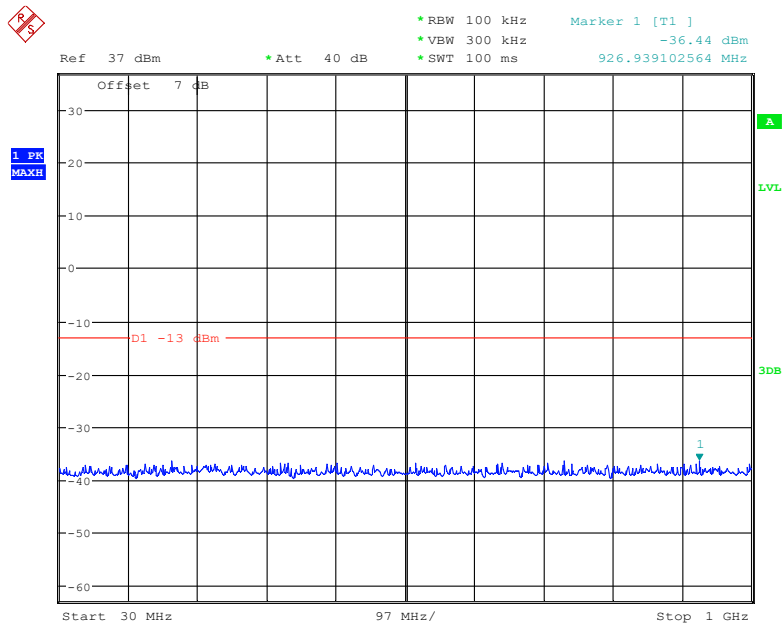
Date: 16.FEB.2022 13:26:09

2 GHz – 20 GHz (GSM Mode)

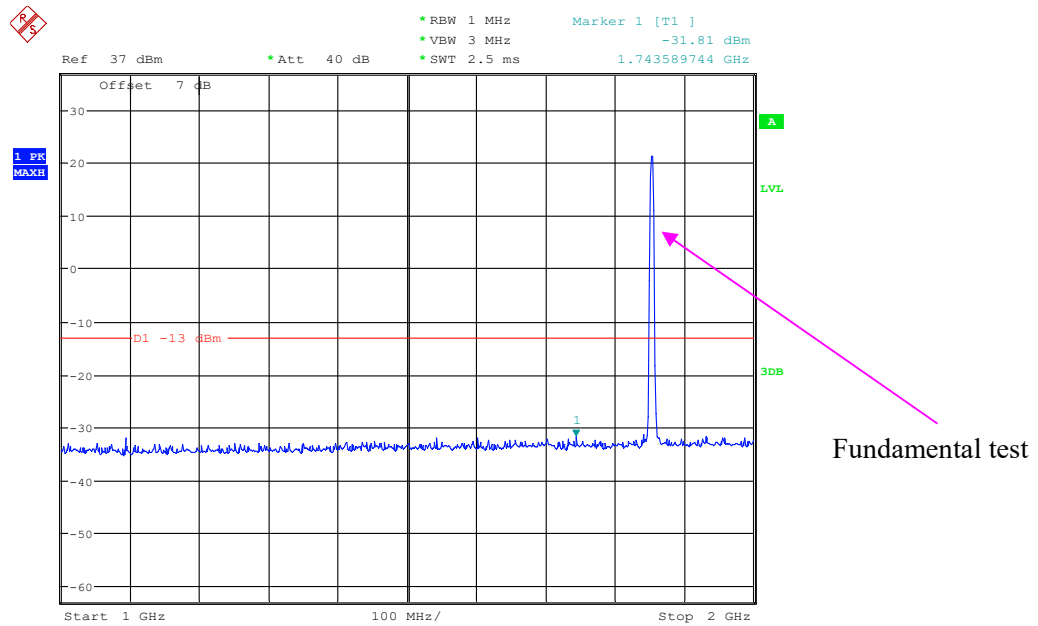


Date: 16.FEB.2022 13:27:15

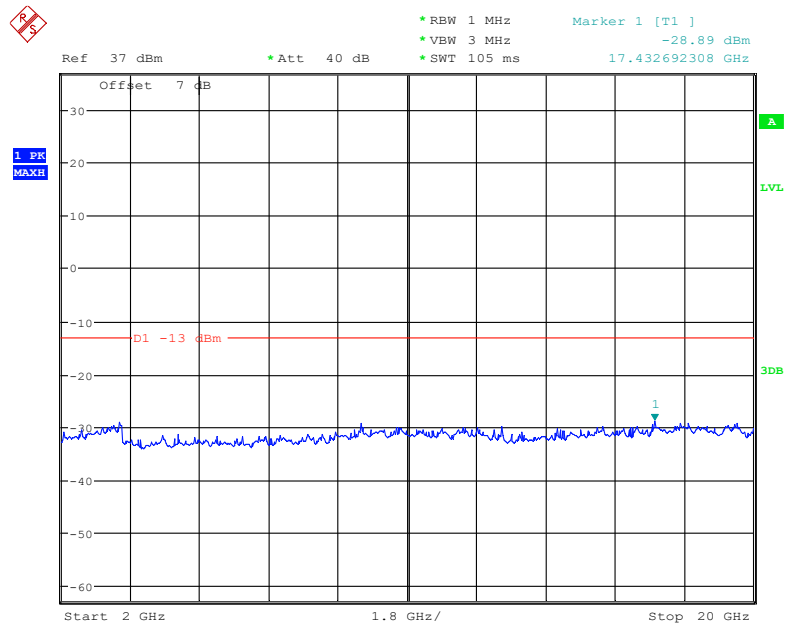
30 MHz – 1 GHz (WCDMA Mode)



