



FCC PART 27
FCC PART 22H, PART 24E
TEST REPORT

For

SENWA MEXICO,S.A.DE C.V

CARRETERA MEXICO-TOLUCA No. 5324, INT. PLANTA BAJA COL. EL YAQUI,
CUAJIMALPA DE MORELOS, CIUDAD DE MEXICO, Mexico

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Mobile Phone
Tested Model	D50L
Frequency Range	EGSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 66: 1710-1780MHz(TX); 2110-2180MHz(RX)
Modulation Technique	2G: GMSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	EGSM850/WCDMA Band 5/LTE Band 5: -0.5dBi PCS1900/WCDMA Band 2/LTE Band 2: 0.3dBi WCDMA Band 4/LTE Band 4/LTE Band 66: 0.2dBi LTE Band 7: -0.2dBi (provided by the applicant)
Voltage Range	DC 3.8 V from battery or DC5.0V from adapter
Date of Test	2021-04-23 to 2021-05-21
Sample serial number	SZ1210419-12206E-RF-S1(Assigned by BACL, Shenzhen)
Received date	2021-04-19
Sample/EUT Status	Good condition
Adapter information	Model: SGITL1A Input: 100-240V _{AC} , 50/60Hz, 0.2A Output: 5V _{DC} , 1A

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and Subpart 27 of the Federal Communication Commissions 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 Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters. Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Equipment Modifications

No modification was made to the EUT.

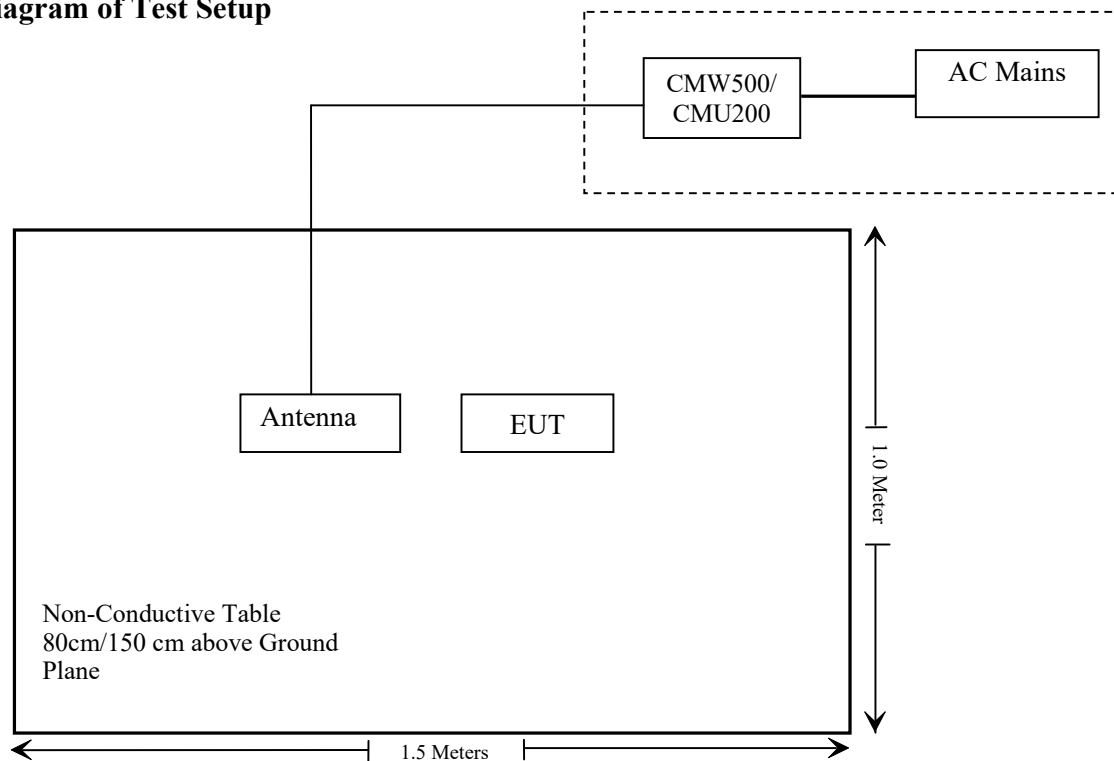
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh

Support Cable Description

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMU200

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/28	2021/11/27
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
A.H.System	Horn Antenna	SAS-200/571	135	2018/09/01	2021/08/31
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
MICRO-TRONICS	Passband filter	HPM50111	F-19-EM006	2021/04/20	2022/04/20
Unknown	High Pass filter	1.3GHz	101120	2021/04/20	2022/04/20
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-01 1304	2020/12/06	2023/12/05
Agilent	Signal Generator	N5183A	MY51040755	2020/12/29	2021/12/28

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2021/04/02	2022/04/01
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/08/04	2021/08/03
Unknown	RF Cable	Unknown	2301 276	2020/11/29	2021/11/28
Unknown	RF Cable	Unknown	DLO J5/W6102	2020/11/29	2021/11/28
Weinschel	Power divider	1515	MY628	2020/11/29	2021/11/28
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500	2020/07/31	2021/07/30
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2021/01/05	2022/01/05
Fluke	Digital Multimeter	287	19000011	2020/07/23	2021/07/22

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) 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

Compliance, please refer to the SAR report: SZ1210419-12206E-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 (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.

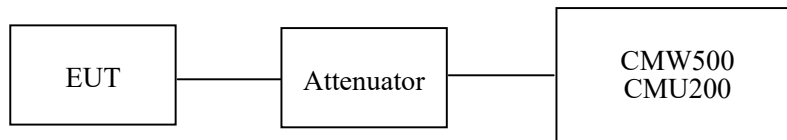
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz & 2496-2690MHz.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMW500/CMU200 through sufficient attenuation.



Radiated method:

ANSI C63.26-2015 section 5.5.3.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Pedro Yun on 2021-04-23.

Conducted Power**Cellular 850**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP (dBm)	Limit (dBm)
GSM	128	824.2	31.89	29.04	38.45
	190	836.6	32.24	29.39	38.45
	251	848.8	32.31	29.46	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	31.85	29.76	27.73	25.37	29	26.91	24.88	22.52	38.45
	190	836.6	32.17	29.91	27.88	25.52	29.32	27.06	25.03	22.67	38.45
	251	848.8	32.25	29.94	27.95	25.58	29.4	27.09	25.1	22.73	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP (dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 5)	RMC12.2k		22.30	22.23	22.14	19.45	19.38	19.29	38.45
	HSDPA	1	21.04	21.02	20.51	18.19	18.17	17.66	38.45
		2	21.03	21.04	20.49	18.18	18.19	17.64	38.45
		3	21.01	21.01	20.47	18.16	18.16	17.62	38.45
		4	21.00	20.99	20.50	18.15	18.14	17.65	38.45
	HSUPA	1	21.03	21.02	20.57	18.18	18.17	17.72	38.45
		2	21.01	20.99	20.53	18.16	18.14	17.68	38.45
		3	21.00	20.97	20.52	18.15	18.12	17.67	38.45
		4	21.02	20.01	20.51	18.17	17.16	17.66	38.45
		5	20.99	20.98	20.54	18.14	18.13	17.69	38.45
	HSPA+	1	20.36	20.28	20.27	17.51	17.43	17.42	38.45

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable Loss(dB)
 For GSM850/WCDMA Band 5: Antenna Gain = -0.5dBi = -2.65dBd (0dBd=2.15dBi)
 Cable Loss=0.2dB*(provided by the applicant)
 Limit: ERP≤38.45dBm

PCS 1900

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP (dBm)	Limit (dBm)
GSM	512	1850.2	29.74	29.54	33
	661	1880.0	29.95	29.75	33
	810	1909.8	29.97	29.77	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.74	27.44	25.91	23.99	29.54	27.24	25.71	23.79	33
	661	1880.0	29.93	27.47	25.94	24.01	29.73	27.27	25.74	23.81	33
	810	1909.8	29.95	27.41	25.84	23.89	29.75	27.21	25.64	23.69	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP (dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 2)	RMC12.2k		21.46	21.53	21.67	21.26	21.33	21.47	33
	HSDPA	1	20.01	20.63	20.32	19.81	20.43	20.12	33
		2	20.00	20.59	20.28	19.8	20.39	20.08	33
		3	19.89	20.61	20.30	19.69	20.41	20.10	33
		4	19.95	20.57	20.27	19.75	20.37	20.07	33
	HSUPA	1	20.05	20.61	20.32	19.85	20.41	20.12	33
		2	19.78	20.35	20.21	19.58	20.15	20.01	33
		3	19.86	20.56	20.12	19.66	20.36	19.92	33
		4	19.94	20.45	20.30	19.74	20.25	20.10	33
		5	19.96	20.53	20.25	19.76	20.33	20.05	33
	HSPA+	1	20.02	20.55	20.35	19.82	20.35	20.15	33

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

For PCS1900 /WCDMA Band 2: Antenna Gain = 0.3dBi

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

Limit: EIRP≤33dBm

AWS Band 4

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 4)	RMC12.2k		22.98	23.02	22.92	22.68	22.72	22.62	30
	HSDPA	1	22.01	21.94	21.95	21.71	21.64	21.65	30
		2	21.96	21.96	21.87	21.66	21.66	21.57	30
		3	21.85	21.81	21.80	21.55	21.51	21.50	30
		4	22.19	22.19	22.13	21.89	21.89	21.83	30
	HSUPA	1	22.12	22.07	22.09	21.82	21.77	21.79	30
		2	21.99	21.98	21.85	21.69	21.68	21.55	30
		3	22.21	22.20	22.03	21.91	21.90	21.73	30
		4	22.06	22.09	21.87	21.76	21.79	21.57	30
		5	22.03	22.03	21.91	21.73	21.73	21.61	30
	HSPA+	1	22.36	22.28	22.17	22.06	21.98	21.87	30

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

For Band 4: Antenna Gain = 0.2dBi

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

Limit: EIRP ≤ 30dBm

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.25	13
	Middle	3.56	13
	High	3.49	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.56	13
	Middle	3.35	13
	High	3.54	13
HSDPA (16QAM)	Low	3.45	13
	Middle	3.24	13
	High	3.46	13
HSUPA (BPSK)	Low	3.14	13
	Middle	3.24	13
	High	3.37	13
HSPA+	Low	3.26	13
	Middle	3.35	13
	High	3.29	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.28	13
	Middle	3.22	13
	High	3.49	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.56	13
	Middle	3.45	13
	High	3.41	13
HSDPA (16QAM)	Low	3.53	13
	Middle	3.37	13
	High	3.48	13
HSUPA (BPSK)	Low	3.34	13
	Middle	3.67	13
	High	3.54	13
HSPA+	Low	3.64	13
	Middle	3.52	13
	High	3.38	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.36	13
	Middle	3.26	13
	High	3.25	13
HSDPA (16QAM)	Low	3.26	13
	Middle	3.32	13
	High	3.16	13
HSUPA (BPSK)	Low	3.25	13
	Middle	3.15	13
	High	3.18	13
HSPA+	Low	3.43	13
	Middle	3.25	13
	High	3.15	13

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	22.41	22.44	22.74	22.21	22.24	22.54
		RB1#3	22.57	22.48	22.76	22.37	22.28	22.56
		RB1#5	22.60	22.49	22.74	22.40	22.29	22.54
		RB3#0	22.60	22.60	22.81	22.40	22.40	22.61
		RB3#3	22.59	22.59	22.71	22.39	22.39	22.51
		RB6#0	21.53	21.59	21.70	21.33	21.39	21.50
	16QAM	RB1#0	21.71	21.32	22.39	21.51	21.12	22.19
		RB1#3	21.74	21.37	22.36	21.54	21.17	22.16
		RB1#5	21.72	21.30	22.36	21.52	21.10	22.16
		RB3#0	21.44	21.82	21.84	21.24	21.62	21.64
		RB3#3	21.48	21.83	21.89	21.28	21.63	21.69
		RB6#0	20.58	20.67	21.00	20.38	20.47	20.80
3.0	QPSK	RB1#0	22.43	22.43	22.61	22.23	22.23	22.41
		RB1#8	22.44	22.45	22.65	22.24	22.25	22.45
		RB1#14	22.43	22.50	22.66	22.23	22.3	22.46
		RB6#0	21.47	21.55	21.77	21.27	21.35	21.57
		RB6#9	21.47	21.61	21.69	21.27	21.41	21.49
		RB15#0	21.53	21.46	21.65	21.33	21.26	21.45
	16QAM	RB1#0	21.70	22.05	21.46	21.50	21.85	21.26
		RB1#8	21.73	22.04	21.48	21.53	21.84	21.28
		RB1#14	21.69	22.04	21.53	21.49	21.84	21.33
		RB6#0	20.69	20.75	21.04	20.49	20.55	20.84
		RB6#9	20.63	20.78	21.01	20.43	20.58	20.81
		RB15#0	20.62	20.51	20.82	20.42	20.31	20.62

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.45	22.60	22.59	22.25	22.40	22.39
		RB1#13	22.45	22.55	22.62	22.25	22.35	22.42
		RB1#24	22.46	22.65	22.64	22.26	22.45	22.44
		RB15#0	21.59	21.57	21.77	21.39	21.37	21.57
		RB15#10	21.49	21.51	21.72	21.29	21.31	21.52
		RB25#0	21.45	21.52	21.68	21.25	21.32	21.48
	16QAM	RB1#0	20.74	21.66	21.29	20.54	21.46	21.09
		RB1#13	20.79	21.76	21.41	20.59	21.56	21.21
		RB1#24	20.77	21.74	21.40	20.57	21.54	21.20
		RB15#0	20.66	20.51	20.80	20.46	20.31	20.60
		RB15#10	20.68	20.58	20.86	20.48	20.38	20.66
		RB25#0	20.66	20.61	20.64	20.46	20.41	20.44
10.0	QPSK	RB1#0	22.47	22.58	22.61	22.27	22.38	22.41
		RB1#25	22.49	22.52	22.63	22.29	22.32	22.43
		RB1#49	22.49	22.64	22.75	22.29	22.44	22.55
		RB25#0	21.44	21.50	21.69	21.24	21.30	21.49
		RB25#25	21.58	21.49	21.73	21.38	21.29	21.53
		RB50#0	21.64	21.50	21.56	21.44	21.30	21.36
	16QAM	RB1#0	21.95	21.70	21.14	21.75	21.5	20.94
		RB1#25	21.93	21.68	21.20	21.73	21.48	21.00
		RB1#49	21.92	21.75	21.21	21.72	21.55	21.01
		RB25#0	20.60	20.70	20.83	20.40	20.50	20.63
		RB25#25	20.66	20.70	20.86	20.46	20.50	20.66
		RB50#0	20.55	20.69	20.83	20.35	20.49	20.63

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	22.47	22.44	22.54	22.27	22.24	22.34
		RB1#38	22.42	22.41	22.54	22.22	22.21	22.34
		RB1#74	22.50	22.46	22.70	22.30	22.26	22.50
		RB36#0	21.52	21.59	21.59	21.32	21.39	21.39
		RB36#39	21.54	21.54	21.78	21.34	21.34	21.58
		RB75#0	21.48	21.59	21.65	21.28	21.39	21.45
	16QAM	RB1#0	21.90	21.74	21.95	21.70	21.54	21.75
		RB1#38	21.97	22.32	22.03	21.77	22.12	21.83
		RB1#74	21.90	22.31	22.11	21.70	22.11	21.91
		RB36#0	20.54	20.64	20.79	20.34	20.44	20.59
		RB36#39	20.64	20.62	20.84	20.44	20.42	20.64
		RB75#0	20.64	20.60	20.71	20.44	20.40	20.51
20.0	QPSK	RB1#0	22.63	22.56	22.62	22.43	22.36	22.42
		RB1#50	22.69	22.58	22.65	22.49	22.38	22.45
		RB1#99	22.65	22.58	22.83	22.45	22.38	22.63
		RB50#0	21.51	21.60	21.64	21.31	21.40	21.44
		RB50#50	21.58	21.64	21.65	21.38	21.44	21.45
		RB100#0	21.50	21.50	21.63	21.30	21.30	21.43
	16QAM	RB1#0	21.54	21.58	22.27	21.34	21.38	22.07
		RB1#50	21.55	21.62	22.30	21.35	21.42	22.10
		RB1#99	21.54	21.64	22.42	21.34	21.44	22.22
		RB50#0	20.64	20.66	20.56	20.44	20.46	20.36
		RB50#50	20.72	20.75	20.73	20.52	20.55	20.53
		RB100#0	20.66	20.58	20.88	20.46	20.38	20.68

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

For Band 2: Antenna Gain = 0.3dBi

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

Limit: EIRP ≤ 33dBm

Peak-to-average ratio (PAR)**20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.68	4.49	3.94	13	Pass
QPSK (100RB Size)	5.51	5.58	5.29	13	Pass
16QAM (1RB Size)	5.61	5.64	5.06	13	Pass
16QAM (100RB Size)	6.41	6.47	6.12	13	Pass

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	22.32	22.45	22.46	22.02	22.15	22.16
		RB1#3	22.32	22.36	22.47	22.02	22.06	22.17
		RB1#5	22.31	22.44	22.46	22.01	22.14	22.16
		RB3#0	22.34	22.51	22.48	22.04	22.21	22.18
		RB3#3	22.34	22.55	22.37	22.04	22.25	22.07
		RB6#0	21.34	21.45	21.32	21.04	21.15	21.02
	16QAM	RB1#0	21.98	22.17	21.44	21.68	21.87	21.14
		RB1#3	21.96	22.16	21.48	21.66	21.86	21.18
		RB1#5	22.00	22.18	21.56	21.70	21.88	21.26
		RB3#0	21.38	21.36	21.42	21.08	21.06	21.12
		RB3#3	21.43	21.39	21.43	21.13	21.09	21.13
		RB6#0	20.61	20.50	20.76	20.31	20.20	20.46
3.0	QPSK	RB1#0	22.25	22.38	22.50	21.95	22.08	22.20
		RB1#8	22.27	22.41	22.50	21.97	22.11	22.20
		RB1#14	22.27	22.36	22.46	21.97	22.06	22.16
		RB6#0	21.29	21.39	21.33	20.99	21.09	21.03
		RB6#9	21.28	21.42	21.38	20.98	21.12	21.08
		RB15#0	21.31	21.44	21.45	21.01	21.14	21.15
	16QAM	RB1#0	21.80	22.12	21.46	21.50	21.82	21.16
		RB1#8	21.73	22.19	21.45	21.43	21.89	21.15
		RB1#14	21.79	22.15	21.49	21.49	21.85	21.19
		RB6#0	20.28	20.51	20.80	19.98	20.21	20.50
		RB6#9	20.28	20.58	20.69	19.98	20.28	20.39
		RB15#0	20.48	20.43	20.66	20.18	20.13	20.36