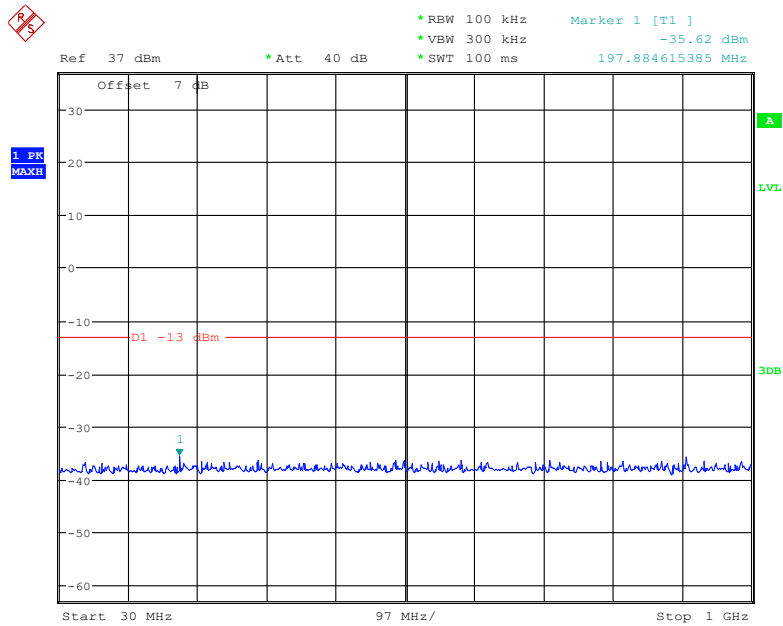
Date: 16.FEB.2022 16:08:12

1 GHz – 2 GHz (WCDMA Mode)

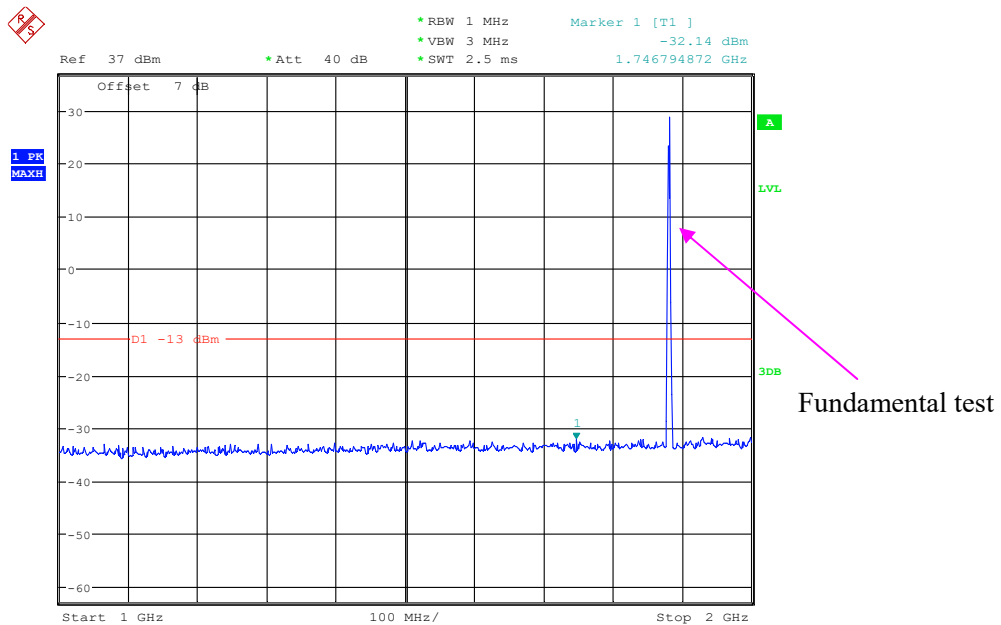
Date: 16.FEB.2022 16:10:27

2 GHz – 20 GHz (WCDMA Mode)

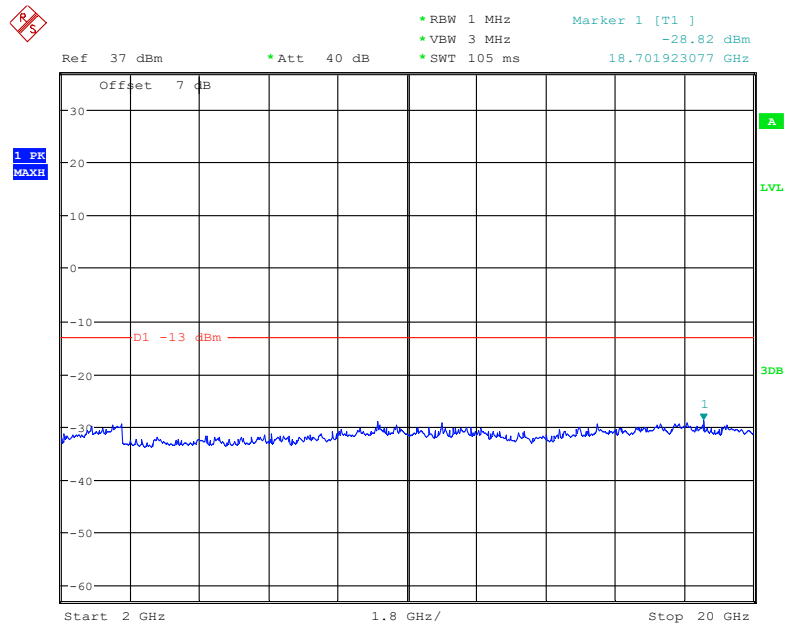
Date: 16.FEB.2022 16:12:01

Middle Channel:**30 MHz – 1 GHz (GSM Mode)**

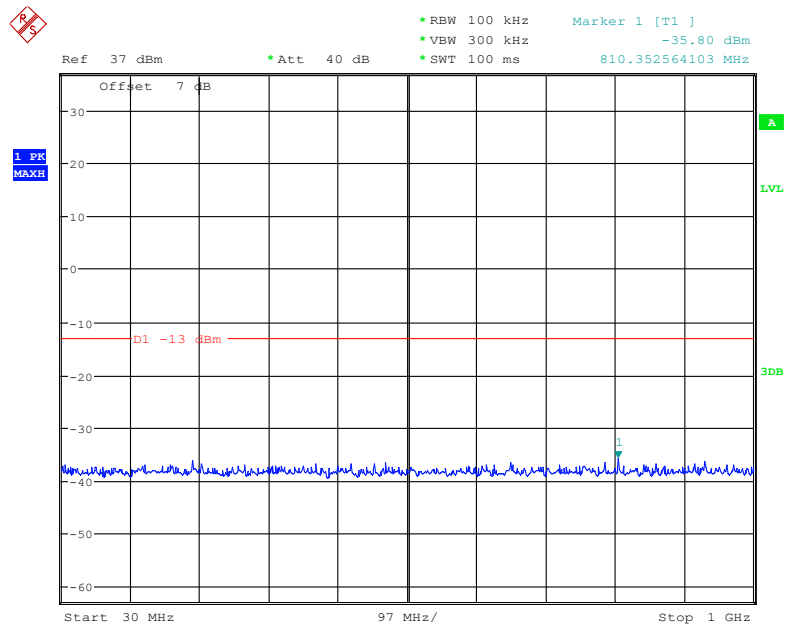
Date: 16.FEB.2022 13:33:04

1 GHz – 2 GHz (GSM Mode)

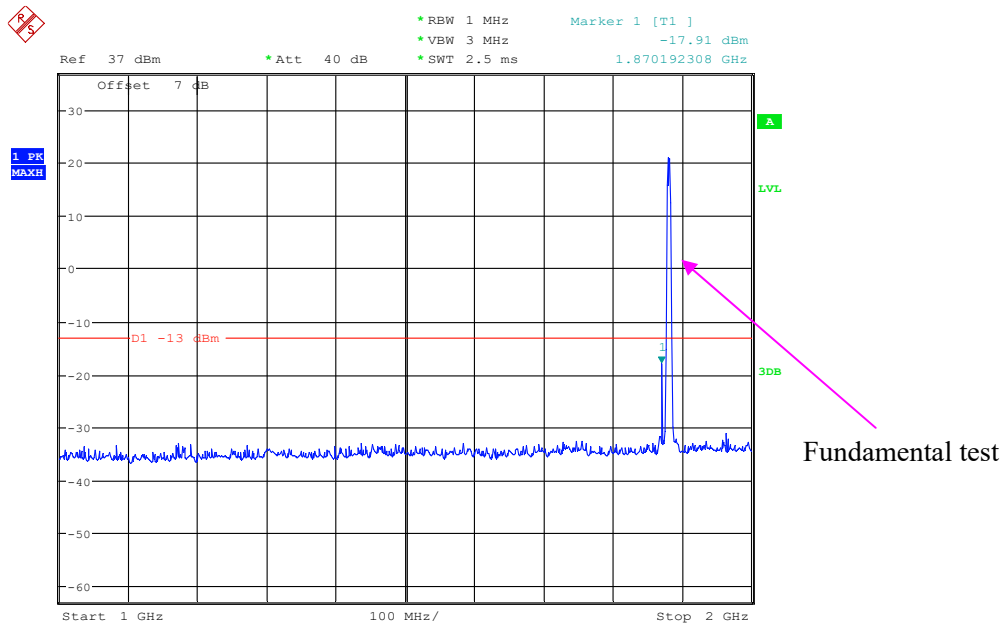
Date: 16.FEB.2022 13:31:17

2 GHz – 20 GHz (GSM Mode)

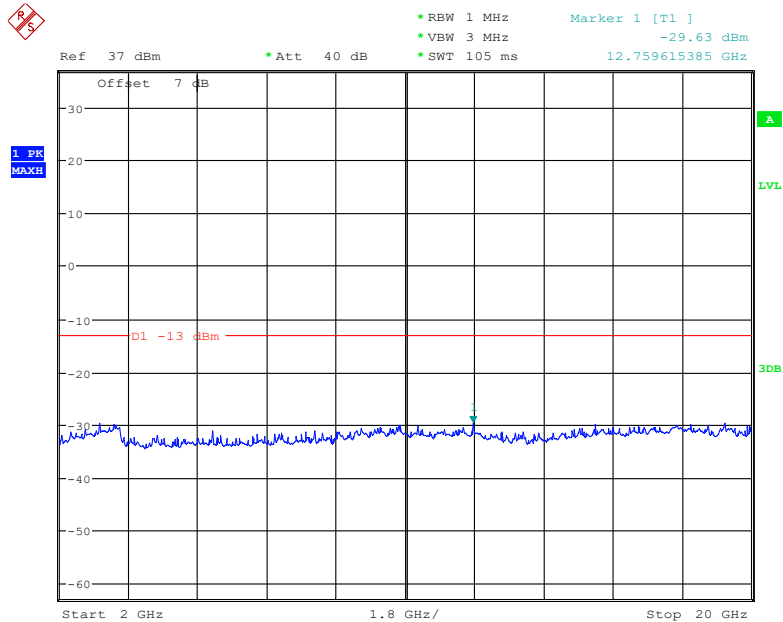
Date: 16.FEB.2022 13:29:27

30 MHz – 1 GHz (WCDMA Mode)

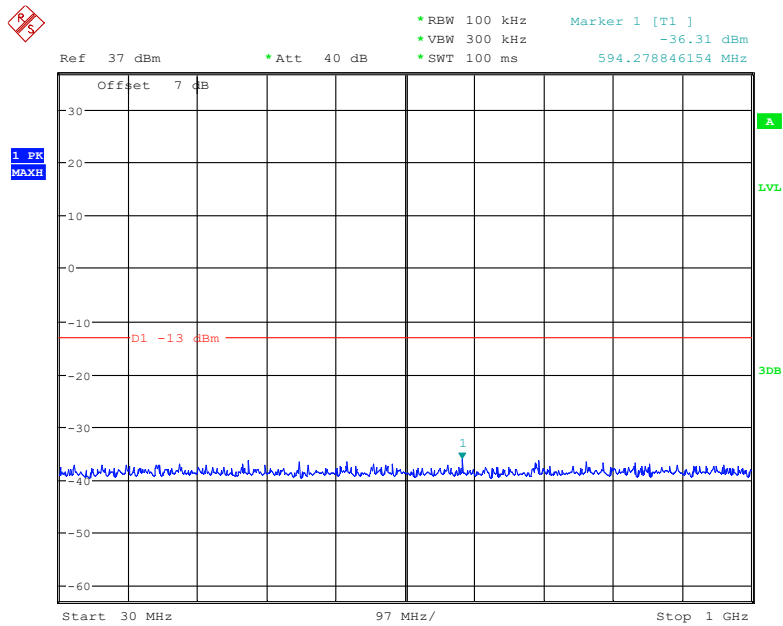
Date: 16.FEB.2022 16:19:39

1 GHz – 2 GHz (WCDMA Mode)

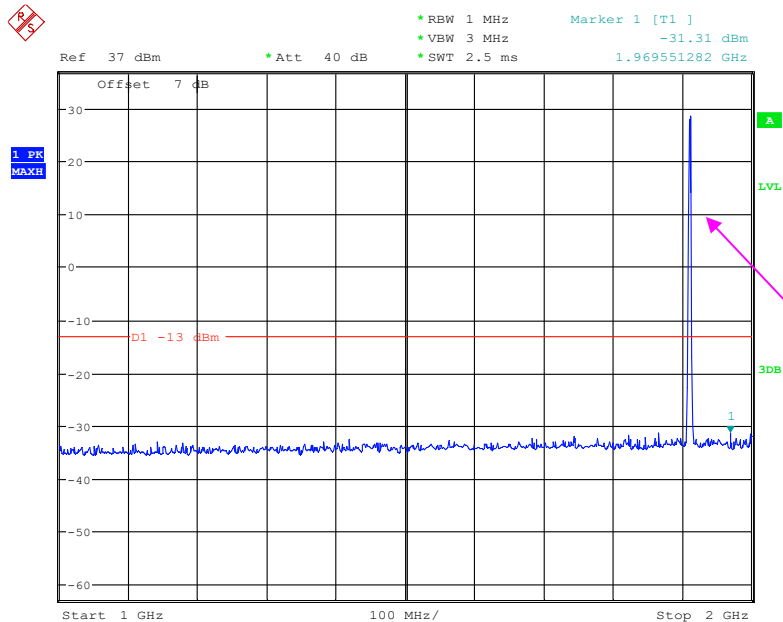
Date: 16.FEB.2022 16:17:52

2 GHz – 20 GHz (WCDMA Mode)

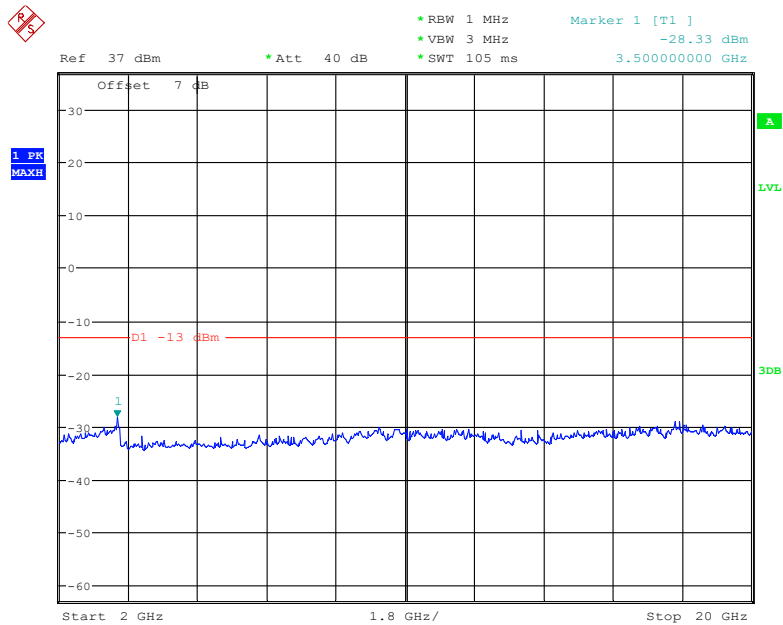
Date: 16.FEB.2022 16:18:46

High Channel:**30 MHz – 1 GHz (GSM Mode)**

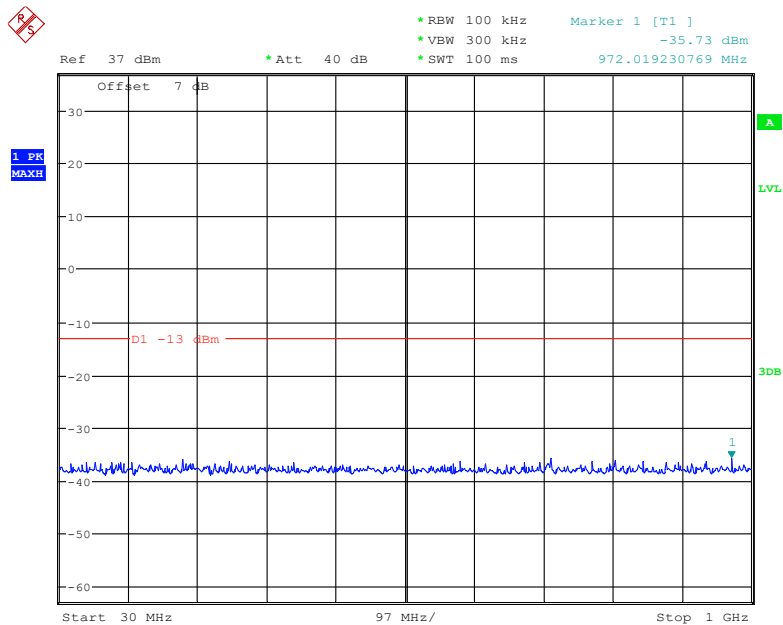
Date: 16.FEB.2022 13:33:43

1 GHz – 2 GHz (GSM Mode)

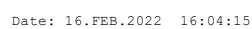
Date: 16.FEB.2022 13:35:00

2 GHz – 20 GHz (GSM Mode)

Date: 16.FEB.2022 13:36:19

30 MHz – 1 GHz (WCDMA Mode)

Date: 16.FEB.2022 15:58:55



FCC -2G,3G,4G

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

Applicable Standard

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

Test Procedure

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

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

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

Test Data

Environmental Conditions

Temperature:	22~22.5 °C
Relative Humidity:	55~56 %
ATM Pressure:	101.0kPa

The testing was performed by Chao Mo on 2022-03-02 for below 1GHz and on 2022-03-03 for above 1GHz..

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

The worst case is as below:

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

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GSM850								
Low Channel								
960.38	-61.25	295	1.2	H	10	-51.25	-13	-38.25
960.38	-63.03	191	1.9	V	11.7	-51.33	-13	-38.33
1648.4	-43.30	285	1.1	H	3.5	-39.80	-13	-26.80
1648.4	-42.10	61	2.5	V	3.1	-39.00	-13	-26.00
2472.6	-48.10	237	2.4	H	6.6	-41.50	-13	-28.50
2472.6	-40.40	231	2.1	V	5.8	-34.60	-13	-21.60
3296.8	-45.00	284	2.1	H	6.4	-38.60	-13	-25.60
3296.8	-45.20	163	1.3	V	5.7	-39.50	-13	-26.50
Middle Channel								
959.82	-60.74	328	2.1	H	10	-50.74	-13	-37.74
959.82	-62.66	81	1.2	V	11.7	-50.96	-13	-37.96
1673.2	-39.80	144	1.5	H	3.8	-36.00	-13	-23.00
1673.2	-42.30	168	1.4	V	3.1	-39.20	-13	-26.20
2509.8	-45.50	259	1	H	6.2	-39.30	-13	-26.30
2509.8	-44.60	13	1.6	V	5.6	-39.00	-13	-26.00
3346.4	-45.50	96	2.4	H	6.6	-38.90	-13	-25.90
3346.4	-42.90	142	2.1	V	5.4	-37.50	-13	-24.50
High Channel								
960.39	-61.19	179	1.3	H	10	-51.19	-13	-38.19
960.39	-63.27	157	1.9	V	11.7	-51.57	-13	-38.57
1697.6	-43.50	24	1.5	H	4.1	-39.40	-13	-26.40
1697.6	-41.80	11	2.2	V	3.1	-38.70	-13	-25.70
2546.4	-39.40	88	1.7	H	6.1	-33.30	-13	-20.30
2546.4	-40.10	295	1.5	V	5.8	-34.30	-13	-21.30
3395.2	-47.00	248	2.1	H	6.2	-40.80	-13	-27.80
3395.2	-44.30	336	1.4	V	5.4	-38.90	-13	-25.90