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	22.41	22.52	22.22	22.11	22.22	21.92
		RB1#13	22.28	22.44	22.23	21.98	22.14	21.93
		RB1#24	22.29	22.46	22.27	21.99	22.16	21.97
		RB15#0	21.41	21.43	21.47	21.11	21.13	21.17
		RB15#10	21.36	21.36	21.41	21.06	21.06	21.11
		RB25#0	21.33	21.42	21.39	21.03	21.12	21.09
	16QAM	RB1#0	20.55	21.61	20.98	20.25	21.31	20.68
		RB1#13	20.51	21.55	21.00	20.21	21.25	20.70
		RB1#24	20.47	21.65	21.00	20.17	21.35	20.70
		RB15#0	20.49	20.38	20.51	20.19	20.08	20.21
		RB15#10	20.44	20.25	20.48	20.14	19.95	20.18
		RB25#0	20.47	20.41	20.41	20.17	20.11	20.11
10.0	QPSK	RB1#0	22.28	22.42	22.55	21.98	22.12	22.25
		RB1#25	22.23	22.43	22.57	21.93	22.13	22.27
		RB1#49	22.34	22.46	22.53	22.04	22.16	22.23
		RB25#0	21.29	21.31	21.36	20.99	21.01	21.06
		RB25#25	21.37	21.39	21.43	21.07	21.09	21.13
		RB50#0	21.33	21.30	21.36	21.03	21.00	21.06
	16QAM	RB1#0	21.50	21.54	20.97	21.20	21.24	20.67
		RB1#25	21.54	21.58	20.97	21.24	21.28	20.67
		RB1#49	21.57	21.64	20.98	21.27	21.34	20.68
		RB25#0	20.43	20.57	20.57	20.13	20.27	20.27
		RB25#25	20.47	20.54	20.63	20.17	20.24	20.33
		RB50#0	20.42	20.51	20.48	20.12	20.21	20.18

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	22.29	22.46	22.48	21.99	22.16	22.18
		RB1#38	22.35	22.48	22.60	22.05	22.18	22.30
		RB1#74	22.38	22.48	22.53	22.08	22.18	22.23
		RB36#0	21.35	21.39	21.43	21.05	21.09	21.13
		RB36#39	21.39	21.39	21.47	21.09	21.09	21.17
		RB75#0	21.40	21.45	21.47	21.10	21.15	21.17
	16QAM	RB1#0	21.53	21.58	21.85	21.23	21.28	21.55
		RB1#38	21.55	21.60	21.83	21.25	21.30	21.53
		RB1#74	21.59	21.54	21.81	21.29	21.24	21.51
		RB36#0	20.47	20.52	20.55	20.17	20.22	20.25
		RB36#39	20.50	20.58	20.59	20.20	20.28	20.29
		RB75#0	20.52	20.51	20.45	20.22	20.21	20.15
20.0	QPSK	RB1#0	22.46	22.44	22.52	22.16	22.14	22.22
		RB1#50	22.48	22.39	22.53	22.18	22.09	22.23
		RB1#99	22.53	22.47	22.56	22.23	22.17	22.26
		RB50#0	21.36	21.40	21.37	21.06	21.10	21.07
		RB50#50	21.42	21.52	21.38	21.12	21.22	21.08
		RB100#0	21.41	21.48	21.41	21.11	21.18	21.11
	16QAM	RB1#0	21.31	21.86	22.01	21.01	21.56	21.71
		RB1#50	21.41	21.85	21.97	21.11	21.55	21.67
		RB1#99	21.41	21.89	22.07	21.11	21.59	21.77
		RB50#0	20.47	20.53	20.43	20.17	20.23	20.13
		RB50#50	20.50	20.59	20.48	20.20	20.29	20.18
		RB100#0	20.53	20.42	20.49	20.23	20.12	20.19

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

For Band 4: Antenna Gain = 0.2dBi

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

Limit: EIRP≤30dBm

Peak-to-average ratio (PAR)**20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.62	5.67	4.71	13	Pass
QPSK (100RB Size)	5.58	5.67	5.48	13	Pass
16QAM (1RB Size)	5.71	6.92	5.64	13	Pass
16QAM (100RB Size)	6.47	6.57	6.41	13	Pass

LTE Band 5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.01	22.82	22.99	20.16	19.97	20.14
		RB1#3	22.90	22.90	22.97	20.05	20.05	20.12
		RB1#5	22.91	22.89	22.97	20.06	20.04	20.12
		RB3#0	23.10	23.05	23.05	20.25	20.20	20.20
		RB3#3	23.09	23.04	22.99	20.24	20.19	20.14
		RB6#0	21.93	22.05	22.02	19.08	19.20	19.17
	16QAM	RB1#0	22.42	22.58	21.87	19.57	19.73	19.02
		RB1#3	22.32	22.69	21.87	19.47	19.84	19.02
		RB1#5	22.38	22.69	21.90	19.53	19.84	19.05
		RB3#0	22.00	22.01	22.09	19.15	19.16	19.24
		RB3#3	22.09	21.93	22.10	19.24	19.08	19.25
		RB6#0	21.19	21.11	21.31	18.34	18.26	18.46
3.0	QPSK	RB1#0	23.00	22.85	23.02	20.15	20.00	20.17
		RB1#8	22.95	22.95	23.07	20.10	20.10	20.22
		RB1#14	22.91	22.86	23.04	20.06	20.01	20.19
		RB6#0	21.95	22.05	21.96	19.10	19.20	19.11
		RB6#9	22.07	22.06	21.96	19.22	19.21	19.11
		RB15#0	22.00	22.01	21.95	19.15	19.16	19.10
	16QAM	RB1#0	22.26	22.78	21.63	19.41	19.93	18.78
		RB1#8	22.25	22.72	21.67	19.40	19.87	18.82
		RB1#14	22.34	22.71	21.73	19.49	19.86	18.88
		RB6#0	21.14	21.00	21.23	18.29	18.15	18.38
		RB6#9	21.05	21.05	21.18	18.20	18.20	18.33
		RB15#0	21.10	21.08	20.96	18.25	18.23	18.11

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	23.12	22.98	22.94	20.27	20.13	20.09
		RB1#13	23.01	23.09	22.96	20.16	20.24	20.11
		RB1#24	23.16	23.10	22.88	20.31	20.25	20.03
		RB15#0	22.13	22.04	22.00	19.28	19.19	19.15
		RB15#10	22.05	22.04	21.91	19.20	19.19	19.06
		RB25#0	22.07	22.10	21.97	19.22	19.25	19.12
	16QAM	RB1#0	21.34	22.15	21.59	18.49	19.30	18.74
		RB1#13	21.33	22.18	21.67	18.48	19.33	18.82
		RB1#24	21.32	22.11	21.70	18.47	19.26	18.85
		RB15#0	21.18	20.94	21.15	18.33	18.09	18.30
		RB15#10	21.24	20.91	21.04	18.39	18.06	18.19
		RB25#0	21.23	21.06	20.91	18.38	18.21	18.06
10.0	QPSK	RB1#0	23.06	23.14	23.04	20.21	20.29	20.19
		RB1#25	23.04	23.02	23.00	20.19	20.17	20.15
		RB1#49	23.03	23.04	22.88	20.18	20.19	20.03
		RB25#0	22.07	22.07	22.04	19.22	19.22	19.19
		RB25#25	22.01	22.04	21.99	19.16	19.19	19.14
		RB50#0	22.10	22.01	22.05	19.25	19.16	19.20
	16QAM	RB1#0	22.13	22.15	21.46	19.28	19.30	18.61
		RB1#25	22.15	22.11	21.54	19.30	19.26	18.69
		RB1#49	22.11	22.16	21.54	19.26	19.31	18.69
		RB25#0	21.13	21.10	21.12	18.28	18.25	18.27
		RB25#25	21.08	21.11	21.06	18.23	18.26	18.21
		RB50#0	21.20	21.14	21.04	18.35	18.29	18.19

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
 For Band 5: Antenna Gain = 0.5dBi = -2.65dBd (0dBd=2.15dBi)
 Cable Loss= 0.2dB*(provided by the applicant)
 Limit: ERP≤38.45dBm

Peak-to-average ratio (PAR)**10MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.33	4.58	4.46	13	Pass
QPSK (50RB Size)	5.51	5.35	5.51	13	Pass
16QAM (1RB Size)	5.26	5.61	5.64	13	Pass
16QAM (50RB Size)	6.38	6.25	6.25	13	Pass

LTE Band 7:**Maximum Output Power**

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	22.45	22.37	21.98	21.75	21.67	21.28
		RB1#13	22.37	22.37	22.01	21.67	21.67	21.31
		RB1#24	22.38	22.37	21.39	21.68	21.67	20.69
		RB15#0	21.54	21.42	21.24	20.84	20.72	20.54
		RB15#10	21.39	21.30	21.29	20.69	20.60	20.59
		RB25#0	21.47	21.42	21.30	20.77	20.72	20.60
	16QAM	RB1#0	20.82	21.49	20.94	20.12	20.79	20.24
		RB1#13	20.76	21.44	20.93	20.06	20.74	20.23
		RB1#24	20.90	21.48	20.96	20.20	20.78	20.26
		RB15#0	20.63	20.33	20.42	19.93	19.63	19.72
		RB15#10	20.62	20.44	20.44	19.92	19.74	19.74
		RB25#0	20.63	20.42	20.34	19.93	19.72	19.64
10.0	QPSK	RB1#0	22.30	22.34	22.50	21.60	21.64	21.80
		RB1#25	22.25	22.22	22.36	21.55	21.52	21.66
		RB1#49	22.28	22.25	21.93	21.58	21.55	21.23
		RB25#0	21.45	21.25	21.33	20.75	20.55	20.63
		RB25#25	21.44	21.25	21.28	20.74	20.55	20.58
		RB50#0	21.49	21.44	21.36	20.79	20.74	20.66
	16QAM	RB1#0	21.65	21.70	20.94	20.95	21.00	20.24
		RB1#25	21.64	21.66	20.89	20.94	20.96	20.19
		RB1#49	21.67	21.65	20.87	20.97	20.95	20.17
		RB25#0	20.53	20.50	20.53	19.83	19.80	19.83
		RB25#25	20.50	20.56	20.54	19.80	19.86	19.84
		RB50#0	20.62	20.52	20.38	19.92	19.82	19.68

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	22.39	22.39	22.44	21.69	21.69	21.74
		RB1#38	22.35	22.22	22.38	21.65	21.52	21.68
		RB1#74	22.49	22.22	21.29	21.79	21.52	20.59
		RB36#0	21.38	21.43	21.38	20.68	20.73	20.68
		RB36#39	21.43	21.31	21.20	20.73	20.61	20.50
		RB75#0	21.34	21.38	21.35	20.64	20.68	20.65
	16QAM	RB1#0	21.78	22.28	21.74	21.08	21.58	21.04
		RB1#38	21.66	22.10	21.78	20.96	21.40	21.08
		RB1#74	21.84	22.08	21.54	21.14	21.38	20.84
		RB36#0	20.53	20.51	20.46	19.83	19.81	19.76
		RB36#39	20.63	20.43	20.41	19.93	19.73	19.71
		RB75#0	20.58	20.53	20.47	19.88	19.83	19.77
20.0	QPSK	RB1#0	22.50	22.46	22.39	21.80	21.76	21.69
		RB1#50	22.48	22.34	22.49	21.78	21.64	21.79
		RB1#99	22.53	22.24	21.52	21.83	21.54	20.82
		RB50#0	21.33	21.35	21.36	20.63	20.65	20.66
		RB50#50	21.30	21.29	21.25	20.60	20.59	20.55
		RB100#0	21.36	21.32	21.36	20.66	20.62	20.66
	16QAM	RB1#0	21.28	21.96	21.87	20.58	21.26	21.17
		RB1#50	21.33	21.85	21.95	20.63	21.15	21.25
		RB1#99	21.14	21.83	21.87	20.44	21.13	21.17
		RB50#0	20.60	20.54	20.38	19.90	19.84	19.68
		RB50#50	20.53	20.59	20.38	19.83	19.89	19.68
		RB100#0	20.41	20.47	20.51	19.71	19.77	19.81

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
 For Band 7: Antenna Gain = -0.2dBi, Cable Loss=0.5dB*(provided by the applicant)
 Limit: EIRP ≤ 33dBm

Peak-to-average ratio (PAR)**20MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.91	4.52	4.62	13	Pass
QPSK (100RB Size)	5.06	5.26	5.45	13	Pass
16QAM (1RB Size)	4.39	5.06	5.58	13	Pass
16QAM (100RB Size)	5.74	6.03	6.25	13	Pass

LTE Band 66:

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	22.36	22.27	22.34	22.06	21.97	22.04
		RB1#3	22.39	22.27	22.34	22.09	21.97	22.04
		RB1#5	22.39	22.29	22.33	22.09	21.99	22.03
		RB3#0	22.36	22.51	22.48	22.06	22.21	22.18
		RB3#3	22.35	22.51	22.56	22.05	22.21	22.26
		RB6#0	21.22	21.45	21.47	20.92	21.15	21.17
	16QAM	RB1#0	21.50	22.10	21.18	21.20	21.80	20.88
		RB1#3	21.56	22.12	21.20	21.26	21.82	20.90
		RB1#5	21.50	22.09	21.20	21.20	21.79	20.90
		RB3#0	21.14	21.42	21.63	20.84	21.12	21.33
		RB3#3	21.18	21.49	21.59	20.88	21.19	21.29
		RB6#0	20.29	20.39	20.70	19.99	20.09	20.40
3.0	QPSK	RB1#0	22.29	22.31	22.31	21.99	22.01	22.01
		RB1#8	22.23	22.27	22.36	21.93	21.97	22.06
		RB1#14	22.26	22.34	22.40	21.96	22.04	22.10
		RB6#0	21.26	21.46	21.52	20.96	21.16	21.22
		RB6#9	21.24	21.50	21.45	20.94	21.20	21.15
		RB15#0	21.29	21.40	21.49	20.99	21.10	21.19
	16QAM	RB1#0	21.75	22.15	21.23	21.45	21.85	20.93
		RB1#8	21.68	22.11	21.18	21.38	21.81	20.88
		RB1#14	21.66	22.07	21.25	21.36	21.77	20.95
		RB6#0	20.30	20.45	20.72	20.00	20.15	20.42
		RB6#9	20.32	20.46	20.72	20.02	20.16	20.42
		RB15#0	20.41	20.53	20.54	20.11	20.23	20.24

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QP SK	RB1#0	22.30	22.31	22.36	22.00	22.01	22.06
		RB1#13	22.25	22.02	22.07	21.95	21.72	21.77
		RB1#24	22.30	22.44	22.23	22.00	22.14	21.93
		RB15#0	21.29	21.35	21.32	20.99	21.05	21.02
		RB15#10	21.34	21.34	21.25	21.04	21.04	20.95
		RB25#0	21.33	21.30	21.10	21.03	21.00	20.80
	16QAM	RB1#0	21.42	21.51	21.62	21.12	21.21	21.32
		RB1#13	21.25	21.22	21.16	20.95	20.92	20.86
		RB1#24	21.30	21.26	21.43	21.00	20.96	21.13
		RB15#0	21.13	21.11	21.05	20.83	20.81	20.75
		RB15#10	21.12	21.14	21.00	20.82	20.84	20.70
		RB25#0	20.91	20.76	20.85	20.61	20.46	20.55
10.0	QPSK	RB1#0	23.05	23.31	23.28	22.75	23.01	22.98
		RB1#25	22.91	22.92	22.85	22.61	22.62	22.55
		RB1#49	23.09	23.31	23.38	22.79	23.01	23.08
		RB25#0	22.05	22.09	22.01	21.75	21.79	21.71
		RB25#25	22.09	22.21	22.24	21.79	21.91	21.94
		RB50#0	22.02	21.83	21.86	21.72	21.53	21.56
	16QAM	RB1#0	22.37	22.47	22.34	22.07	22.17	22.04
		RB1#25	22.26	22.41	22.65	21.96	22.11	22.35
		RB1#49	22.42	22.29	22.43	22.12	21.99	22.13
		RB25#0	20.89	20.89	21.08	20.59	20.59	20.78
		RB25#25	21.21	21.29	21.02	20.91	20.99	20.72
		RB50#0	20.93	20.67	20.64	20.63	20.37	20.34

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	22.75	22.86	22.88	22.45	22.56	22.58
		RB1#38	22.78	22.82	22.74	22.48	22.52	22.44
		RB1#74	23.12	23.26	23.26	22.82	22.96	22.96
		RB36#0	21.92	21.74	21.58	21.62	21.44	21.28
		RB36#39	21.87	21.73	21.73	21.57	21.43	21.43
		RB75#0	22.29	22.46	22.47	21.99	22.16	22.17
	16QAM	RB1#0	21.99	22.06	22.07	21.69	21.76	21.77
		RB1#38	22.11	22.10	22.31	21.81	21.80	22.01
		RB1#74	22.15	22.12	22.14	21.85	21.82	21.84
		RB36#0	21.20	21.20	21.38	20.90	20.90	21.08
		RB36#39	21.27	21.28	21.36	20.97	20.98	21.06
		RB75#0	21.26	21.41	21.45	20.96	21.11	21.15
20.0	QPSK	RB1#0	23.17	23.16	23.07	22.87	22.86	22.77
		RB1#50	23.33	23.41	23.38	23.03	23.11	23.08
		RB1#99	23.08	23.23	23.01	22.78	22.93	22.71
		RB50#0	22.09	22.10	21.88	21.79	21.80	21.58
		RB50#50	21.94	21.72	21.97	21.64	21.42	21.67
		RB100#0	21.95	21.85	21.74	21.65	21.55	21.44
	16QAM	RB1#0	21.90	22.03	22.06	21.60	21.73	21.76
		RB1#50	21.96	21.93	22.14	21.66	21.63	21.84
		RB1#99	22.13	22.22	22.25	21.83	21.92	21.95
		RB50#0	21.13	20.93	20.93	20.83	20.63	20.63
		RB50#50	21.08	21.06	21.08	20.78	20.76	20.78
		RB100#0	21.07	21.24	21.28	20.77	20.94	20.98

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

For Band 66: Antenna Gain = 0.2dBi, Cable Loss=0.5dB*(provided by the applicant)

Limit: EIRP ≤ 30dBm

Peak-to-average ratio (PAR)**20MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.61	5.13	4.97	13	Pass
QPSK (100RB Size)	5.64	5.61	5.64	13	Pass
16QAM (1RB Size)	5.87	6.09	6.06	13	Pass
16QAM (100RB Size)	6.51	6.47	6.51	13	Pass

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

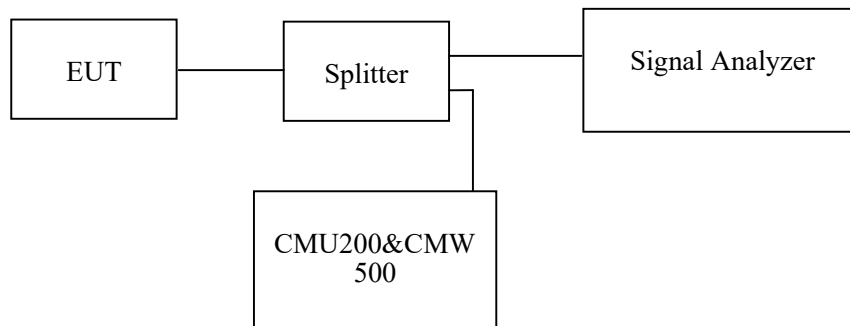
Applicable Standard

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:	25~27 °C
Relative Humidity:	52~55 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Pedro Yun from 2021-04-23 to 2021-05-21.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