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 5								
Low Channel								
959.66	-60.84	125	1.9	H	10	-50.84	-13	-37.84
959.66	-63.38	153	2	V	11.7	-51.68	-13	-38.68
1652.8	-54.10	323	1.2	H	3.5	-50.60	-13	-37.60
1652.8	-53.80	280	1.4	V	3.1	-50.70	-13	-37.70
2479.2	-56.40	83	2.1	H	6.6	-49.80	-13	-36.80
2479.2	-53.40	194	1.5	V	5.8	-47.60	-13	-34.60
3305.6	-52.20	31	2.2	H	6.4	-45.80	-13	-32.80
3305.6	-50.60	10	2.3	V	5.7	-44.90	-13	-31.90
Middle Channel								
959.86	-60.87	178	1.3	H	10	-50.87	-13	-37.87
959.86	-63.17	305	1.8	V	11.7	-51.47	-13	-38.47
1673.2	-51.80	272	2	H	3.8	-48.00	-13	-35.00
1673.2	-51.30	241	1.5	V	3.1	-48.20	-13	-35.20
2509.8	-55.50	24	1.6	H	6.2	-49.30	-13	-36.30
2509.8	-54.10	2	1.4	V	5.6	-48.50	-13	-35.50
3346.4	-51.90	213	1.2	H	6.6	-45.30	-13	-32.30
3346.4	-50.40	105	1.5	V	5.4	-45.00	-13	-32.00
High Channel								
960.02	-60.54	301	1.6	H	10	-50.54	-13	-37.54
960.02	-62.88	135	1.3	V	11.7	-51.18	-13	-38.18
1693.2	-53.50	146	1.6	H	4.1	-49.40	-13	-36.40
1693.2	-53.00	35	1.6	V	3.1	-49.90	-13	-36.90
2539.8	-48.90	80	1.6	H	6.1	-42.80	-13	-29.80
2539.8	-50.70	58	1.2	V	5.8	-44.90	-13	-31.90
3386.4	-51.40	337	1.9	H	6.2	-45.20	-13	-32.20
3386.4	-50.70	269	1.6	V	5.4	-45.30	-13	-32.30

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

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GSM 1900								
Low Channel								
960.48	-60.85	25	2.2	H	10	-50.85	-13	-37.85
960.48	-63.2	296	1.5	V	11.7	-51.5	-13	-38.50
3700.4	-55.20	193	2.0	H	8.1	-47.10	-13	-34.10
3700.4	-51.00	155	2.0	V	7.6	-43.40	-13	-30.40
5550.6	-43.40	330	1.8	H	9.6	-33.80	-13	-20.80
5550.6	-46.60	8	1.8	V	9.1	-37.50	-13	-24.50
Middle Channel								
959.64	-60.86	61	1.8	H	10	-50.86	-13	-37.86
959.64	-63.16	266	2.2	V	11.7	-51.46	-13	-38.46
3760	-56.10	173	2.1	H	8.8	-47.30	-13	-34.30
3760	-53.50	301	2.5	V	8	-45.50	-13	-32.50
5640	-48.30	259	2.4	H	10.2	-38.10	-13	-25.10
5640	-50.40	310	2	V	9.4	-41.00	-13	-28.00
High Channel								
960.05	-61.39	4	2	H	10	-51.39	-13	-38.39
960.05	-62.6	313	1.8	V	11.7	-50.9	-13	-37.9
3819.6	-56.20	112	1.1	H	8.7	-47.50	-13	-34.50
3819.6	-53.90	260	1.9	V	7.9	-46.00	-13	-33.00
5729.4	-46.60	92	2.5	H	10.6	-36.00	-13	-23.00
5729.4	-49.20	230	1.6	V	10.2	-39.00	-13	-26.00

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Band 2								
Low Channel								
960.34	-60.57	303	1.1	H	10	-50.57	-13	-37.57
960.34	-62.55	177	2.4	V	11.7	-50.85	-13	-37.85
3704.8	-53.10	221	2.3	H	8.1	-45.00	-13	-32.00
3704.8	-50.30	275	1.6	V	7.6	-42.70	-13	-29.70
5557.2	-43.80	86	1.9	H	9.6	-34.20	-13	-21.20
5557.2	-49.40	246	2.2	V	9.1	-40.30	-13	-27.30
Middle Channel								
960.35	-61.45	294	2.4	H	10	-51.45	-13	-38.45
960.35	-62.63	327	1.6	V	11.7	-50.93	-13	-37.93
3760	-55.10	304	1.8	H	8.8	-46.30	-13	-33.30
3760	-51.40	237	1.2	V	8	-43.40	-13	-30.40
5640	-48.20	233	2.3	H	10.2	-38.00	-13	-25.00
5640	-50.30	9	1.4	V	9.4	-40.90	-13	-27.90
High Channel								
959.88	-61.1	251	1.1	H	10	-51.1	-13	-38.1
959.88	-63.42	90	2.1	V	11.7	-51.72	-13	-38.72
3815.2	-55.10	117	2.1	H	8.7	-46.40	-13	-33.40
3815.2	-50.20	312	2.4	V	7.9	-42.30	-13	-29.30
5722.8	-53.20	353	1.7	H	10.6	-42.60	-13	-29.60
5722.8	-52.40	225	2.2	V	10.2	-42.20	-13	-29.20

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

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 2								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
959.54	-61	289	2.2	H	10	-51	-13	-38
959.54	-62.66	10	2.2	V	11.7	-50.96	-13	-37.96
3701.4	-32.3	105	1.2	H	8.1	-24.2	-13	-11.2
3701.4	-29	358	1	V	7.6	-21.4	-13	-8.4
5550.6	-31.9	294	1.6	H	9.6	-22.3	-13	-9.3
5550.6	-29.6	300	1.2	V	9.1	-20.5	-13	-7.5
1.4MHz bandwidth, Middle Channel								
960.05	-61.4	120	1.2	H	10	-51.4	-13	-38.4
960.05	-63.31	161	1.9	V	11.7	-51.61	-13	-38.61
3760	-31.6	343	1.5	H	8.8	-22.8	-13	-9.8
3760	-27.6	337	2.1	V	8	-19.6	-13	-6.6
5640	-34.9	107	2.1	H	10.2	-24.7	-13	-11.7
5640	-31.4	202	1.9	V	9.4	-22	-13	-9
1.4MHz bandwidth, High Channel								
959.83	-60.85	12	2.2	H	10	-50.85	-13	-37.85
959.83	-63.28	103	2.1	V	11.7	-51.58	-13	-38.58
3818.6	-33.7	335	1.4	H	8.7	-25	-13	-12
3818.6	-29.4	350	1.1	V	8	-21.4	-13	-8.4
5727.90	-35.9	71	1.9	H	10.6	-25.3	-13	-12.3
5727.90	-32	0	1.6	V	10.2	-21.8	-13	-8.8

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 4								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, Low Channel								
960.41	-60.77	283	1.2	H	10	-50.77	-13	-37.77
960.41	-62.51	178	1.2	V	11.7	-50.81	-13	-37.81
3421.4	-37.7	71	1.2	H	6.4	-31.3	-13	-18.3
3421.4	-33.2	104	1.1	V	5.7	-27.5	-13	-14.5
5132.1	-33.1	51	1	H	11.3	-21.8	-13	-8.8
5132.1	-29.9	25	1.2	V	10.8	-19.1	-13	-6.1
1.4MHz bandwidth, Middle Channel								
959.8	-60.76	356	2.5	H	10	-50.76	-13	-37.76
959.8	-63.15	297	2.3	V	11.7	-51.45	-13	-38.45
3465	-31	250	1.4	H	7	-24	-13	-18.80
3465	-29.5	352	1.8	V	6.2	-23.3	-13	-18.10
5197.5	-36.5	41	1.8	H	10.4	-26.1	-13	-27.60
5197.5	-31.6	140	2.4	V	9.8	-21.8	-13	-25.40
1.4MHz bandwidth, High Channel								
959.76	-61.14	212	2	H	10	-51.14	-13	-38.14
959.76	-63.26	93	1.2	V	11.7	-51.56	-13	-38.56
3508.6	-30.3	61	1.9	H	7.8	-22.5	-13	-9.5
3508.6	-26.7	8	1.1	V	6.6	-20.1	-13	-7.1
5262.9	-39.3	63	2	H	9.5	-29.8	-13	-16.8
5262.9	-37.6	43	2.5	V	8.9	-28.7	-13	-15.7

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 7								
Test frequency range: 30MHz-26.5GHz								
5MHz bandwidth, Low Channel								
960.16	-61.2	292	2.3	H	10	-51.2	-25	-26.2
960.16	-62.85	228	1.8	V	11.7	-51.15	-25	-26.15
5005	-44.4	71	1.2	H	10.8	-33.6	-25	-8.6
5005	-39.6	104	1.1	V	10.2	-29.4	-25	-4.4
7507.5	-51.3	51	1	H	20.3	-31	-25	-6
7507.5	-50.4	25	1.2	V	20.1	-30.3	-25	-5.3
5MHz bandwidth, Middle Channel								
959.82	-61.29	36	2.3	H	10	-51.29	-25	-26.29
959.82	-63.23	133	2.2	V	11.7	-51.53	-25	-26.53
5070	-42.3	250	1.4	H	11.1	-31.2	-25	-6.2
5070	-39.8	352	1.8	V	10.8	-29	-25	-4
7605	-58.3	41	1.8	H	21.2	-37.1	-25	-12.1
7605	-58	140	2.4	V	20.1	-37.9	-25	-12.9
5MHz bandwidth, High Channel								
960.11	-60.93	126	1.7	H	10	-50.93	-25	-25.93
960.11	-62.51	50	1.8	V	11.7	-50.81	-25	-25.81
5135	-40.3	61	1.9	H	11.3	-29	-25	-4
5135	-38.9	8	1.1	V	10.8	-28.1	-25	-3.1
7702.5	-59.3	63	2	H	21.2	-38.1	-25	-13.1
7702.5	-57.6	43	2.5	V	21	-36.6	-25	-11.6