Cellular Band (Part 22H)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	824.2	248.397	314.423
	836.6	245.192	312.179
	848.8	241.987	335.256

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.151	4.705
	836.6	4.151	4.696
	846.6	4.167	4.705
HSDPA	826.4	4.151	4.705
	836.6	4.151	4.692
	846.6	4.167	4.699
HSUPA	826.4	4.167	4.721
	836.6	4.151	4.679
	846.6	4.167	4.686

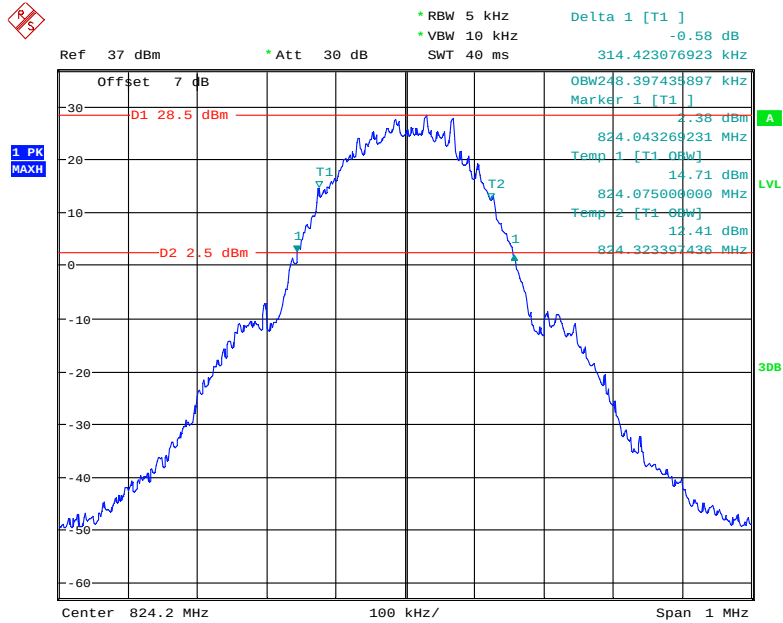
PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1850.2	243.590	310.577
	1880.0	241.987	304.808
	1909.8	240.385	300.962

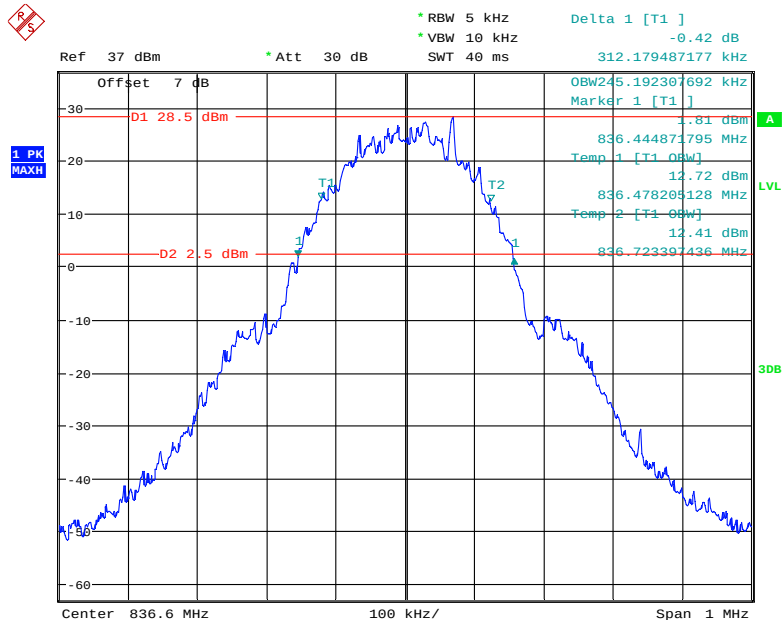
	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.151	4.699
	1880.0	4.151	4.692
	1907.6	4.151	4.708
HSDPA	1852.4	4.151	4.689
	1880.0	4.167	4.699
	1907.6	4.151	4.712
HSUPA	1852.4	4.151	4.663
	1880.0	4.151	4.696
	1907.6	4.151	4.654

AWS Band (Part 27)

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.150	4.679
	1732.6	4.150	4.679
	1752.6	4.150	4.651
HSDPA	1712.4	4.160	4.663
	1732.6	4.150	4.679
	1752.6	4.140	4.663
HSUPA	1712.4	4.140	4.663
	1732.6	4.150	4.679
	1752.6	4.160	4.659

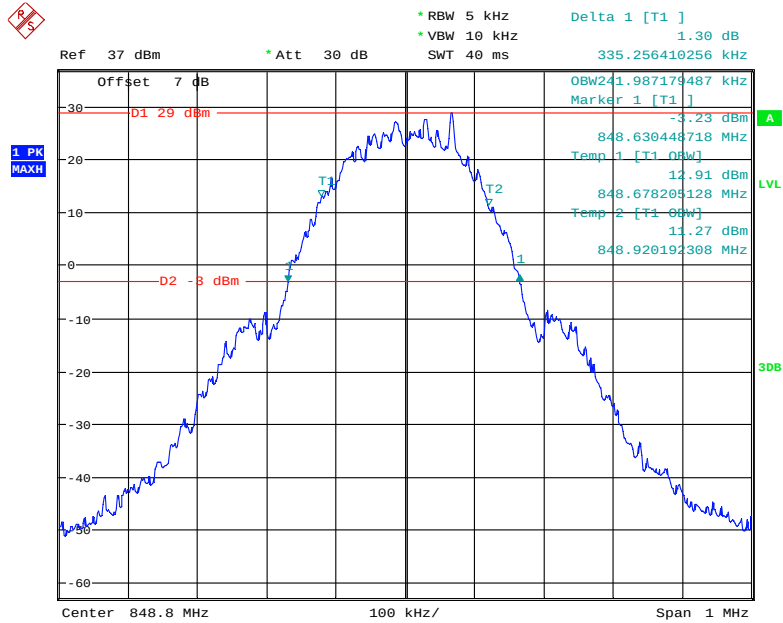
Cellular Band (Part 22H)**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**

Date: 23.APR.2021 17:05:57

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

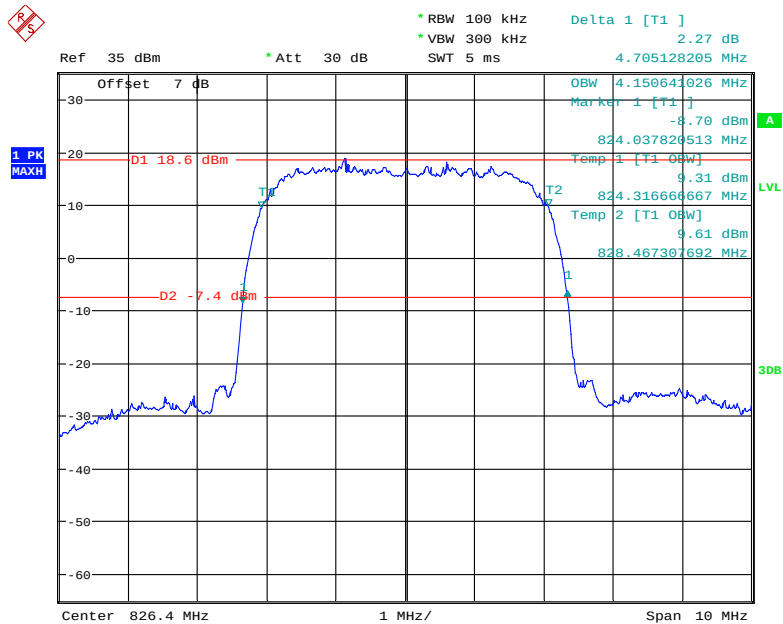
Date: 23.APR.2021 17:18:22

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



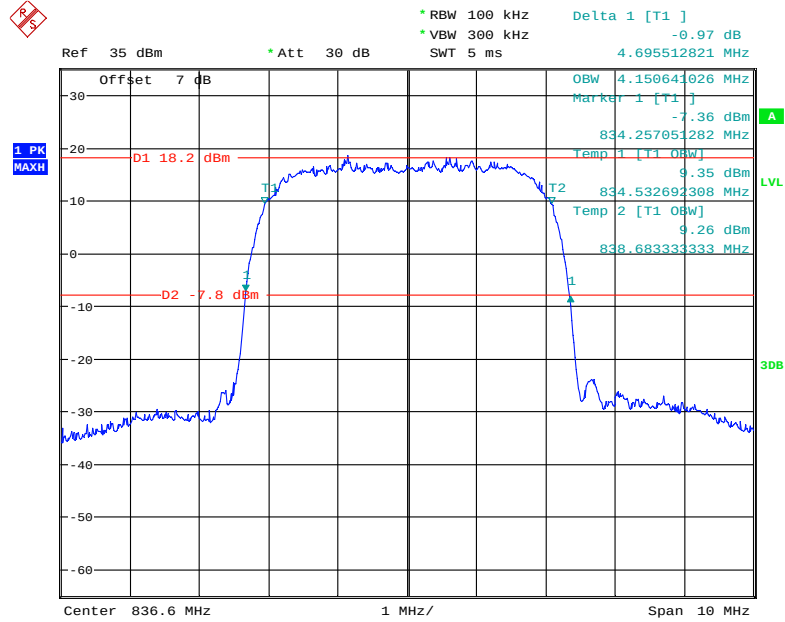
Date: 26.APR.2021 18:26:03

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



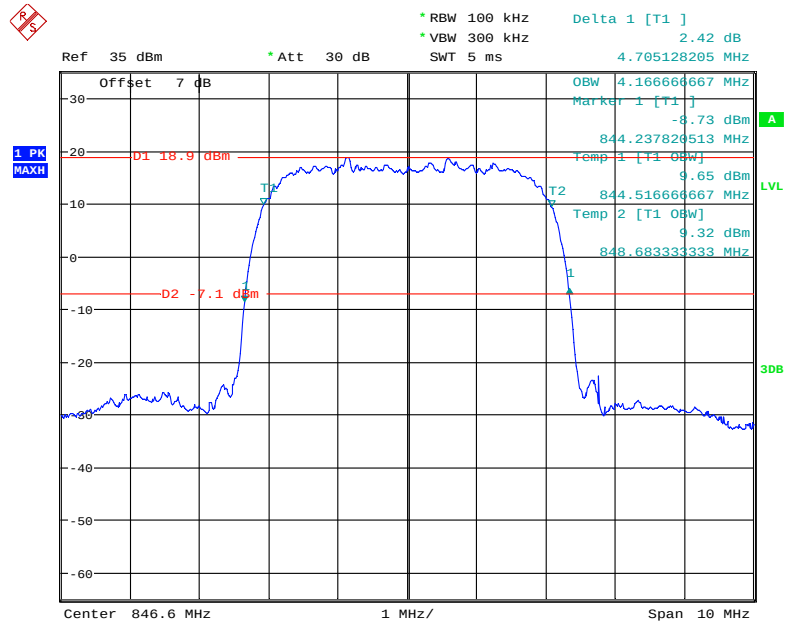
Date: 25.APR.2021 15:25:41

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

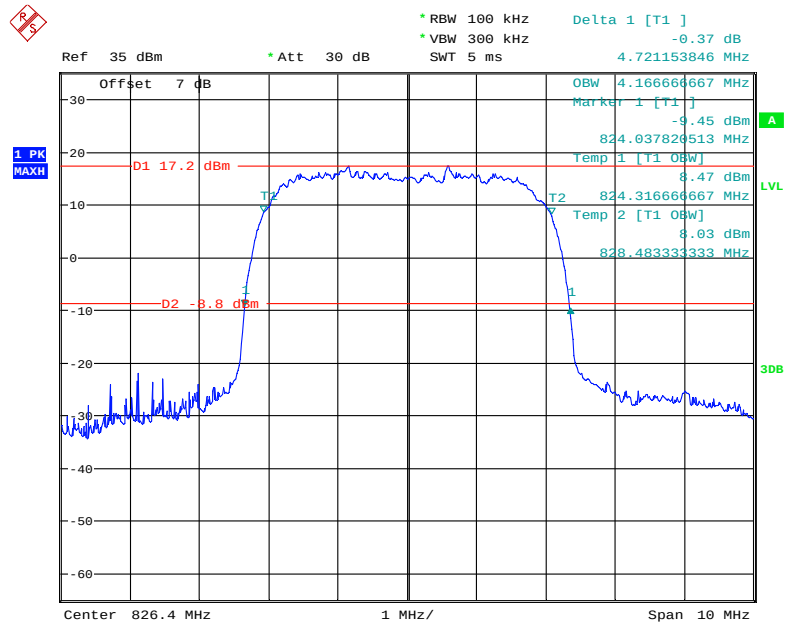


Date: 25.APR.2021 15:28:10

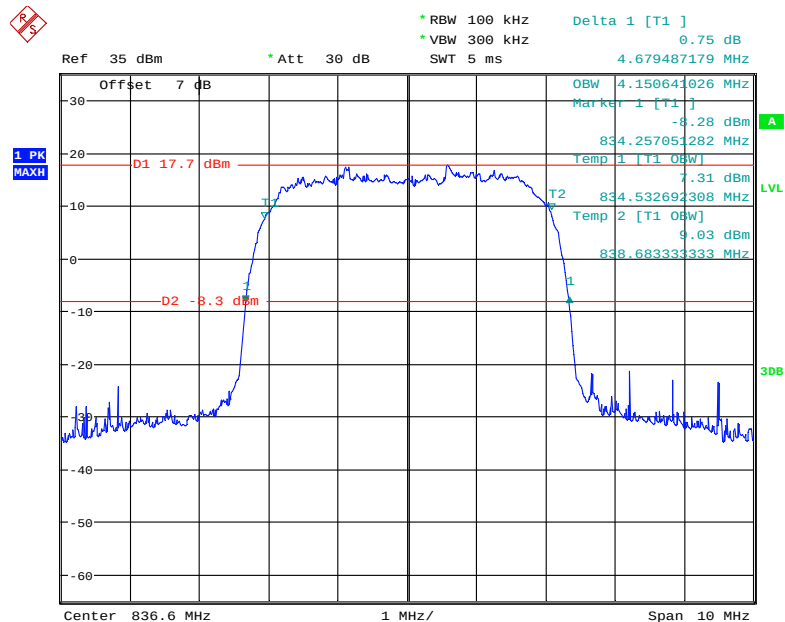
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel



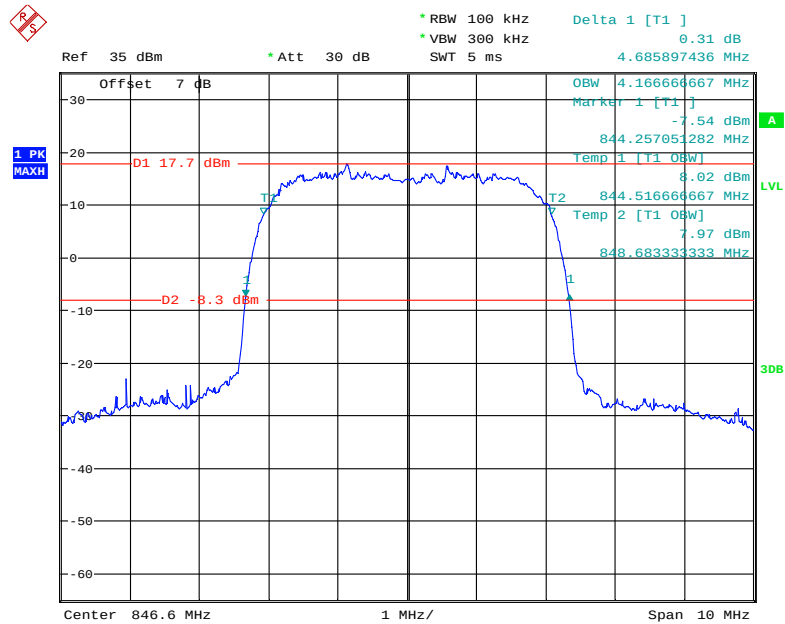
Date: 25.APR.2021 15:33:24

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

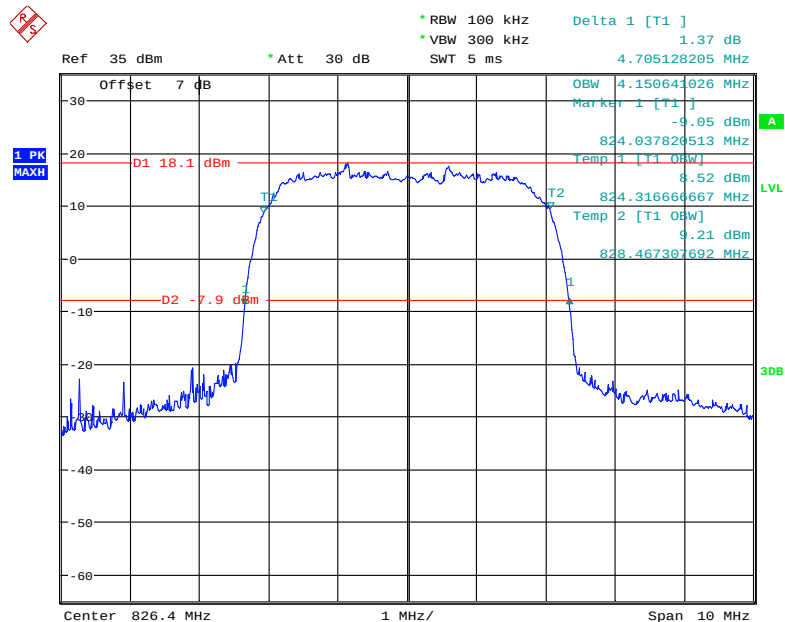
Date: 25.APR.2021 13:24:31

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

Date: 25.APR.2021 13:30:21

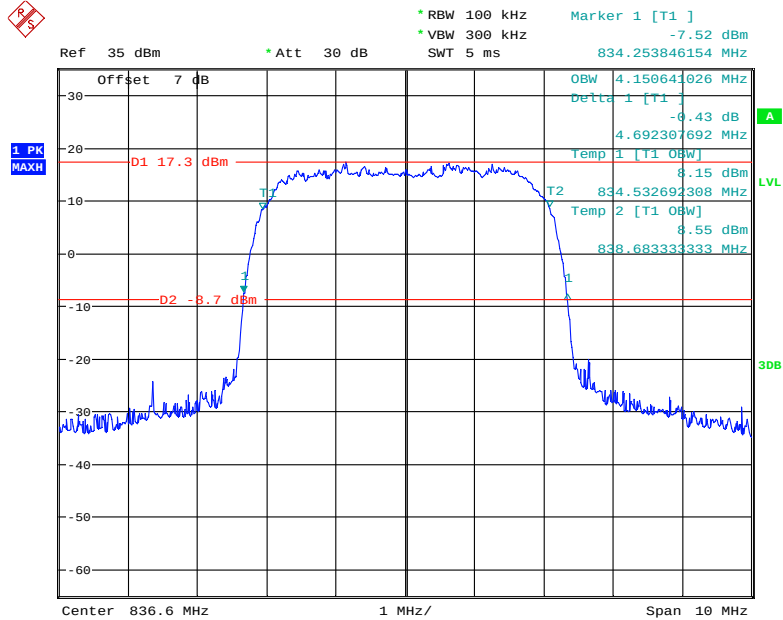
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel

Date: 25.APR.2021 13:36:47

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

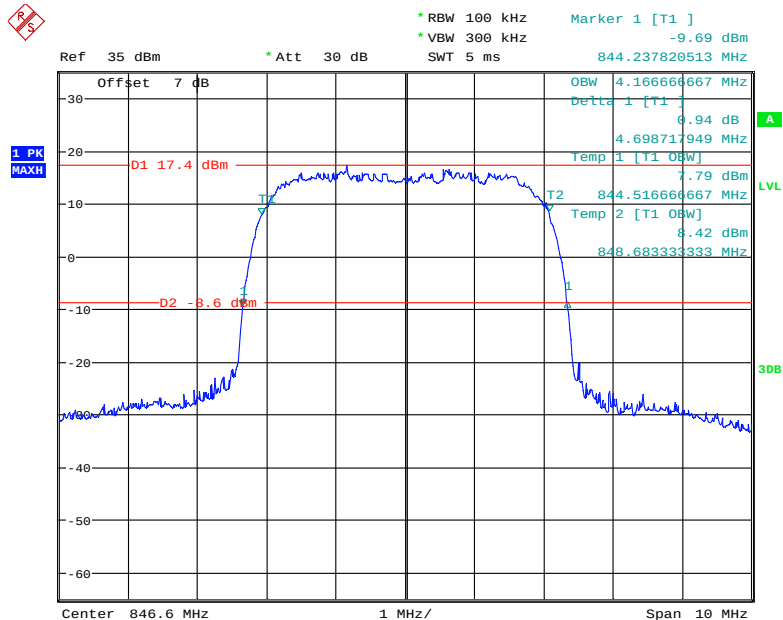
Date: 25.APR.2021 14:47:48

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



Date: 25.APR.2021 14:43:32

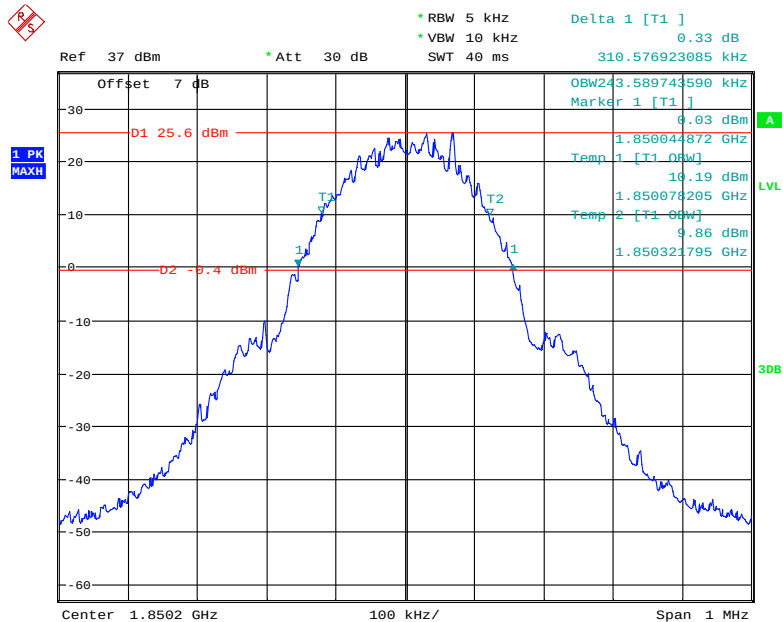
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 25.APR.2021 14:39:57

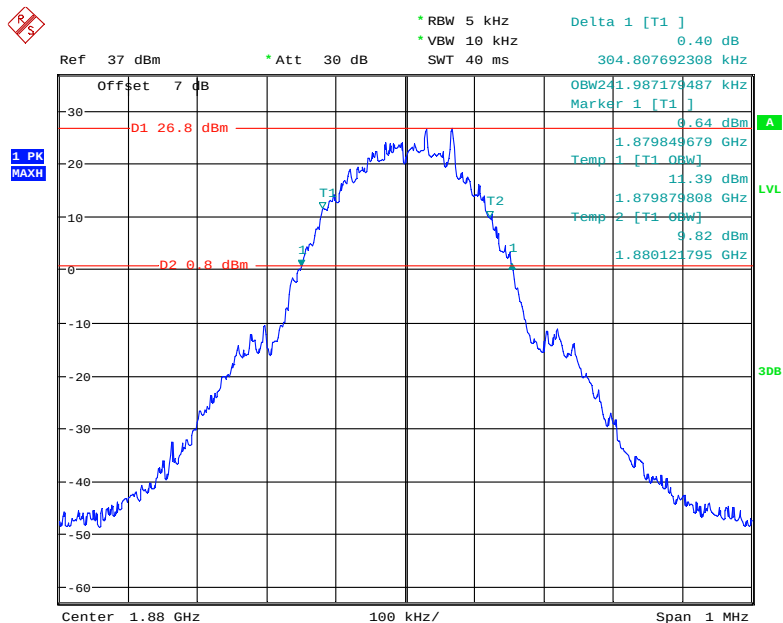
PCS Band (Part 24E)

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

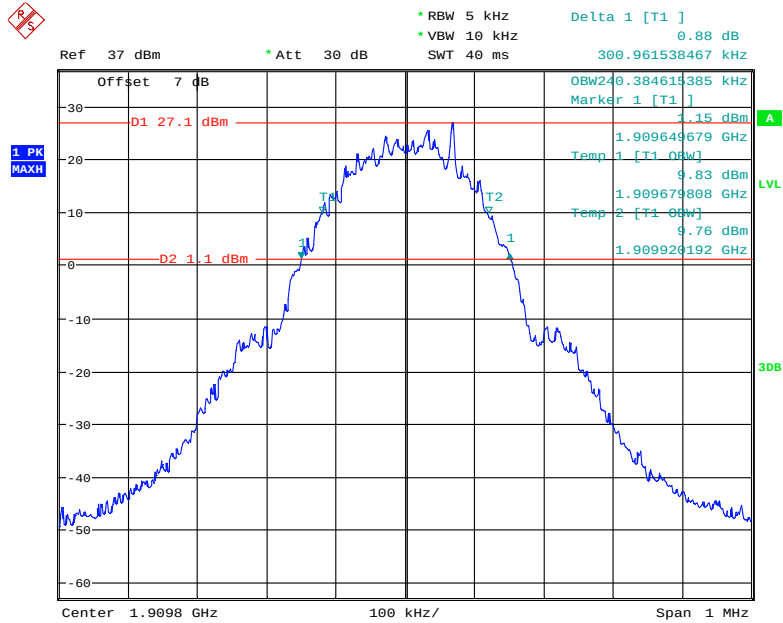


Date: 23.APR.2021 16:54:39

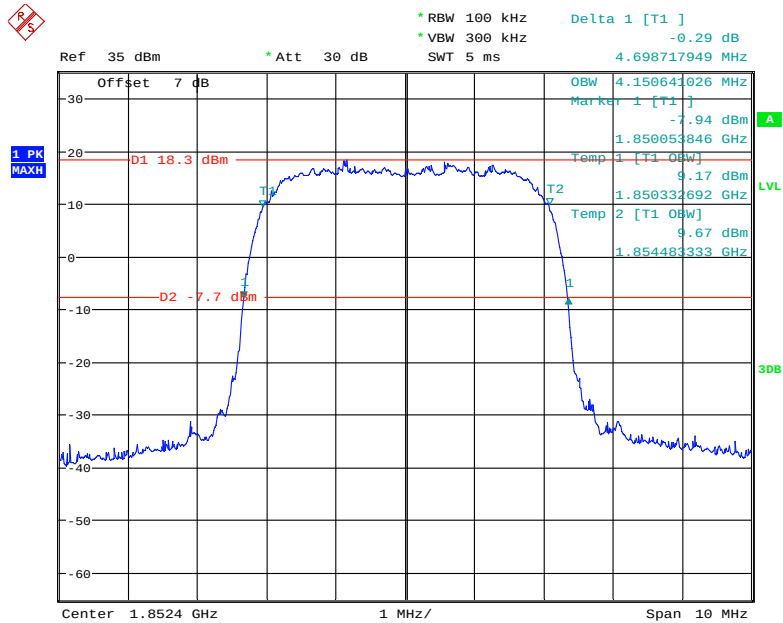
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



Date: 26.APR.2021 18:30:08

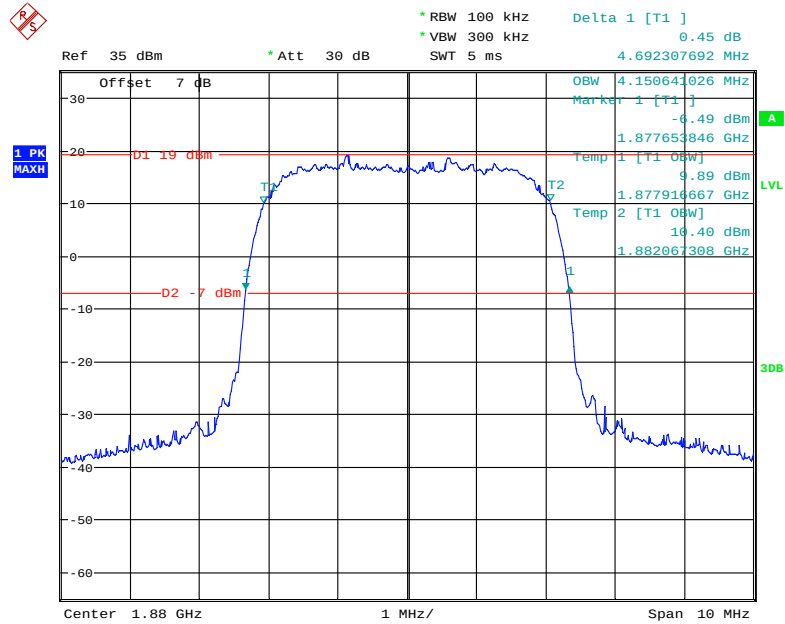
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel