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE BAND 12								
Test frequency range: 30MHz-10GHz								
1.4MHz bandwidth, Low Channel								
960.28	-61.55	93	2	H	10	-51.55	-13	-38.55
960.28	-61.01	197	1.8	V	11.7	-49.31	-13	-36.31
1399.4	-31.2	71	1.2	H	5.9	-25.3	-13	-12.3
1399.4	-27.3	104	1.1	V	5.9	-21.4	-13	-8.4
2099.1	-22.5	51	1	H	6.3	-16.2	-13	-3.2
2099.1	-23.5	25	1.2	V	5.1	-18.4	-13	-5.4
2798.8	-36.6	51	1	H	6.7	-29.9	-13	-16.9
2798.8	-32.6	25	1.2	V	6.7	-25.9	-13	-12.9
1.4MHz bandwidth, Middle Channel								
959.86	-61.63	133	2.2	H	10	-51.63	-13	-38.63
959.86	-61.49	264	1.8	V	11.7	-49.79	-13	-36.79
1415	-31.6	250	1.4	H	5.7	-25.9	-13	-12.9
1415	-27.8	352	1.8	V	5.4	-22.4	-13	-9.4
2122.5	-22.7	41	1.8	H	6.7	-16	-13	-3
2122.5	-22.8	140	2.4	V	5.8	-17	-13	-4
2830	-35.6	41	1.8	H	7.1	-28.5	-13	-15.5
2830	-34.3	140	2.4	V	6.5	-27.8	-13	-14.8
1.4MHz bandwidth, High Channel								
959.76	-61.24	154	1.5	H	10	-51.24	-13	-38.24
959.76	-61.05	142	2.2	V	11.7	-49.35	-13	-36.35
1430.6	-32.3	61	1.9	H	5.4	-26.9	-13	-13.9
1430.6	-25.9	8	1.1	V	4.8	-21.1	-13	-8.1
2145.9	-23.1	63	2	H	7	-16.1	-13	-3.1
2145.9	-23.9	43	2.5	V	6.6	-17.3	-13	-4.3
2861.2	-36.8	63	2	H	7.3	-29.5	-13	-16.5
2861.2	-35.4	43	2.5	V	6.3	-29.1	-13	-16.1

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
BAND 17								
Test frequency range: 1-10GHz								
5MHz bandwidth, Low Channel								
959.55	-61.46	322	1.9	H	10	-51.46	-13	-38.46
959.55	-60.9	333	2.4	V	11.7	-49.2	-13	-36.2
1413	-31	71	1.2	H	5.7	-25.3	-13	-12.3
1413	-27.4	104	1.1	V	5.4	-22	-13	-9
2119.5	-22.7	51	1	H	6.6	-16.1	-13	-3.1
2119.5	-25.2	25	1.2	V	5.7	-19.5	-13	-6.5
2826	-37	51	1	H	7.1	-29.9	-13	-16.9
2826	-35.7	25	1.2	V	6.5	-29.2	-13	-16.2
5MHz bandwidth, Middle Channel								
959.77	-61.29	357	1.5	H	10	-51.29	-13	-38.29
959.77	-60.85	357	1.7	V	11.7	-49.15	-13	-36.15
1420	-32.3	71	1.2	H	5.6	-26.7	-13	-13.7
1420	-26.7	104	1.1	V	5.2	-21.5	-13	-8.5
2130	-22.8	51	1	H	6.8	-16	-13	-3
2130	-23.5	25	1.2	V	5.7	-17.8	-13	-4.8
2840	-37.1	51	1	H	7.3	-29.8	-13	-16.8
2840	-34.9	25	1.2	V	6.5	-28.4	-13	-15.4
5MHz bandwidth, High Channel								
959.97	-61.49	153	2.2	H	10	-51.49	-13	-38.49
959.97	-61.16	5	1.6	V	11.7	-49.46	-13	-36.46
1427	-31.7	71	1.2	H	5.5	-26.2	-13	-13.2
1427	-26.4	104	1.1	V	4.9	-21.5	-13	-8.5
2140.5	-22.9	51	1	H	6.9	-16	-13	-3
2140.5	-24.5	25	1.2	V	6.4	-18.1	-13	-5.1
2854	-37.9	51	1	H	7.4	-30.5	-13	-17.5
2854	-36.3	25	1.2	V	6.4	-29.9	-13	-16.9

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(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.

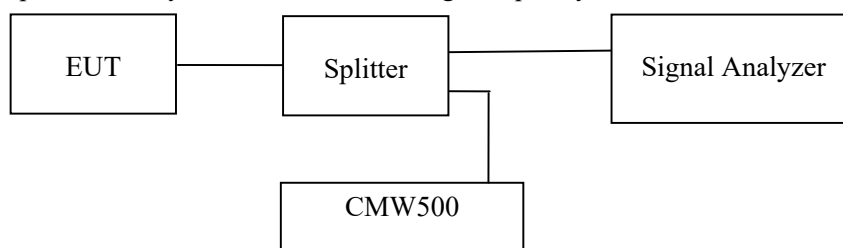
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

Test Procedure

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

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

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

Temperature:	26.8℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

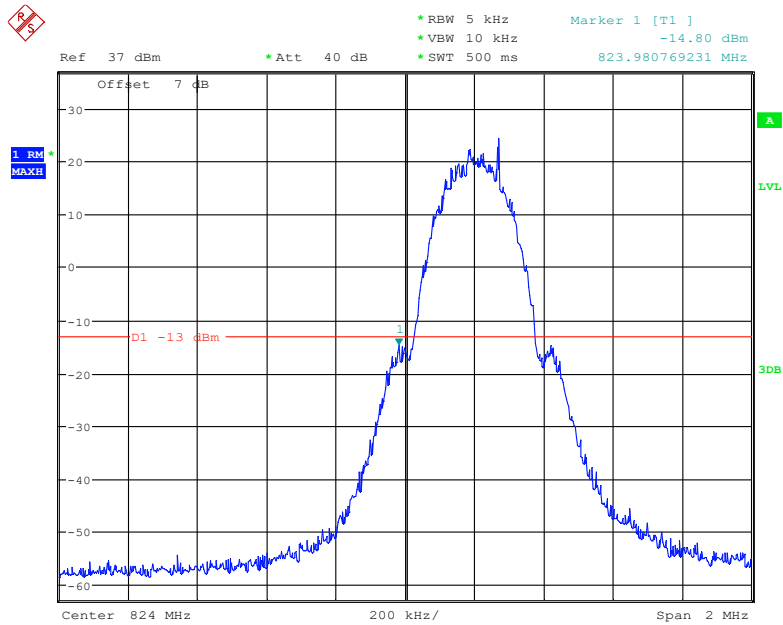
The testing was performed by Black Ding from 2022-02-16 to 2022-05-18.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

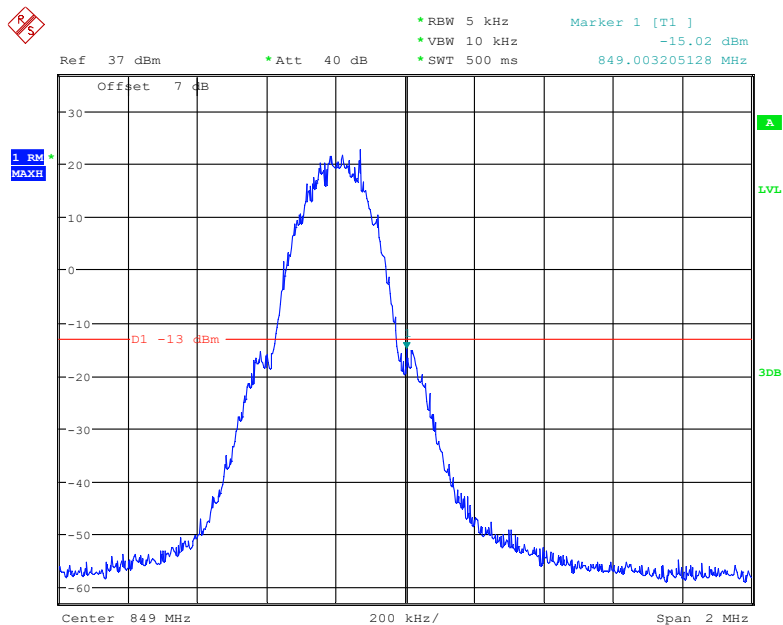
Please refer to the following plots.

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



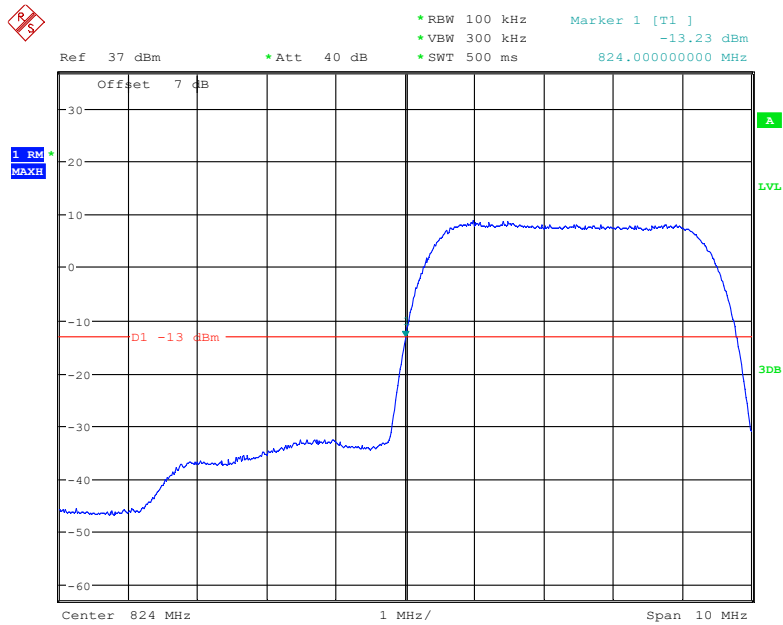
Date: 16.FEB.2022 12:01:00

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



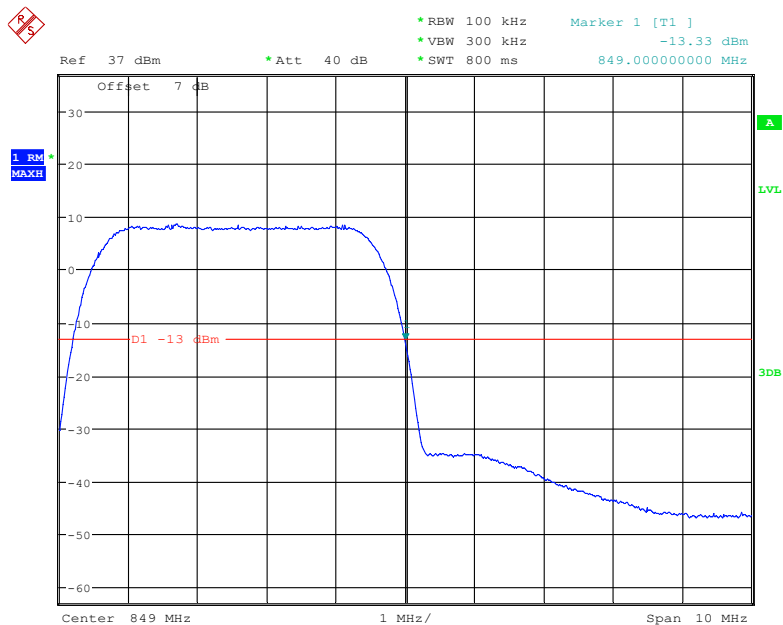
Date: 16.FEB.2022 11:58:02

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

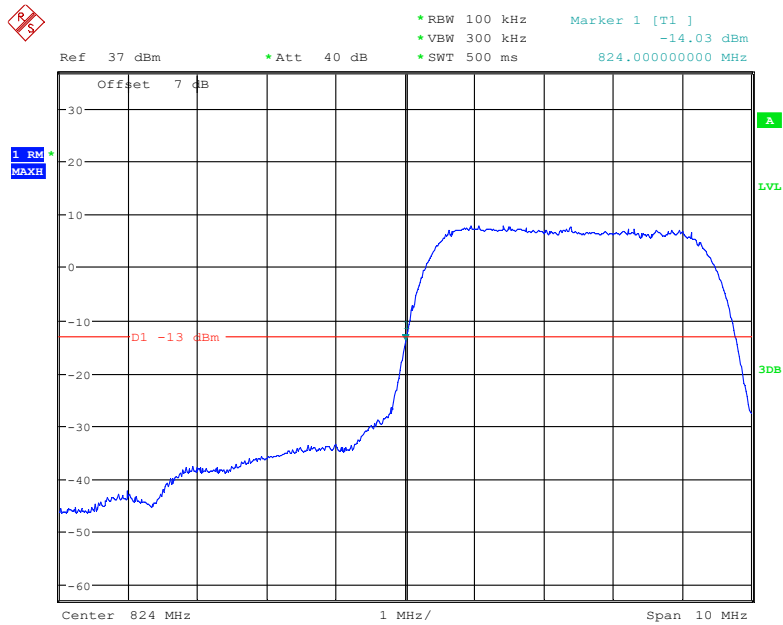


Date: 16.FEB.2022 17:28:10

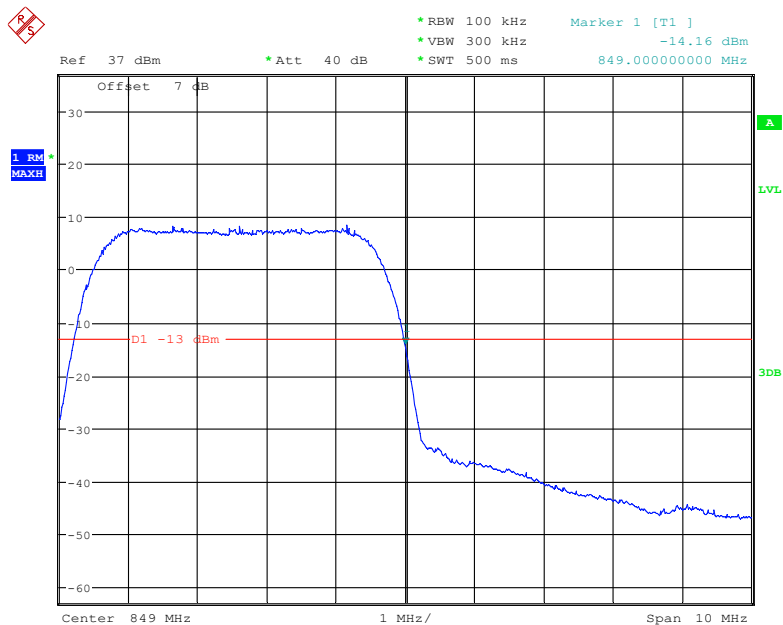
Cellular Band, Right Band Edge for RMC (BPSK) Mode



Date: 16.FEB.2022 17:30:09

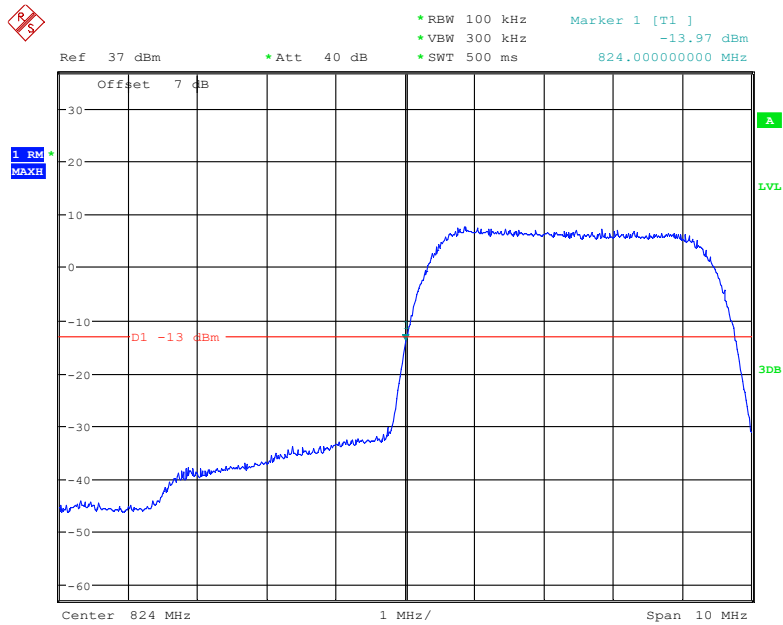
Cellular Band, Left Band Edge for HSDPA(16QAM) Mode