Date: 26.APR.2021 18:32:56

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

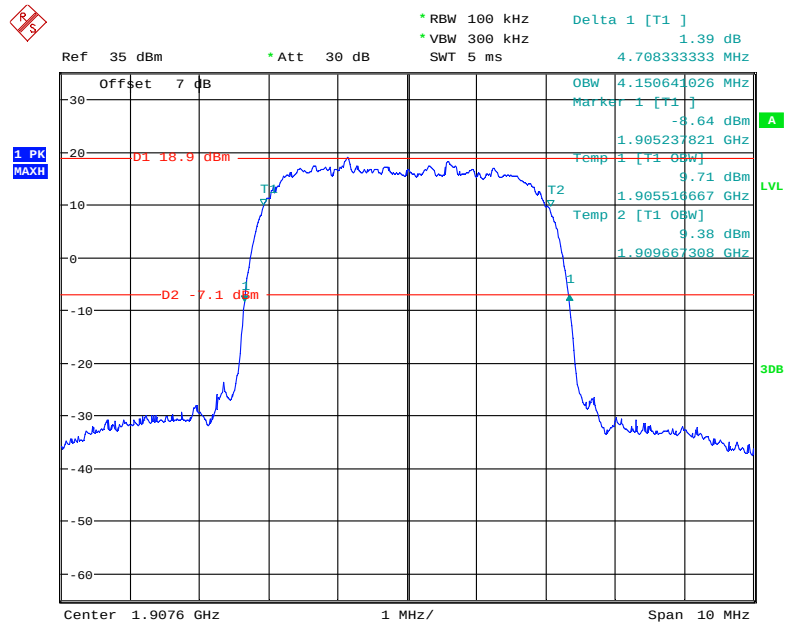
Date: 25.APR.2021 15:05:52

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



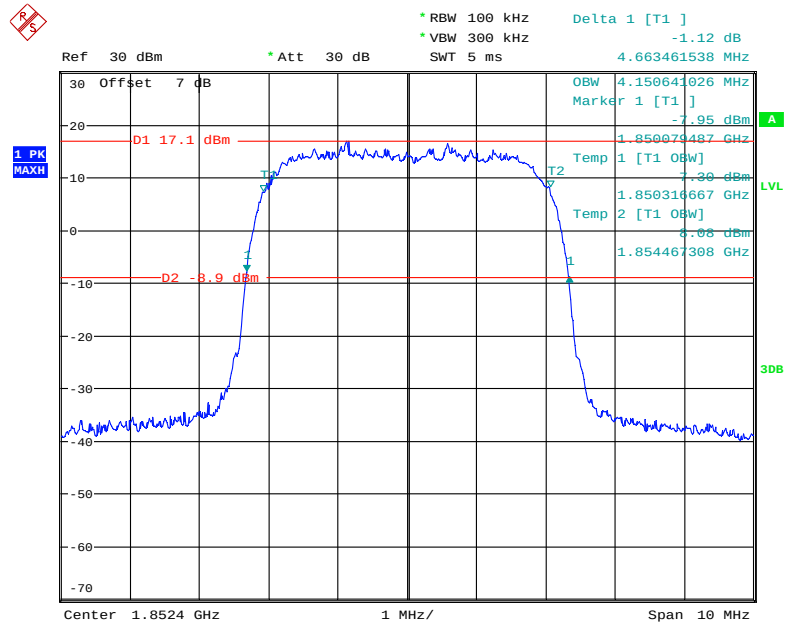
Date: 25.APR.2021 15:08:16

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



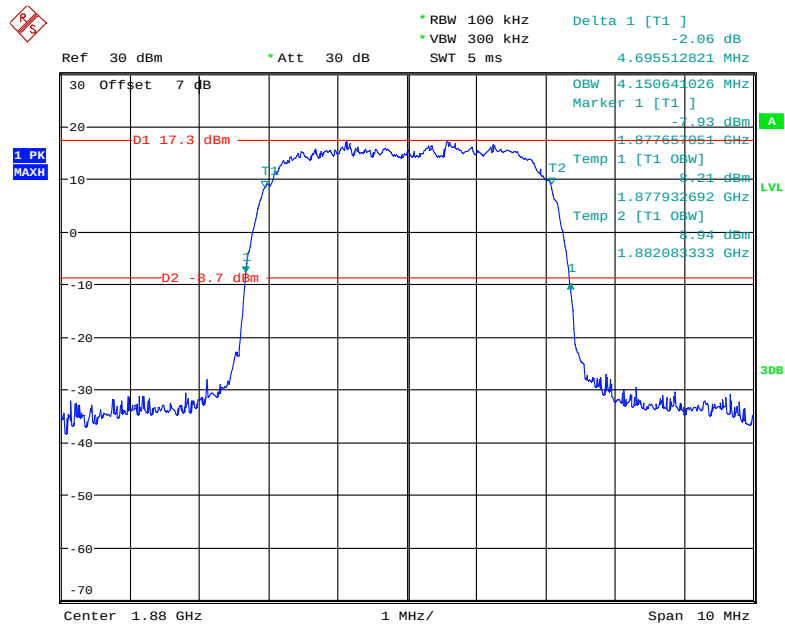
Date: 25.APR.2021 15:12:55

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



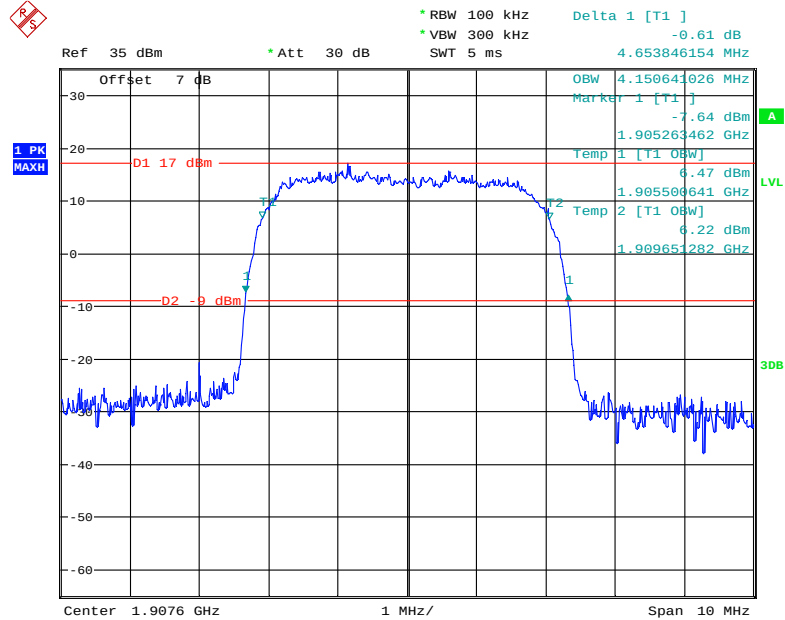
Date: 21.MAY.2021 00:54:41

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



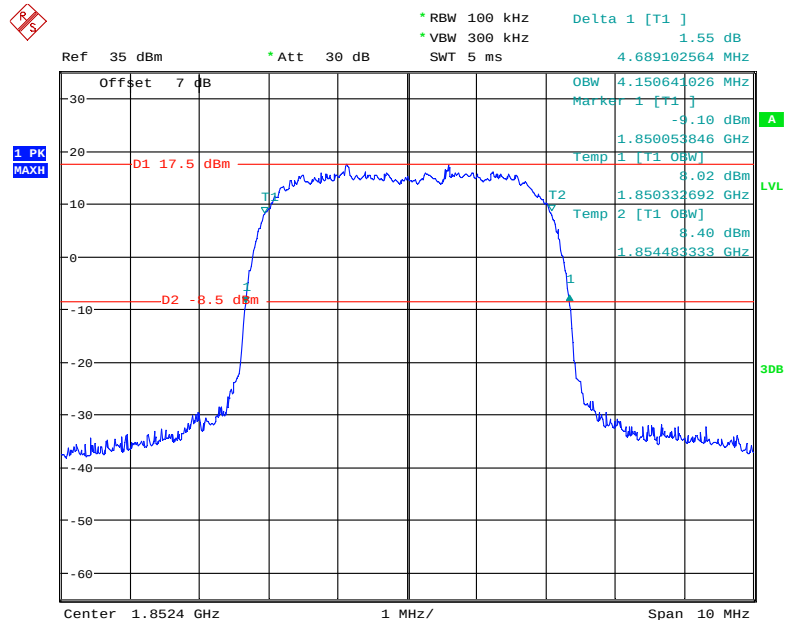
Date: 21.MAY.2021 00:53:22

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

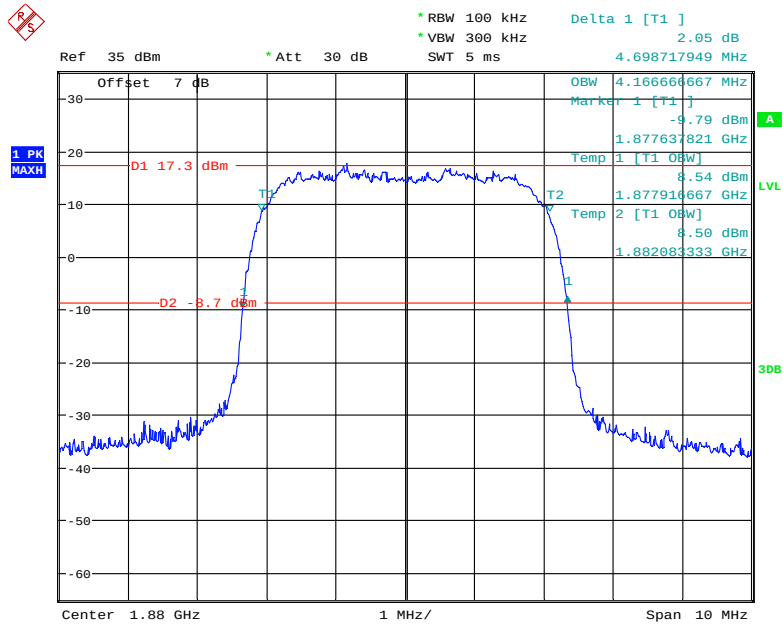


Date: 25.APR.2021 14:16:19

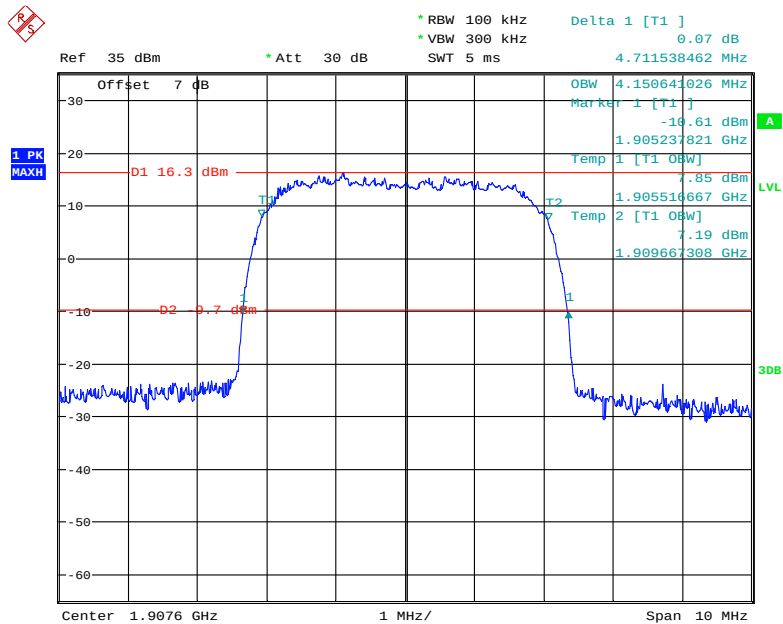
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel



Date: 25.APR.2021 14:26:44

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

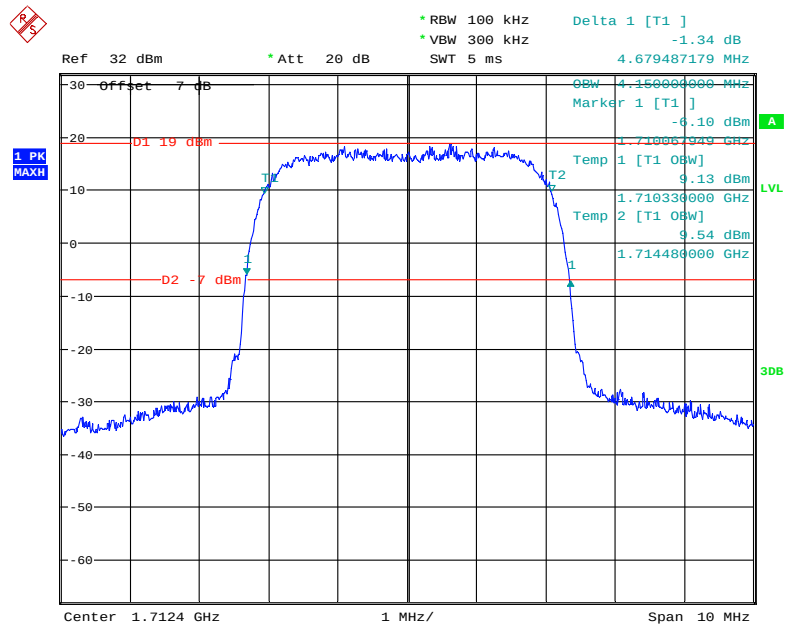
Date: 25.APR.2021 14:23:45

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

Date: 25.APR.2021 14:21:44

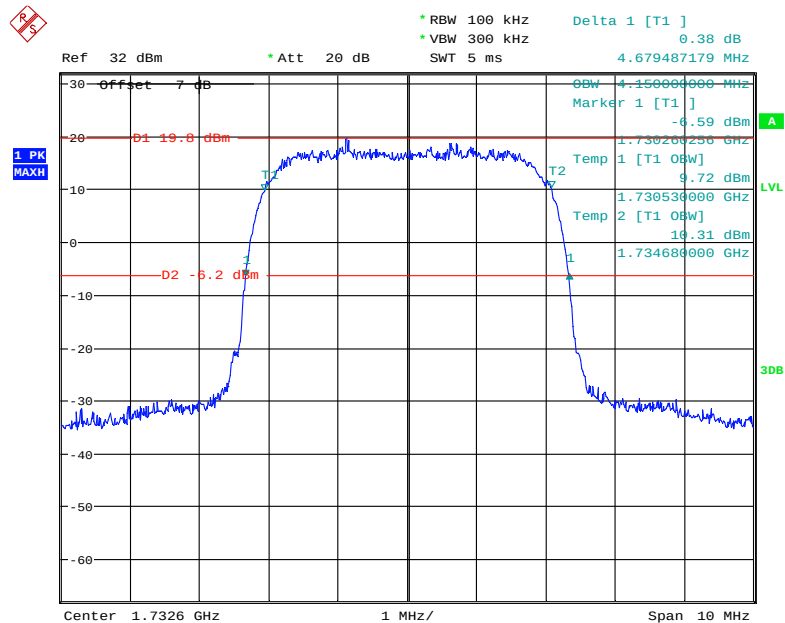
AWS Band (Part 27)

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



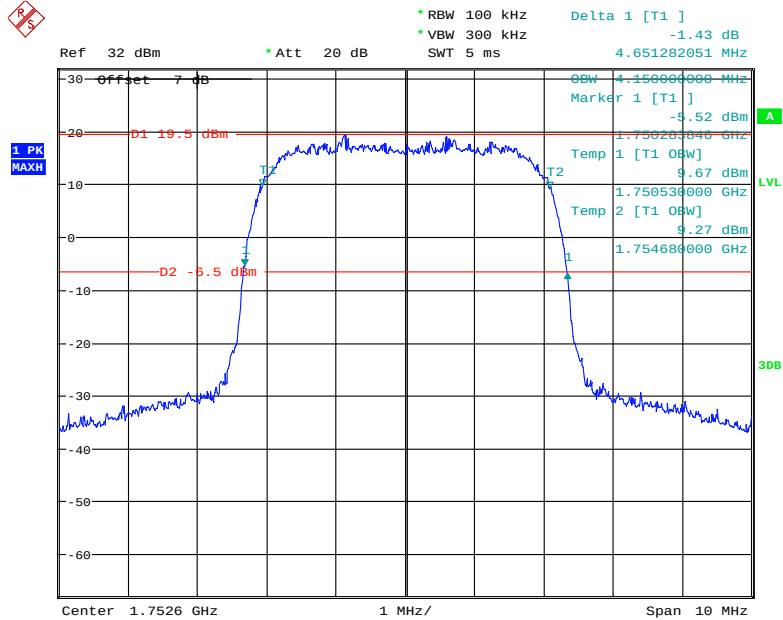
Date: 19.MAY.2021 04:01:09

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



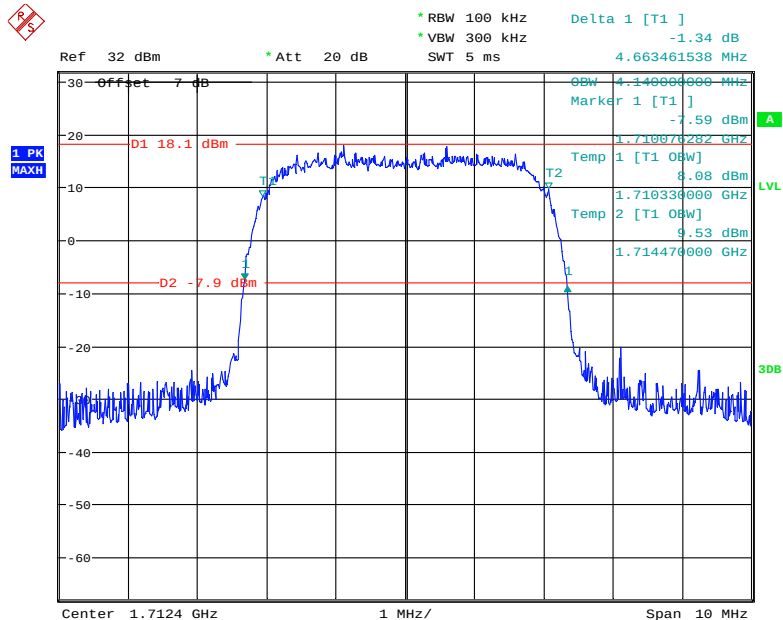
Date: 19.MAY.2021 04:02:08

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



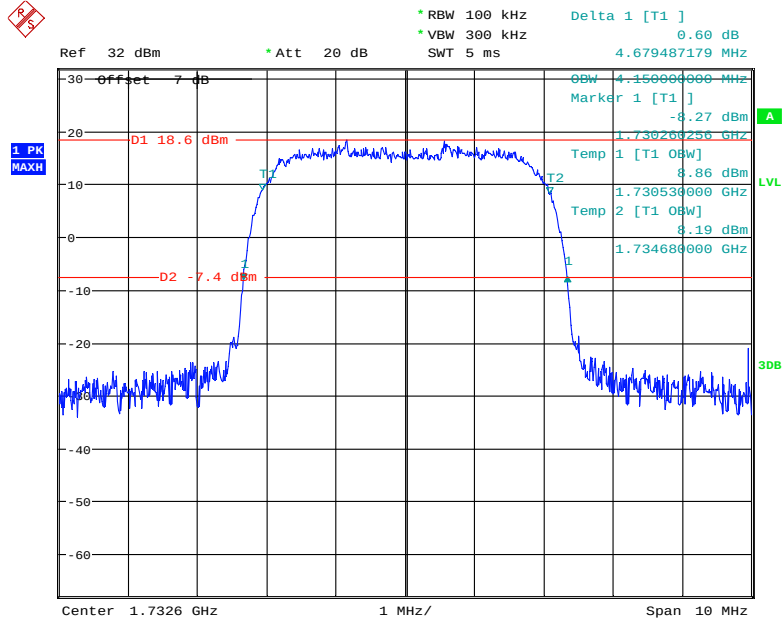
Date: 19.MAY.2021 04:04:42

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



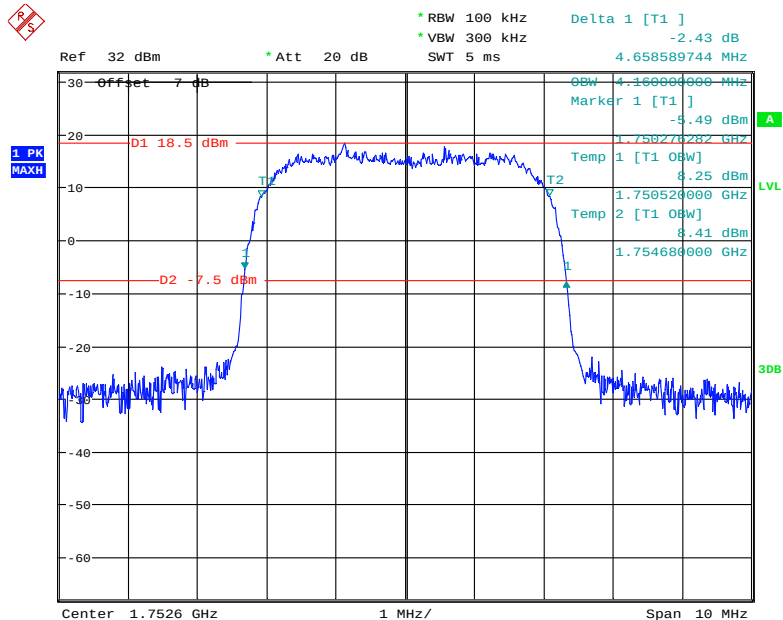
Date: 19.MAY.2021 04:18:27

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



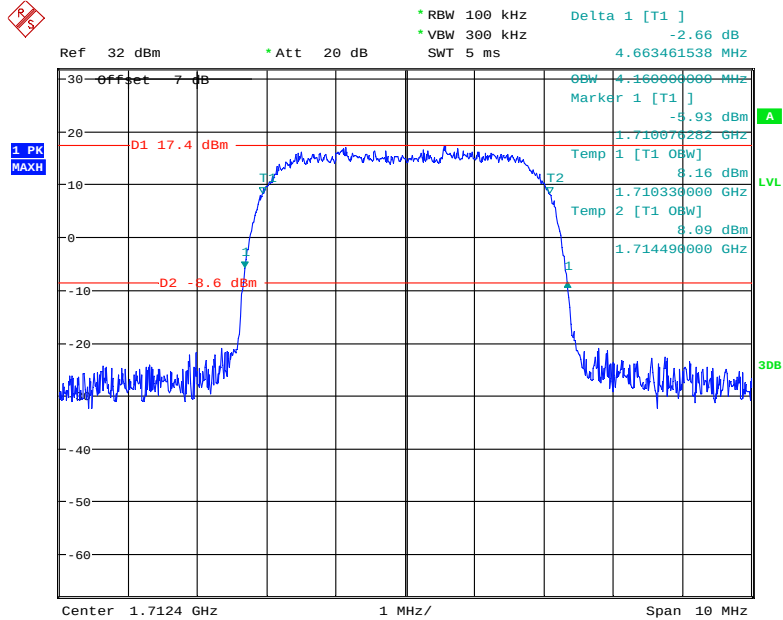
Date: 19.MAY.2021 03:55:39

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



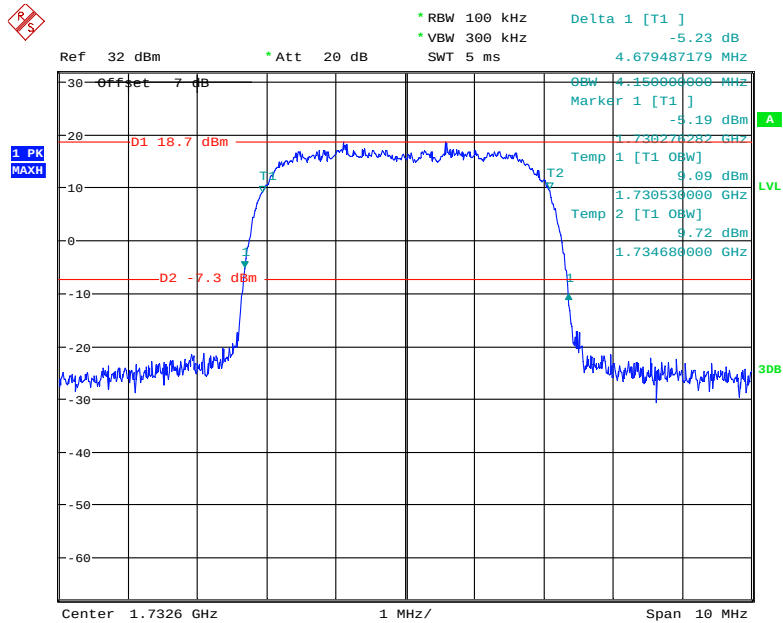
Date: 19.MAY.2021 03:53:45

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



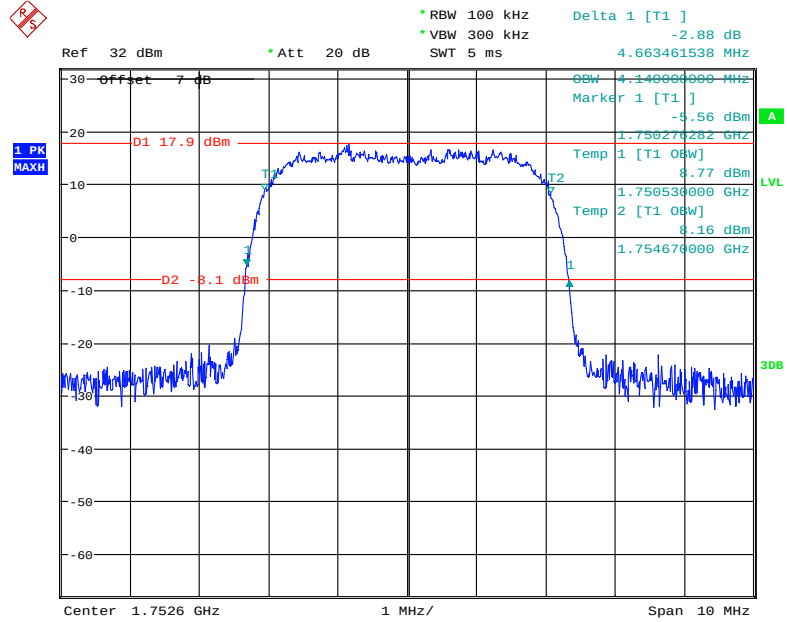
Date: 19.MAY.2021 04:14:56

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



Date: 19.MAY.2021 04:12:50

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



Date: 19.MAY.2021 04:16:43

LTE Band 2:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.332
		Middle	1.110	1.290
		High	1.110	1.320
	16QAM	Low	1.104	1.314
		Middle	1.110	1.278
		High	1.110	1.302
3	QPSK	Low	2.700	3.012
		Middle	2.712	3.036
		High	2.688	3.000
	16QAM	Low	2.700	3.024
		Middle	2.700	3.084
		High	2.700	3.048
5	QPSK	Low	4.540	5.320
		Middle	4.540	5.220
		High	4.540	5.220
	16QAM	Low	4.540	5.300
		Middle	4.567	5.478
		High	4.560	5.400
10	QPSK	Low	9.000	9.760
		Middle	8.960	9.760
		High	8.960	9.800
	16QAM	Low	9.000	9.920
		Middle	8.960	9.920
		High	8.960	10.000
15	QPSK	Low	13.560	15.360
		Middle	13.500	15.360
		High	13.500	15.480
	16QAM	Low	13.560	15.060
		Middle	13.620	15.240
		High	13.500	15.000
20	QPSK	Low	18.000	19.680
		Middle	18.000	19.840
		High	17.920	19.760
	16QAM	Low	18.080	20.000
		Middle	18.000	19.840
		High	18.000	19.840