Date: 16.FEB.2022 17:54:53

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

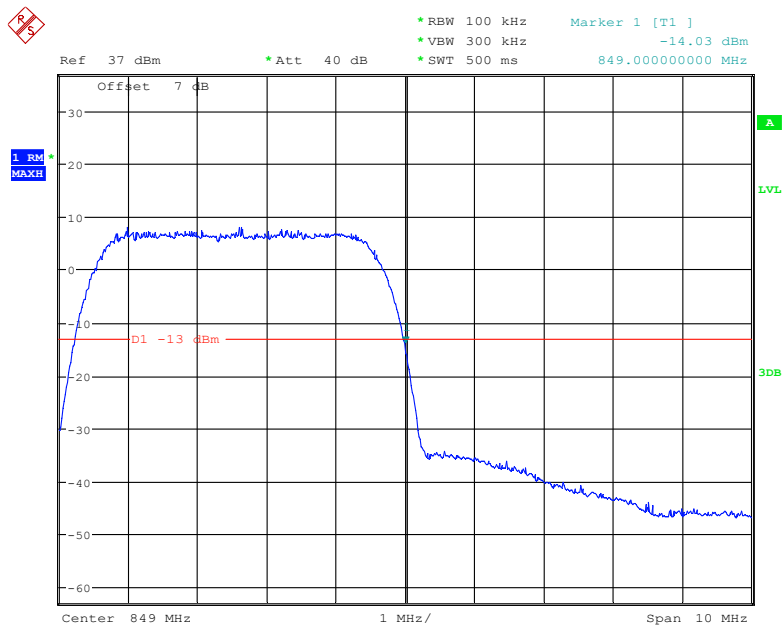
Date: 16.FEB.2022 17:53:33

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

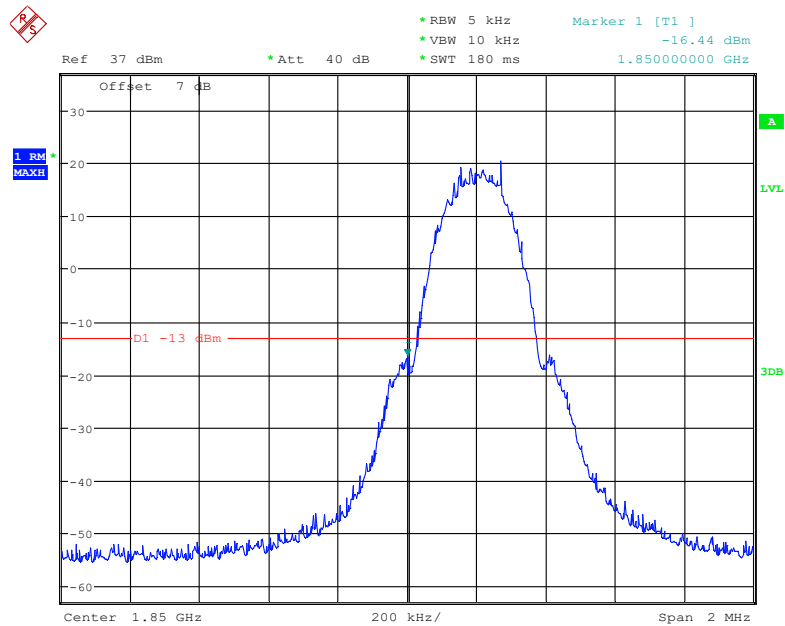


Date: 16.FEB.2022 18:15:01

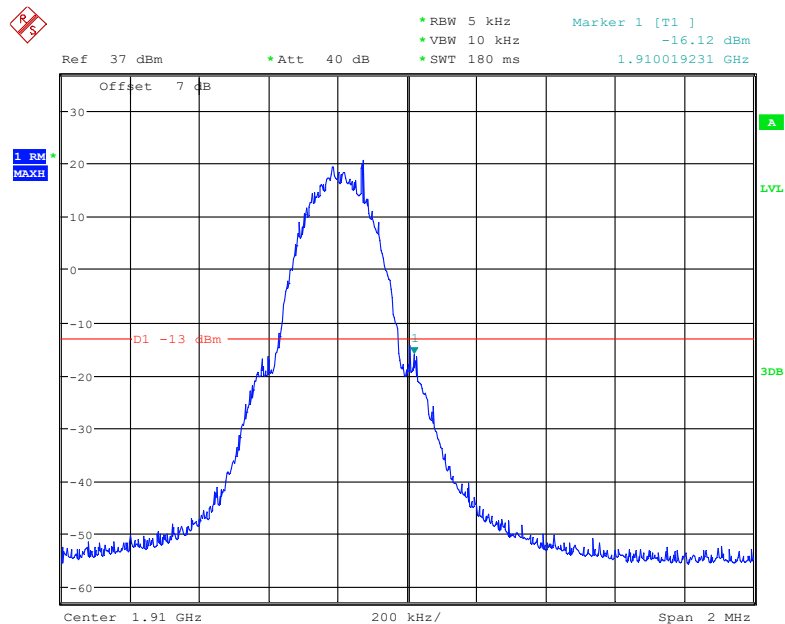
Cellular Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 16.FEB.2022 18:16:03

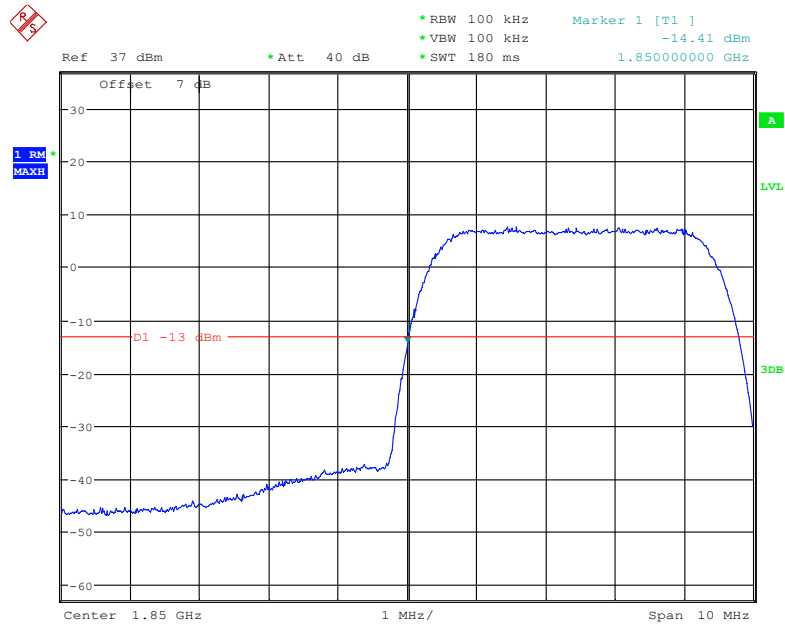
PCS Band, Left Band Edge for GSM (GMSK) Mode