LTE Band 4:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.290
		Middle	1.104	1.314
		High	1.104	1.320
	16QAM	Low	1.110	1.272
		Middle	1.098	1.308
		High	1.104	1.326
3	QPSK	Low	2.712	3.012
		Middle	2.700	3.024
		High	2.700	3.012
	16QAM	Low	2.688	3.024
		Middle	2.688	3.072
		High	2.712	3.084
5	QPSK	Low	4.540	5.300
		Middle	4.520	5.240
		High	4.540	5.440
	16QAM	Low	4.520	5.240
		Middle	4.560	5.540
		High	4.560	5.440
10	QPSK	Low	8.960	9.920
		Middle	9.000	9.800
		High	8.960	9.840
	16QAM	Low	8.960	9.760
		Middle	9.000	9.960
		High	8.960	9.920
15	QPSK	Low	13.620	15.660
		Middle	13.560	15.360
		High	13.560	15.840
	16QAM	Low	13.620	15.240
		Middle	13.560	15.300
		High	13.560	15.060
20	QPSK	Low	18.000	19.600
		Middle	17.920	20.080
		High	18.000	20.160
	16QAM	Low	18.080	19.920
		Middle	18.000	20.080
		High	18.080	20.080

LTE Band 5:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.284
		Middle	1.104	1.320
		High	1.110	1.350
	16QAM	Low	1.110	1.266
		Middle	1.098	1.308
		High	1.104	1.314
3	QPSK	Low	2.712	3.024
		Middle	2.700	3.024
		High	2.688	3.036
	16QAM	Low	2.700	3.024
		Middle	2.688	3.072
		High	2.700	3.072
5	QPSK	Low	4.540	5.380
		Middle	4.520	5.240
		High	4.520	5.420
	16QAM	Low	4.520	5.440
		Middle	4.540	5.260
		High	4.560	5.360
10	QPSK	Low	8.960	9.760
		Middle	8.920	9.640
		High	8.960	9.880
	16QAM	Low	8.960	9.760
		Middle	9.000	9.760
		High	8.960	10.120

LTE Band 7:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.540	5.340
		Middle	4.520	5.260
		High	4.520	5.500
	16QAM	Low	4.540	5.180
		Middle	4.560	5.440
		High	4.560	5.240
10	QPSK	Low	8.960	9.880
		Middle	8.960	9.800
		High	8.960	10.000
	16QAM	Low	8.960	9.760
		Middle	9.000	9.840
		High	8.960	10.000
15	QPSK	Low	13.560	15.480
		Middle	13.500	15.240
		High	13.500	15.300
	16QAM	Low	13.654	15.413
		Middle	13.560	15.360
		High	13.560	15.000
20	QPSK	Low	18.000	19.840
		Middle	17.920	19.600
		High	18.000	19.760
	16QAM	Low	18.000	19.520
		Middle	18.000	20.160
		High	18.000	19.920

LTE Band 66:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.296
		Middle	1.104	1.302
		High	1.110	1.308
	16QAM	Low	1.110	1.266
		Middle	1.098	1.296
		High	1.110	1.308
3	QPSK	Low	2.712	3.024
		Middle	2.712	3.036
		High	2.688	3.024
	16QAM	Low	2.688	3.024
		Middle	2.712	3.096
		High	2.700	3.048
5	QPSK	Low	4.560	5.220
		Middle	4.520	5.280
		High	4.540	5.440
	16QAM	Low	4.540	5.240
		Middle	4.540	5.460
		High	4.540	5.320
10	QPSK	Low	8.960	9.920
		Middle	9.000	9.800
		High	8.960	9.880
	16QAM	Low	8.960	9.760
		Middle	9.000	10.000
		High	9.000	10.000
15	QPSK	Low	13.620	15.540
		Middle	13.500	15.480
		High	13.560	15.960
	16QAM	Low	13.560	15.060
		Middle	13.500	15.180
		High	13.560	15.120
20	QPSK	Low	18.000	19.760
		Middle	17.920	19.760
		High	18.000	20.080
	16QAM	Low	18.080	20.160
		Middle	18.000	19.760
		High	18.000	20.000

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

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

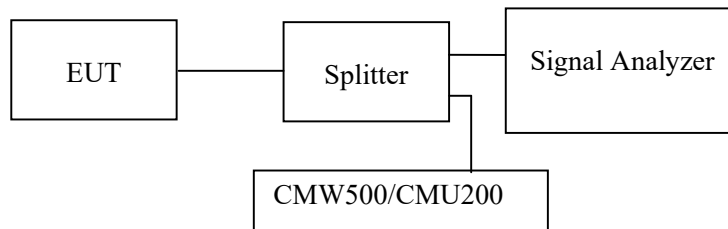
Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a) and §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:	25~27 °C
Relative Humidity:	52~55 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Pedro Yun from 2021-04-23 to 2021-05-19.

EUT operation mode: Transmitting

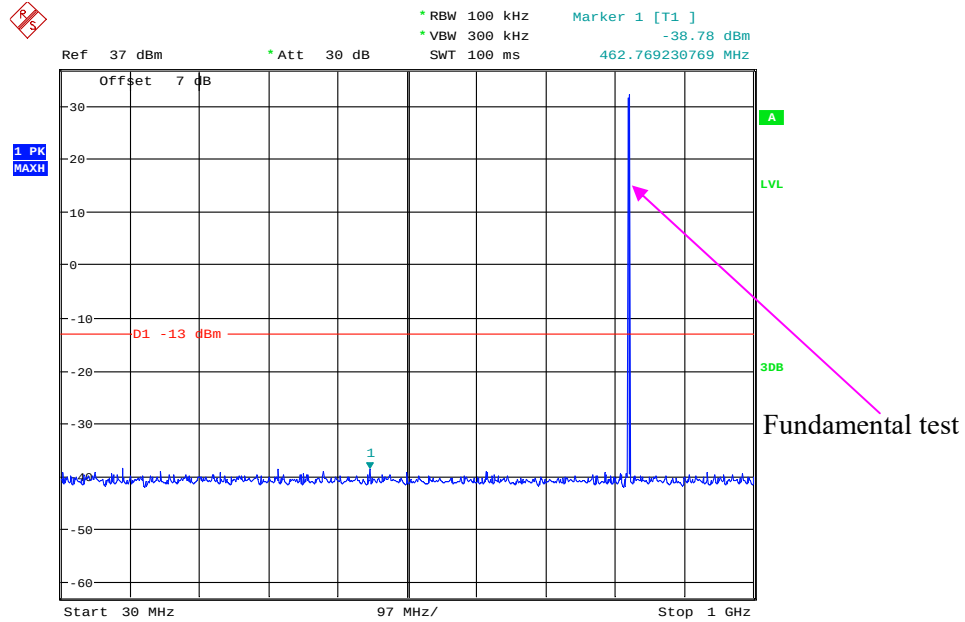
Test result: Pass

Please refer to the following plots.

Cellular Band (Part 22H)

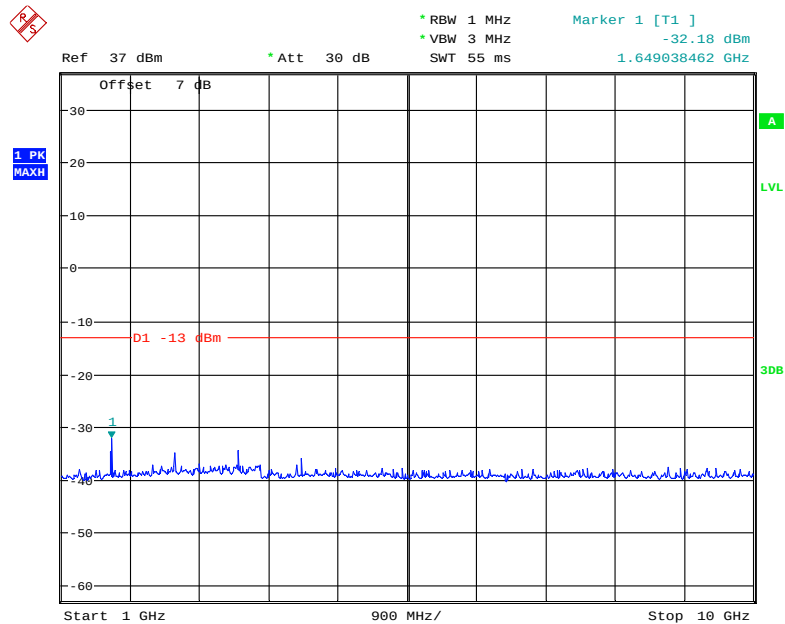
Low Channel:

30 MHz – 1 GHz (GSM Mode)



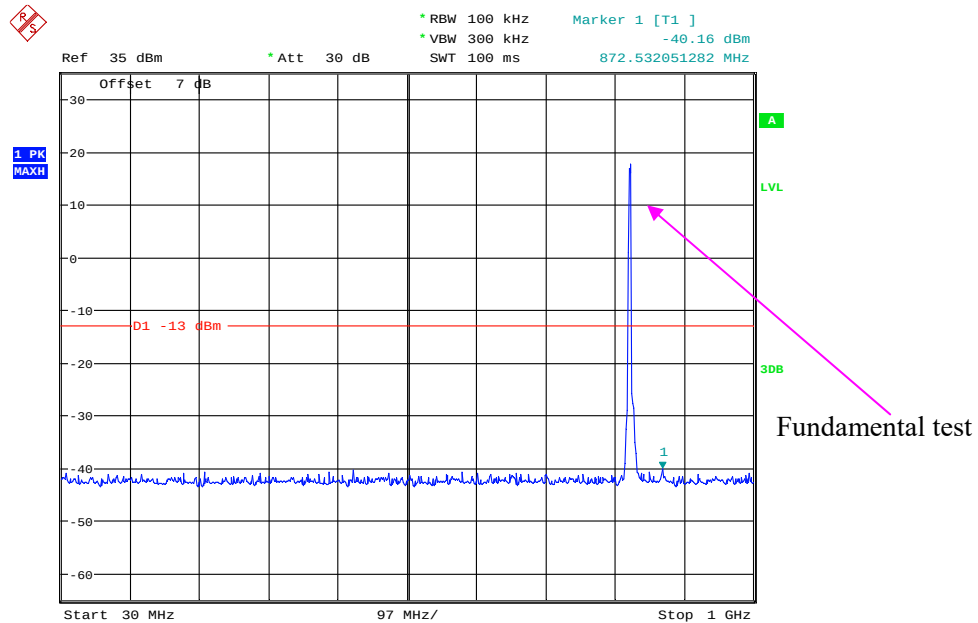
Date: 23.APR.2021 17:33:48

1 GHz – 10 GHz (GSM Mode)



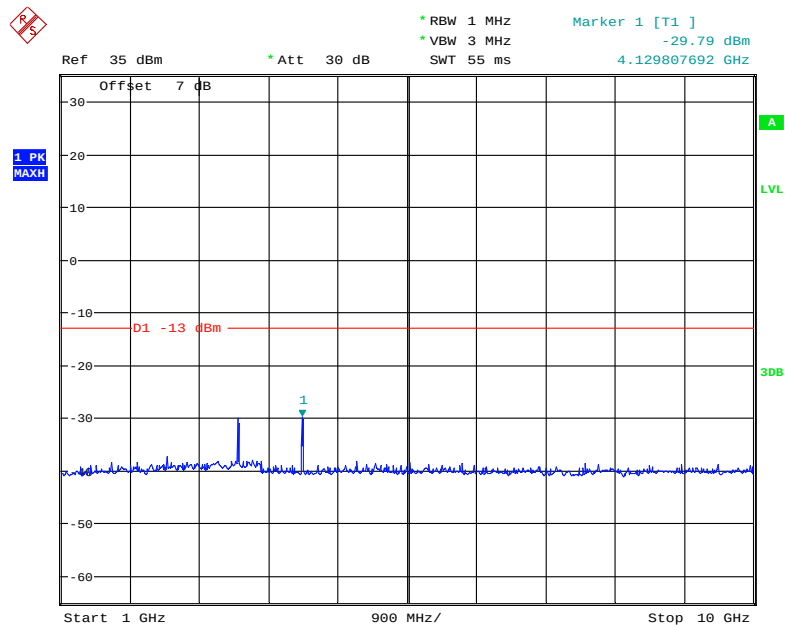
Date: 23.APR.2021 18:02:53

30 MHz – 1 GHz (WCDMA Mode)



Date: 25.APR.2021 15:48:37

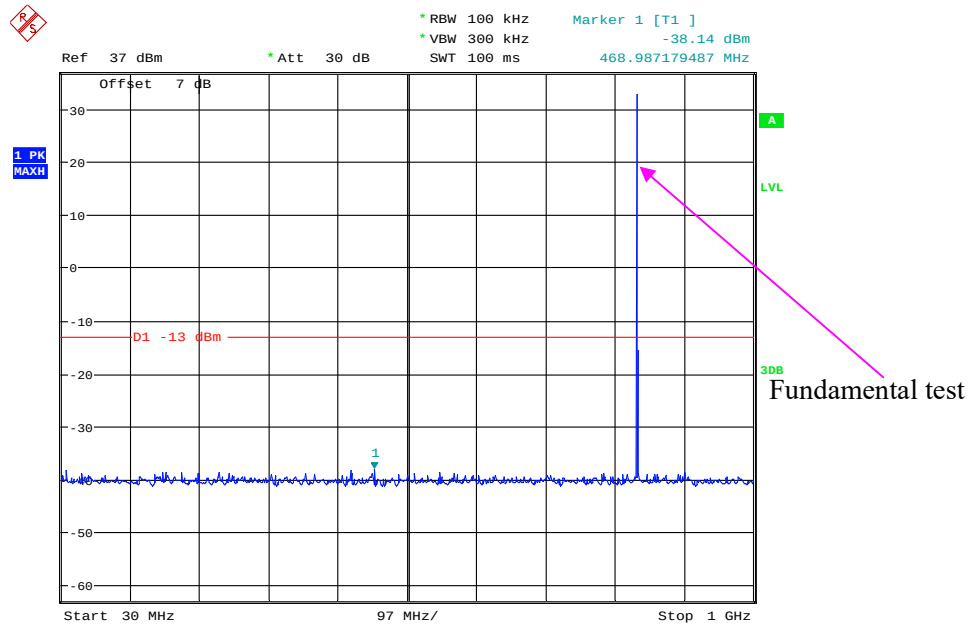
1 GHz – 10 GHz (WCDMA Mode)



Date: 25.APR.2021 15:51:56

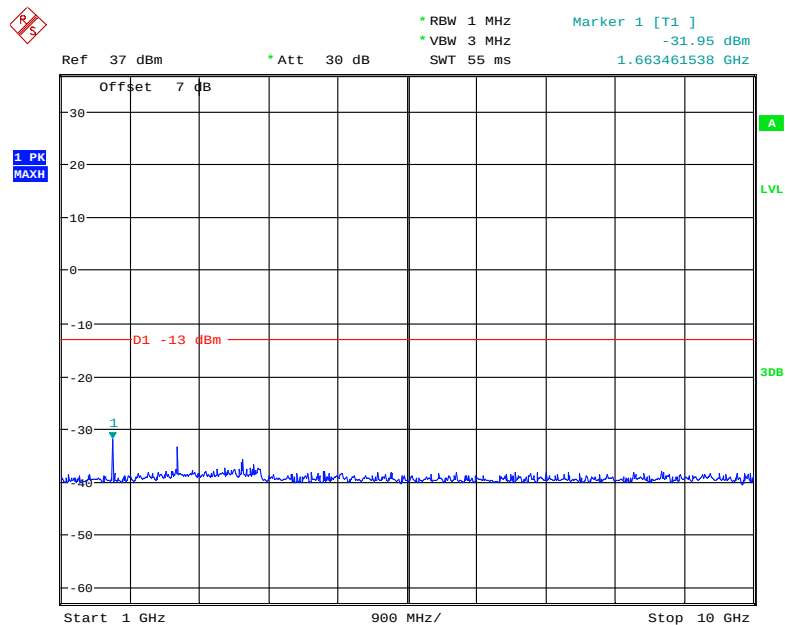
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