Date: 16.FEB.2022 14:03:16

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

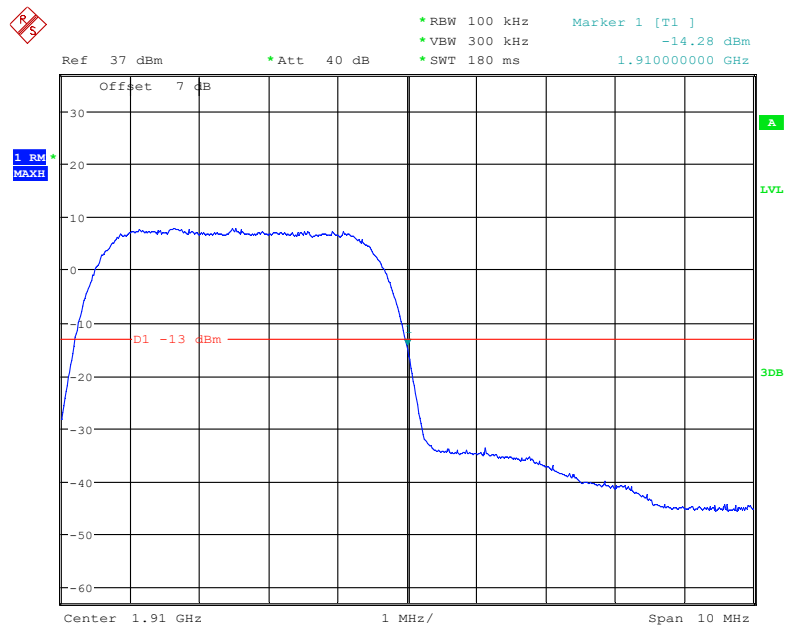
Date: 16.FEB.2022 14:08:51

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



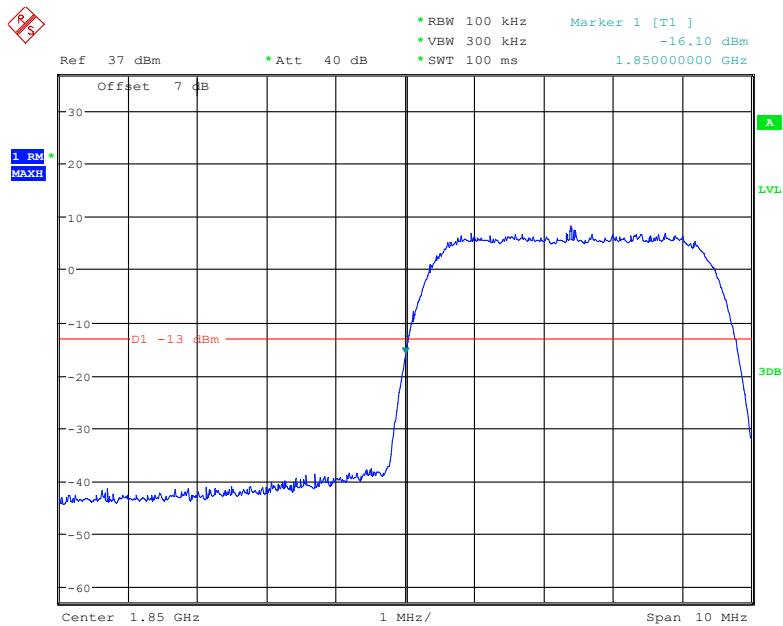
Date: 16.FEB.2022 16:05:54

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

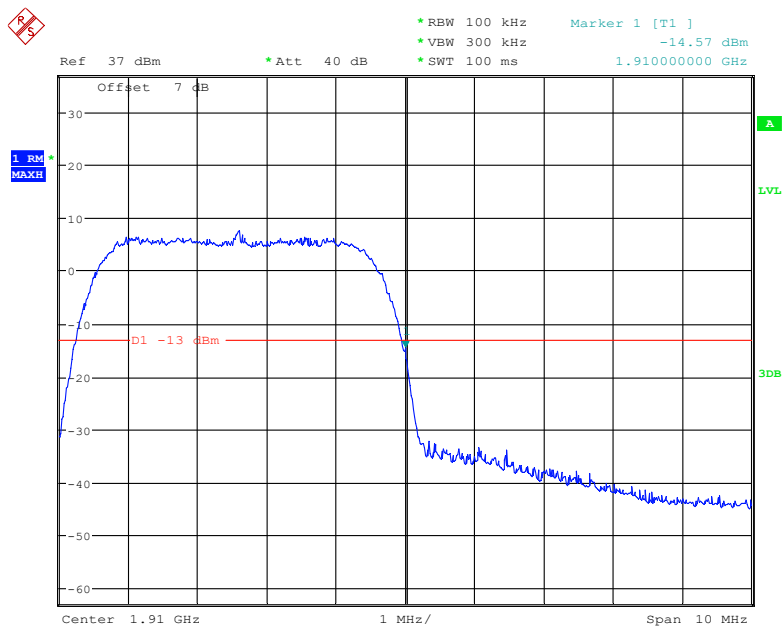


Date: 16.FEB.2022 15:56:58



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

Date: 16.FEB.2022 17:22:40

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

Date: 16.FEB.2022 17:21:01

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

FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY**Applicable Standard**

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

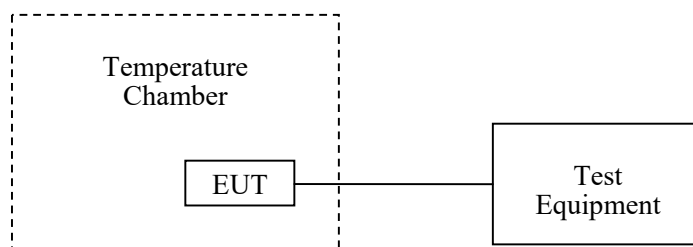
According to §24.235&§27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data**Environmental Conditions**

Temperature:	26.8℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Black Ding from 2022-02-16 to 2022-02-19.

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	NV	12	0.0143	2.5
-20		13	0.0155	2.5
-10		12	0.0143	2.5
0		13	0.0155	2.5
10		13	0.0155	2.5
20		14	0.0167	2.5
30		15	0.0179	2.5
40		12	0.0143	2.5
50		19	0.0227	2.5
20	LV	10	0.0120	2.5
	HV	11	0.0131	2.5

WCDMA Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	NV	6	0.0072	2.5
-20		5	0.0060	2.5
-10		-9	-0.0108	2.5
0		-6	-0.0072	2.5
10		-7	-0.0084	2.5
20		-2	-0.0024	2.5
30		3	0.0036	2.5
40		-1	-0.0012	2.5
50		-9	-0.0108	2.5
20	LV	4	0.0048	2.5
	HV	-4	-0.0048	2.5

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

Middle Channel, $f_0 = 1880.0\text{ MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	79	0.0420	Pass
-20		81	0.0431	Pass
-10		80	0.0426	Pass
0		86	0.0457	Pass
10		84	0.0447	Pass
20		87	0.0463	Pass
30		81	0.0431	Pass
40		79	0.0420	Pass
50		68	0.0362	Pass
20	LV	72	0.0383	Pass
	HV	77	0.0410	Pass

WCDMA Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	9	0.0048	Pass
-20		6	0.0032	Pass
-10		-1	-0.0005	Pass
0		0	0.0000	Pass
10		2	0.0011	Pass
20		-1	-0.0005	Pass
30		-3	-0.0016	Pass
40		1	0.0005	Pass
50		5	0.0027	Pass
20	LV	2	0.0011	Pass
	HV	6	0.0032	Pass

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	1.07	0.0006	Pass
-20		-9.97	-0.0053	Pass
-10		-6.13	-0.0033	Pass
0		6.17	0.0033	Pass
10		7.92	0.0042	Pass
20		6.46	0.0034	Pass
30		-6.52	-0.0035	Pass
40		7.18	0.0038	Pass
50		-9.69	-0.0052	Pass
20	LV	-8.17	-0.0043	Pass
	HV	-7.05	-0.0038	Pass

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	NV	1710.1125	1754.5652	1710	1755
-20		1710.1143	1754.5681	1710	1755
-10		1710.1157	1754.5613	1710	1755
0		1710.1128	1754.5653	1710	1755
10		1710.1121	1754.5652	1710	1755
20		1710.1137	1754.5629	1710	1755
30		1710.1158	1754.5647	1710	1755
40		1710.1129	1754.5665	1710	1755
50		1710.1151	1754.5631	1710	1755
20	LV	1710.1155	1754.5656	1710	1755
	HV	1710.1158	1754.5688	1710	1755

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.	2500.8561	2569.8748	2500	2570
-20		2500.8162	2569.8544	2500	2570
-10		2500.8236	2569.8226	2500	2570
0		2500.7987	2569.8364	2500	2570
10		2500.8123	2569.8844	2500	2570
20		2500.7984	2569.7256	2500	2570
30		2500.7965	2569.7325	2500	2570
40		2500.8016	2569.8217	2500	2570
50		2500.8215	2569.8535	2500	2570
20	L.V.	2500.7978	2569.8574	2500	2570
	H.V.	2500.8010	2569.8323	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	NV	699.0384	715.9630	699	716
-20		699.0368	715.9610	699	716
-10		699.0367	715.9679	699	716
0		699.0319	715.9668	699	716
10		699.0347	715.9649	699	716
20		699.0386	715.9676	699	716
30		699.0379	715.9668	699	716
40		699.0359	715.9694	699	716
50		699.0367	715.9657	699	716
20	LV	699.0348	715.9675	699	716
	HV	699.0372	715.9643	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	NV	704.1297	715.8478	704	716
-20		704.1263	715.8448	704	716
-10		704.1286	715.8443	704	716
0		704.1257	715.8478	704	716
10		704.1242	715.8469	704	716
20		704.1281	715.8488	704	716
30		704.1259	715.8472	704	716
40		704.1291	715.8477	704	716
50		704.1264	715.8451	704	716
20	LV	704.1220	715.8477	704	716
	HV	704.1265	715.8452	704	716

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	-3.59	-0.0019	Pass
-20		-6.68	-0.0036	Pass
-10		9.77	0.0052	Pass
0		-7.62	-0.0041	Pass
10		-9.91	-0.0053	Pass
20		-9.82	-0.0052	Pass
30		-6.68	-0.0036	Pass
40		-8.85	-0.0047	Pass
50		5.67	0.003	Pass
20	LV	6.05	0.0032	Pass
	HV	7.52	0.004	Pass

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	NV	1710.2684	1754.7567	1710	1755
-20		1710.2763	1754.7662	1710	1755
-10		1710.2678	1754.7599	1710	1755
0		1710.2656	1754.7563	1710	1755
10		1710.2667	1754.7574	1710	1755
20		1710.2648	1754.7625	1710	1755
30		1710.2652	1754.7616	1710	1755
40		1710.2667	1754.7598	1710	1755
50		1710.2677	1754.7623	1710	1755
20	LV	1710.2659	1754.7579	1710	1755
	HV	1710.2713	1754.7598	1710	1755

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.	2500.8136	2569.8535	2500	2570
-20		2500.8241	2569.8466	2500	2570
-10		2500.8665	2569.8264	2500	2570
0		2500.7735	2569.8343	2500	2570
10		2500.8384	2569.8848	2500	2570
20		2500.7456	2569.7267	2500	2570
30		2500.7584	2569.7359	2500	2570
40		2500.8645	2569.8278	2500	2570
50		2500.8546	2569.8556	2500	2570
20	L.V.	2500.7859	2569.8544	2500	2570
	H.V.	2500.8032	2569.8332	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	NV	699.0387	715.9626	699	716
-20		699.0366	715.9601	699	716
-10		699.0389	715.9646	699	716
0		699.0337	715.9632	699	716
10		699.0346	715.9641	699	716
20		699.0416	715.9629	699	716
30		699.0358	715.9624	699	716
40		699.0342	715.9633	699	716
50		699.0387	715.9632	699	716
20	LV	699.0356	715.9668	699	716
	HV	699.0341	715.9673	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	NV	704.0415	715.9115	704	716
-20		704.0391	715.9147	704	716
-10		704.0396	715.9142	704	716
0		704.0392	715.9172	704	716
10		704.0414	715.9231	704	716
20		704.0434	715.9236	704	716
30		704.0439	715.9219	704	716
40		704.0413	715.9241	704	716
50		704.0399	715.9238	704	716
20	LV	704.0364	715.9245	704	716
	HV	704.0362	715.9277	704	716

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