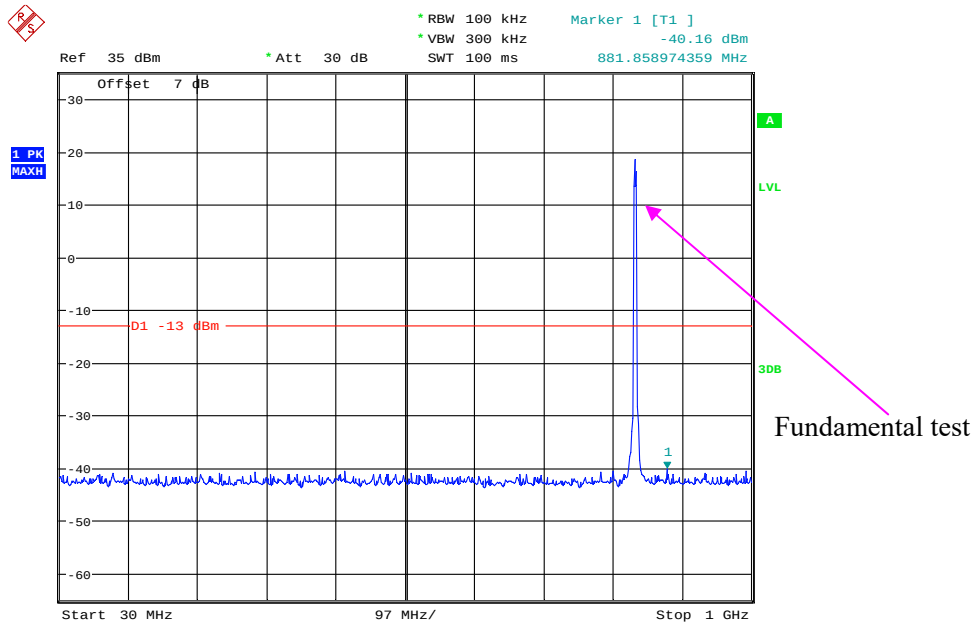
Date: 23.APR.2021 17:32:58

1 GHz – 10 GHz (GSM Mode)



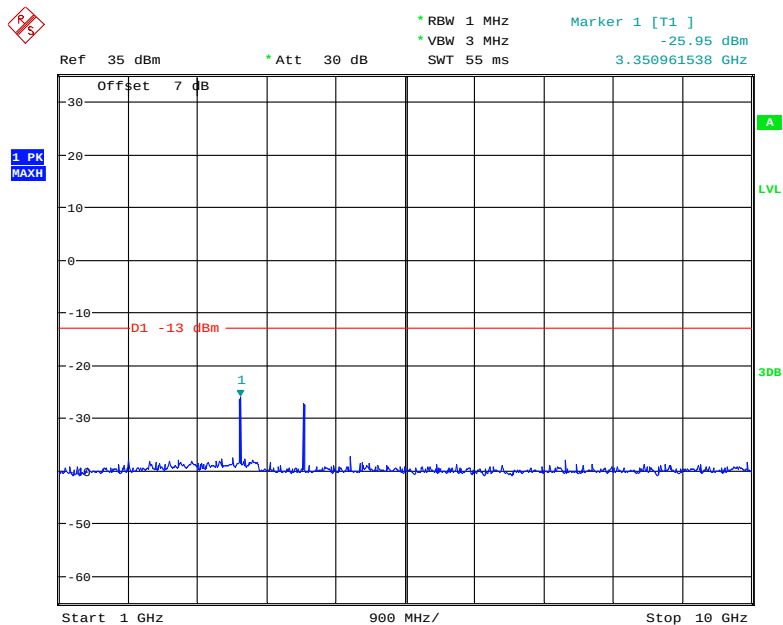
Date: 23.APR.2021 18:04:27

30 MHz – 1 GHz (WCDMA Mode)



Date: 25.APR.2021 15:47:12

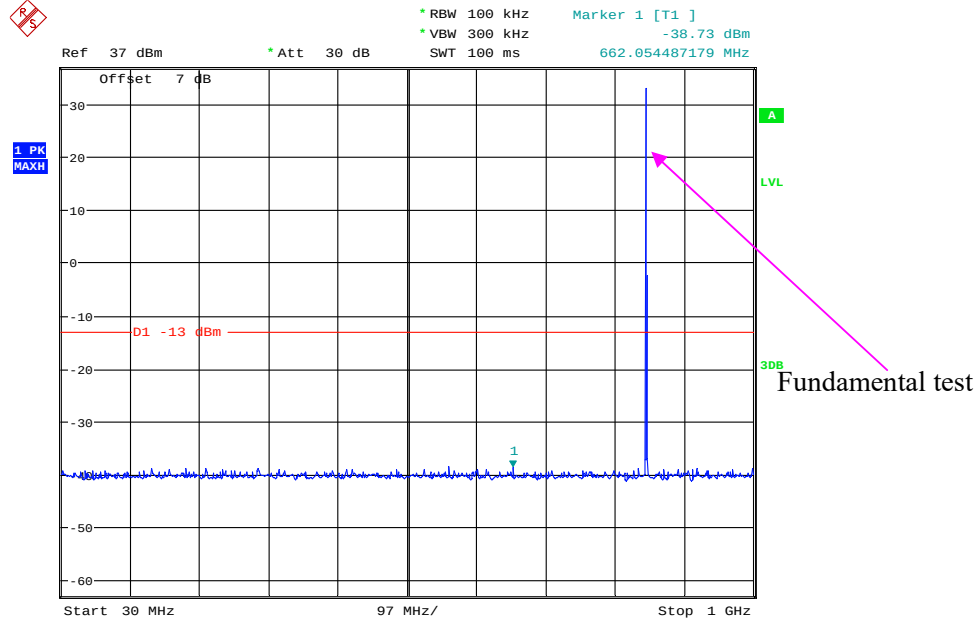
1 GHz – 10 GHz (WCDMA Mode)



Date: 25.APR.2021 15:53:23

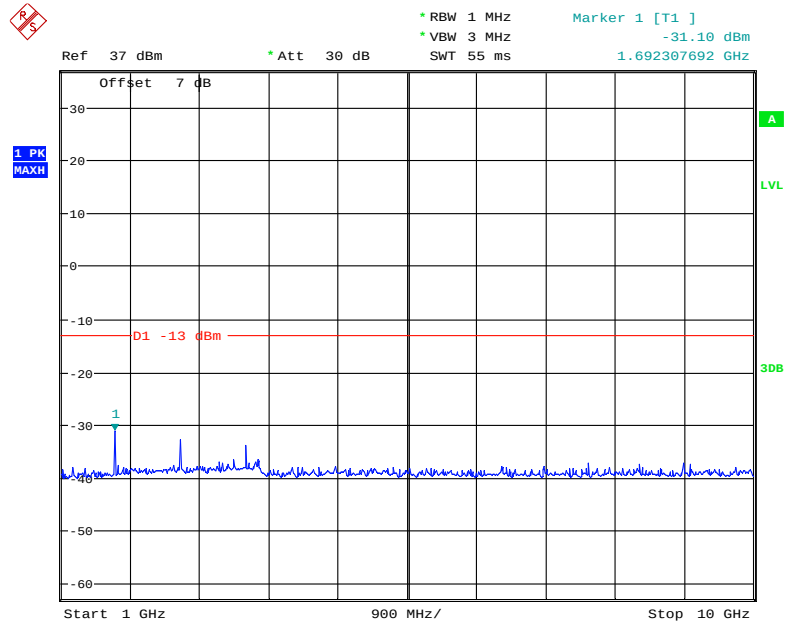
High Channel:

30 MHz – 1 GHz (GSM Mode)

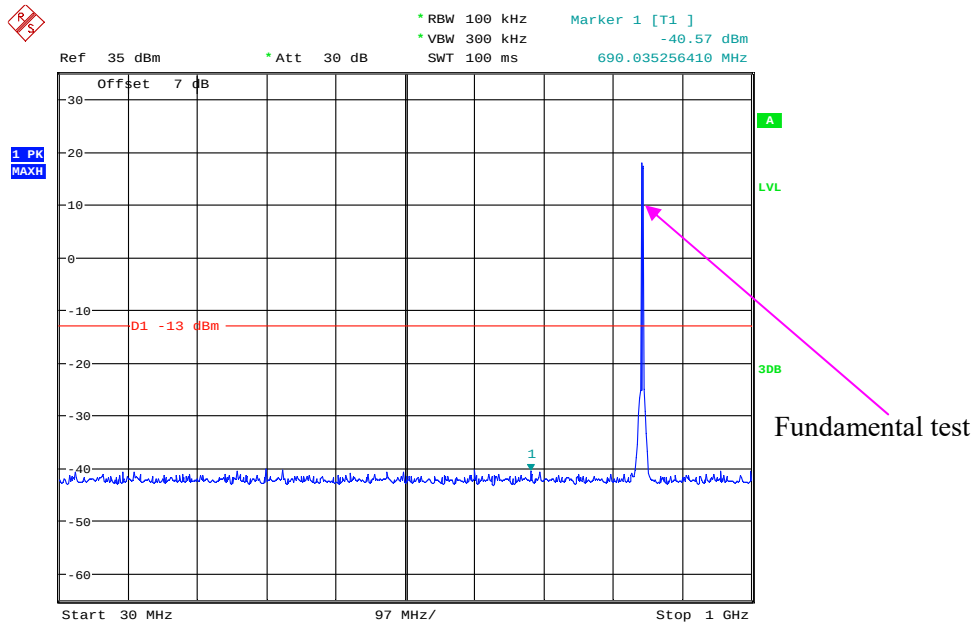


Date: 23.APR.2021 17:29:08

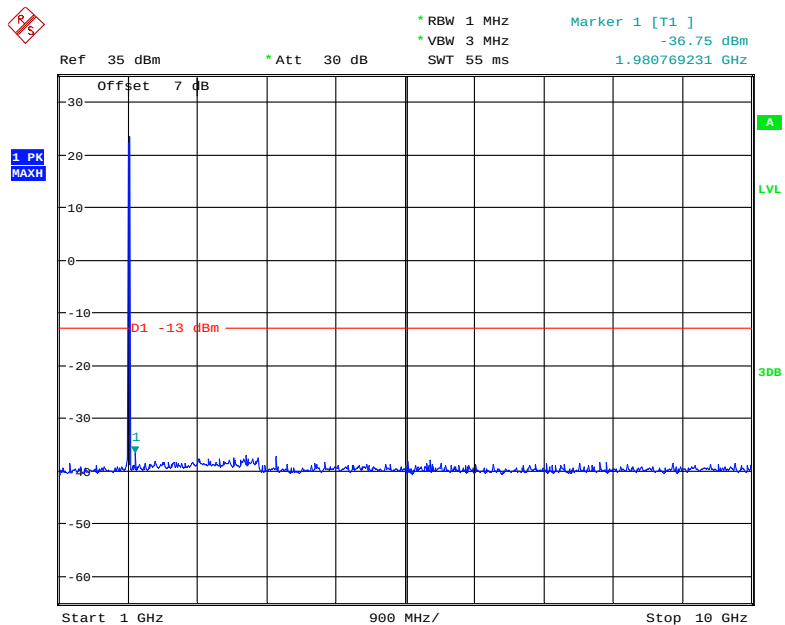
1 GHz – 10 GHz (GSM Mode)



Date: 23.APR.2021 18:06:00

30 MHz – 1 GHz (WCDMA Mode)

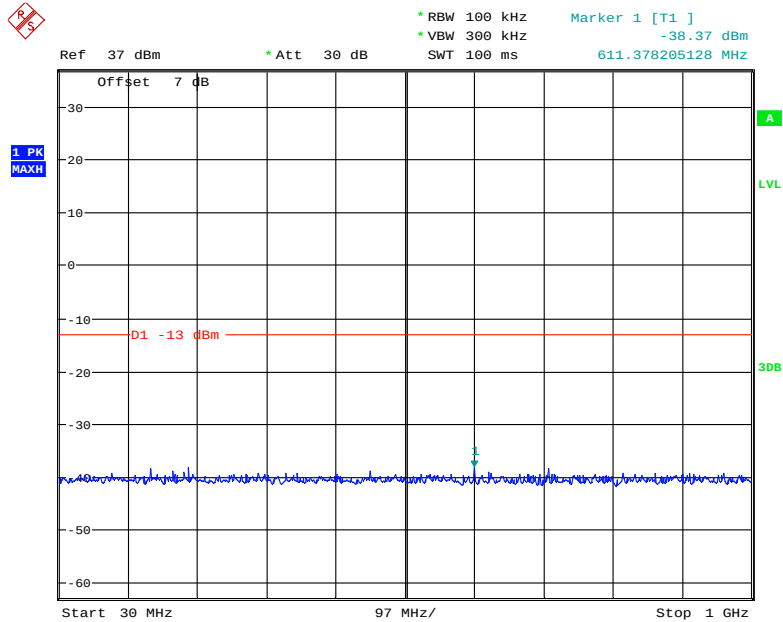
Date: 25.APR.2021 15:41:50

1 GHz – 10 GHz (WCDMA Mode)

Date: 25.APR.2021 15:57:51

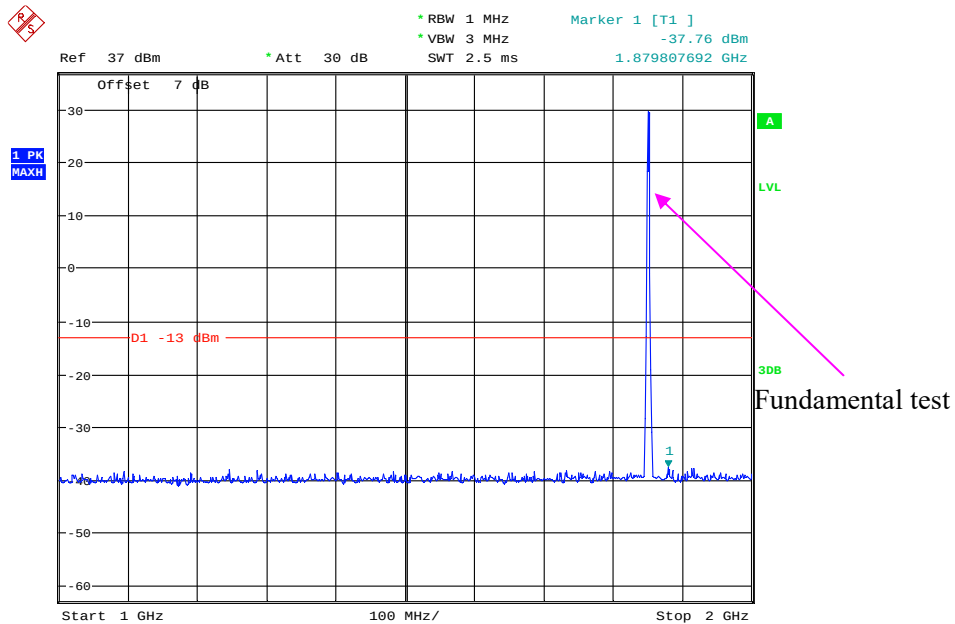
PCS Band (Part 24E)
Low Channel:

30 MHz – 1 GHz (GSM Mode)



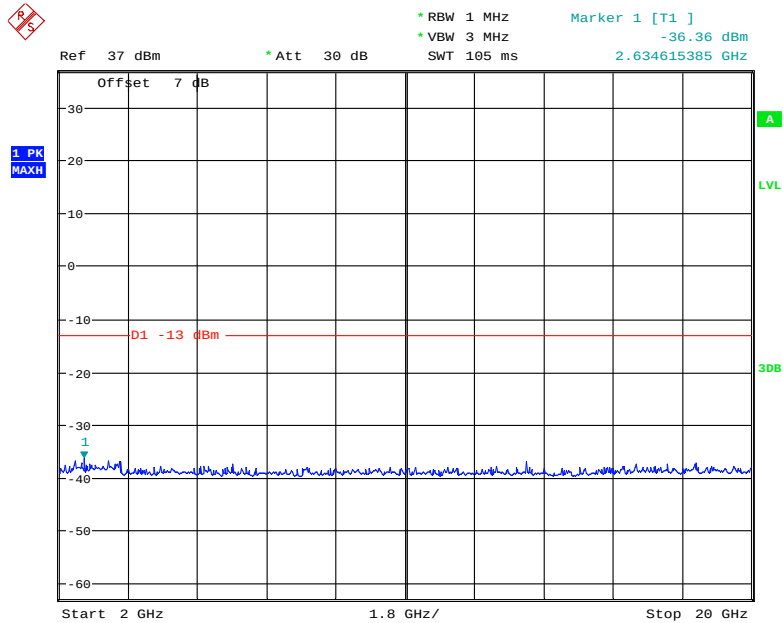
Date: 23.APR.2021 18:47:23

1 GHz – 2 GHz (GSM Mode)



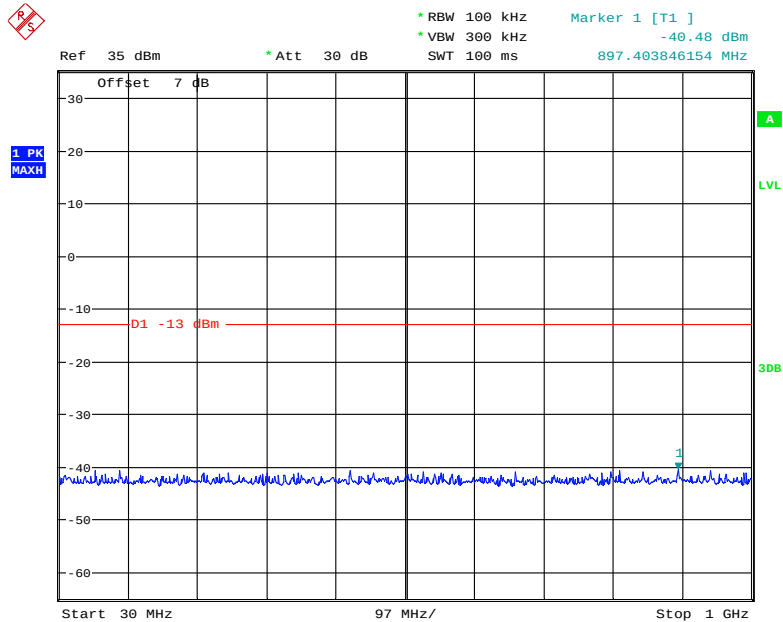
Date: 23.APR.2021 18:57:30

2 GHz – 20 GHz (GSM Mode)



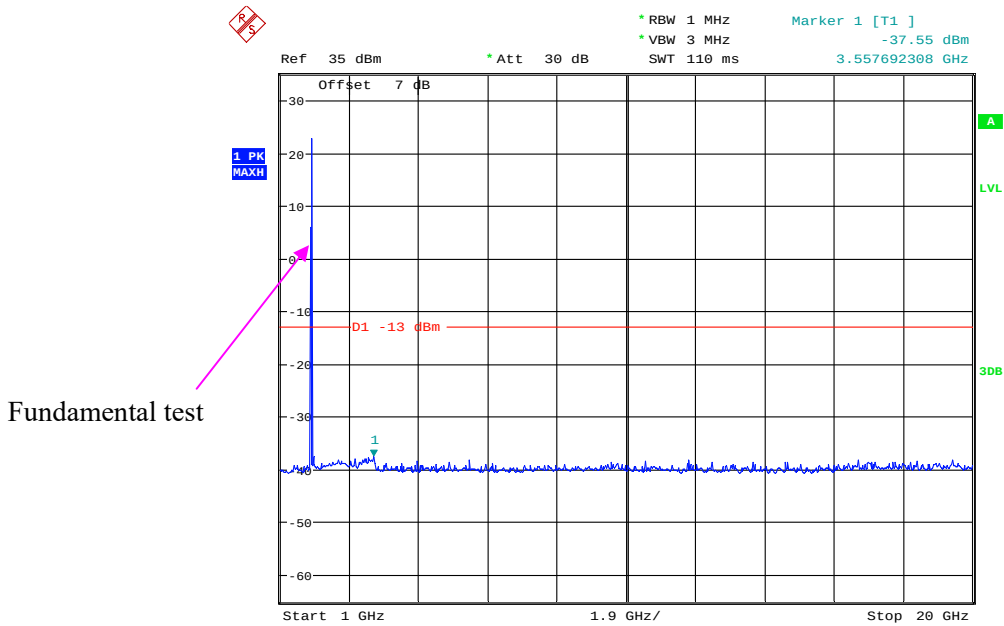
Date: 23.APR.2021 18:59:27

30 MHz – 1 GHz (WCDMA Mode)



Date: 25.APR.2021 16:06:40

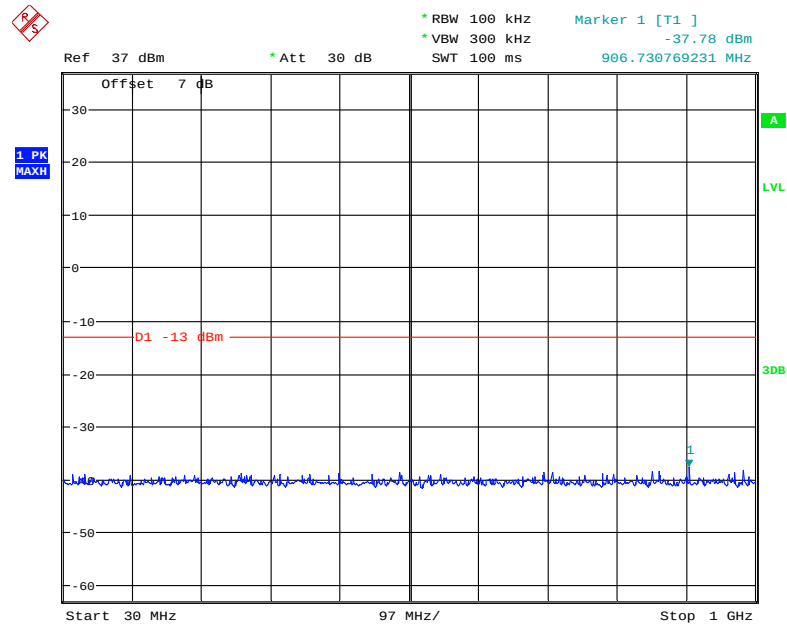
1 GHz – 20 GHz (WCDMA Mode)



Date: 25.APR.2021 16:04:11

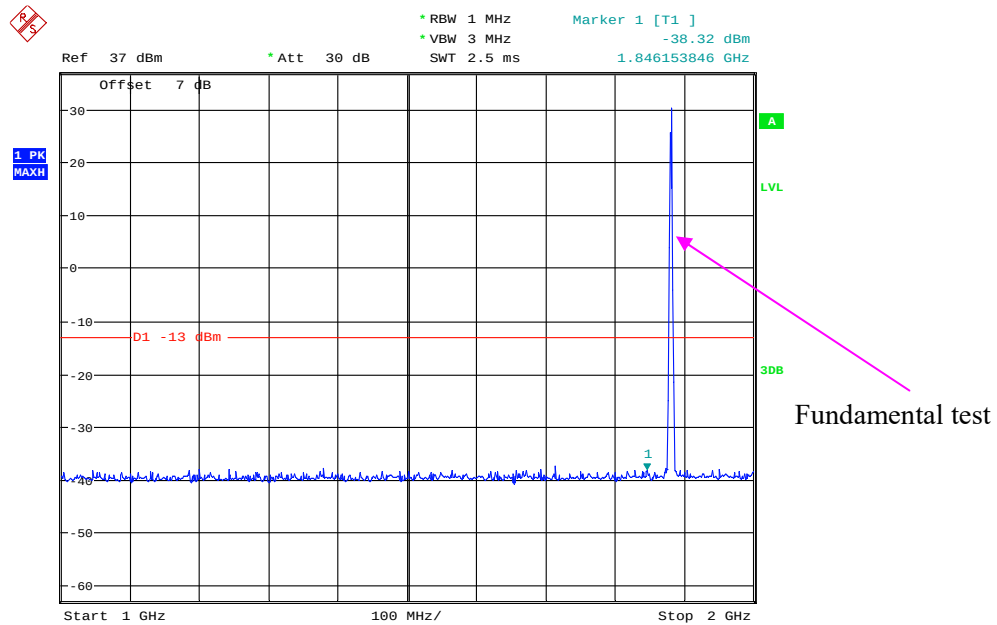
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



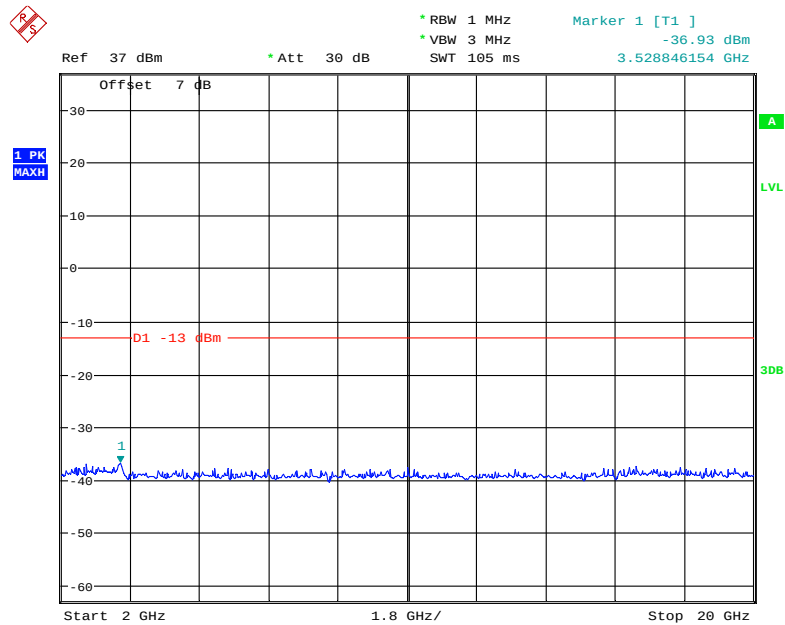
Date: 23.APR.2021 18:48:36

1 GHz – 2 GHz (GSM Mode)



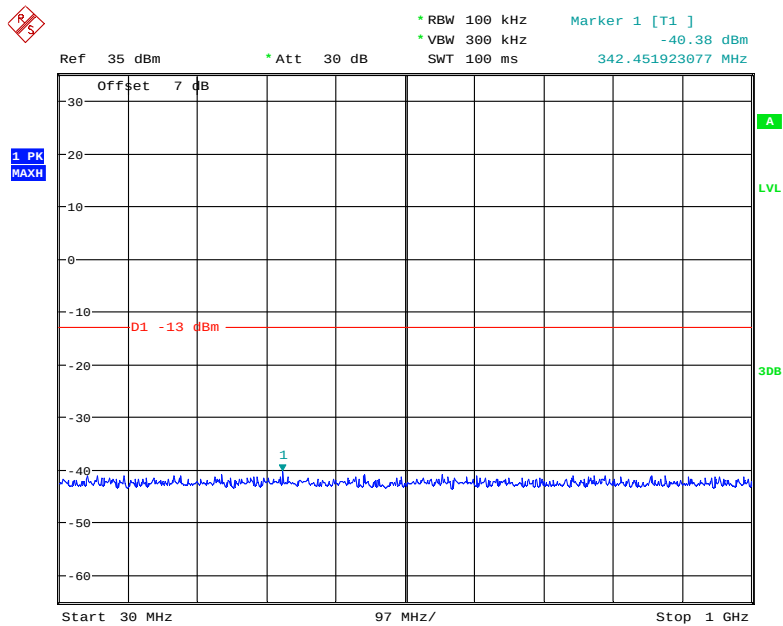
Date: 23.APR.2021 18:56:23

2 GHz – 20 GHz (GSM Mode)



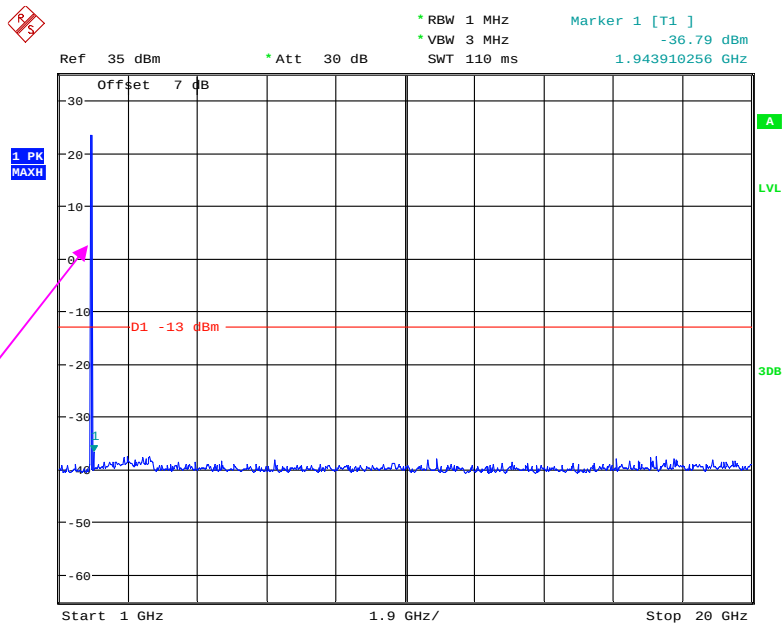
Date: 23.APR.2021 19:02:03

30 MHz – 1 GHz (WCDMA Mode)



Date: 25.APR.2021 16:08:04

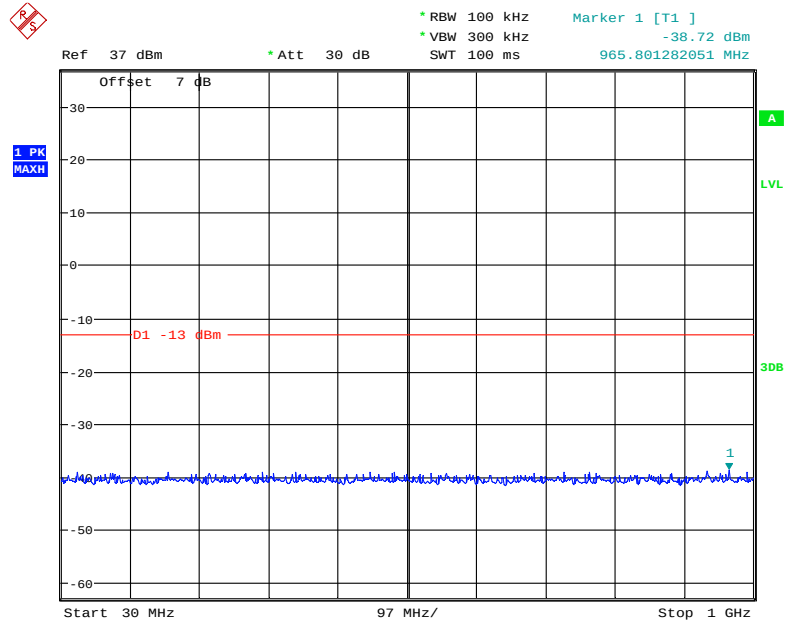
1 GHz – 20 GHz (WCDMA Mode)



Date: 25.APR.2021 16:02:43

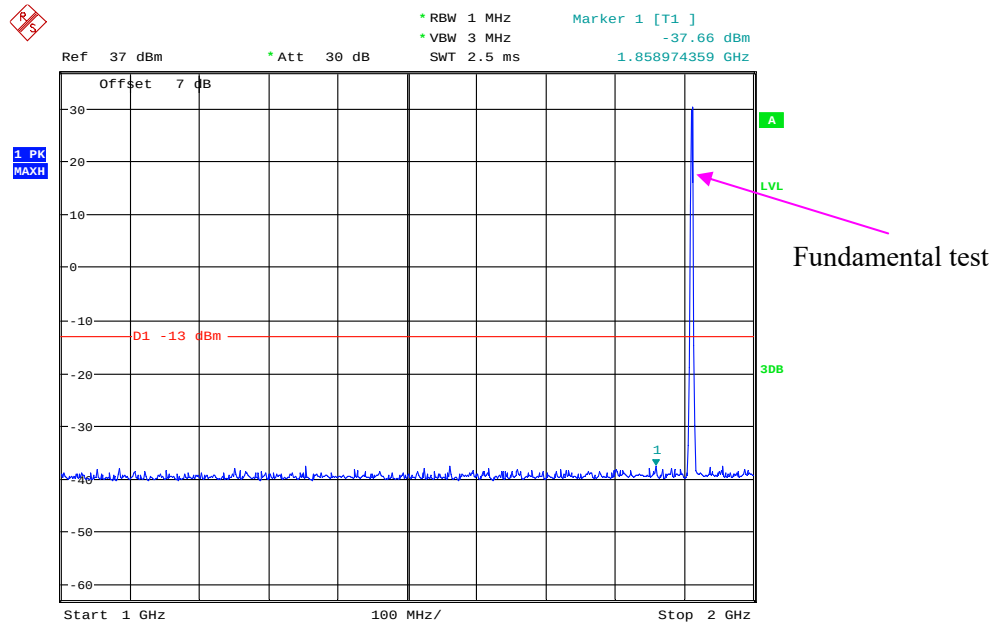
High Channel:

30 MHz – 1 GHz (GSM Mode)



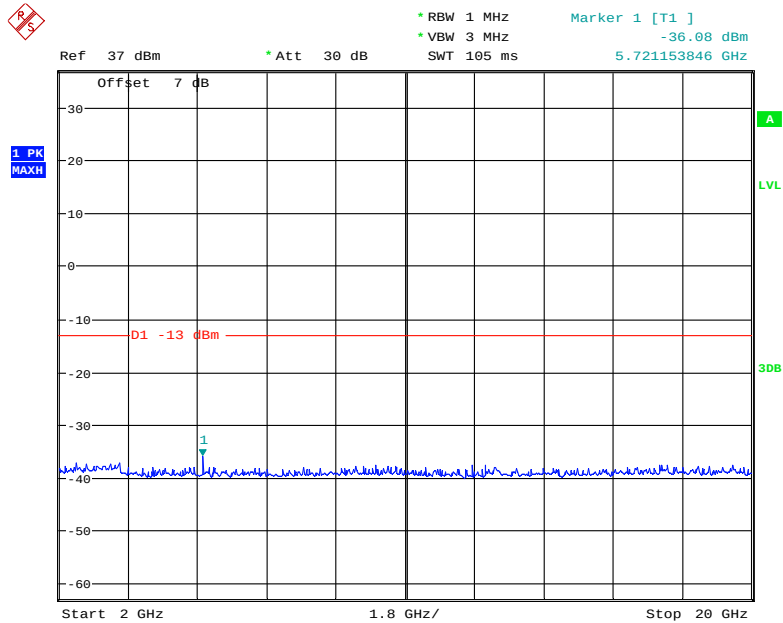
Date: 23.APR.2021 18:49:53

1 GHz – 2 GHz (GSM Mode)



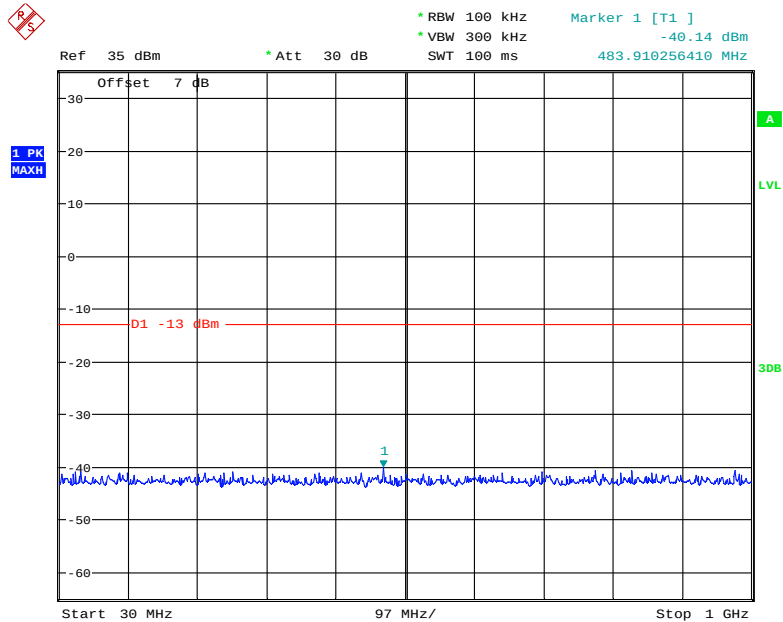
Date: 23.APR.2021 18:54:20

2 GHz – 20 GHz (GSM Mode)



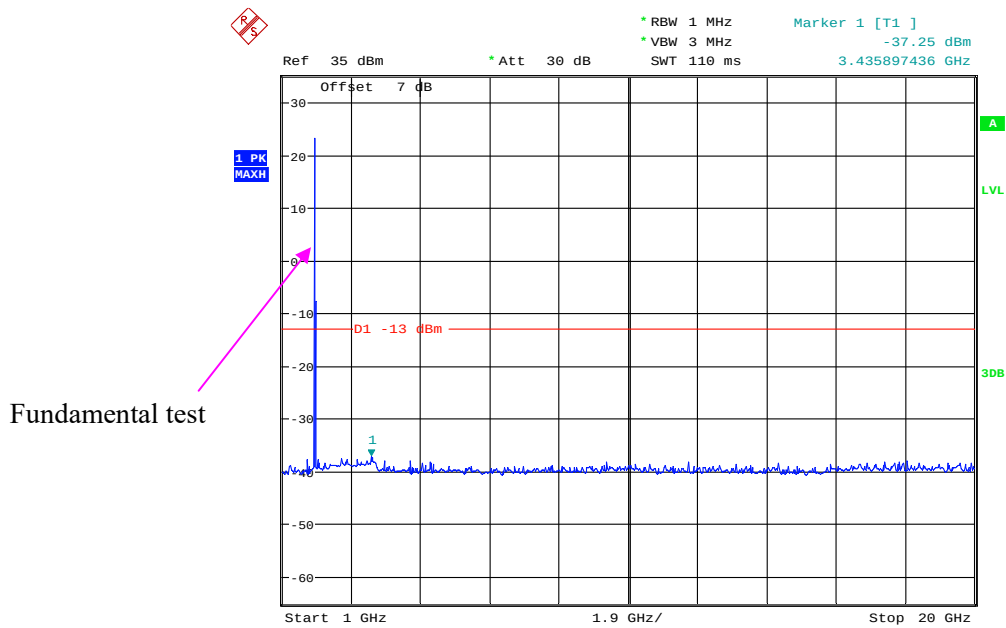
Date: 23.APR.2021 19:03:22

30 MHz – 1 GHz (WCDMA Mode)



Date: 25.APR.2021 16:09:07

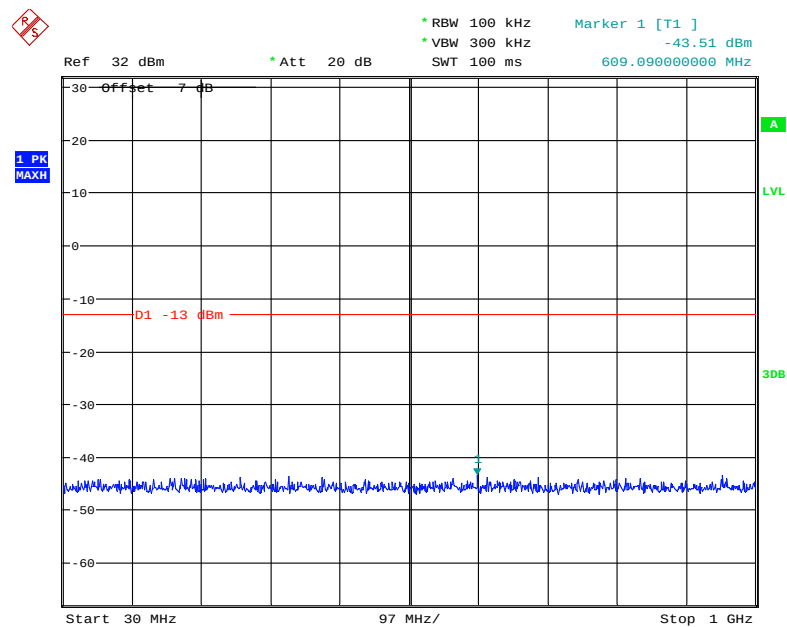
1 GHz – 20 GHz (WCDMA Mode)



Date: 25.APR.2021 15:59:41

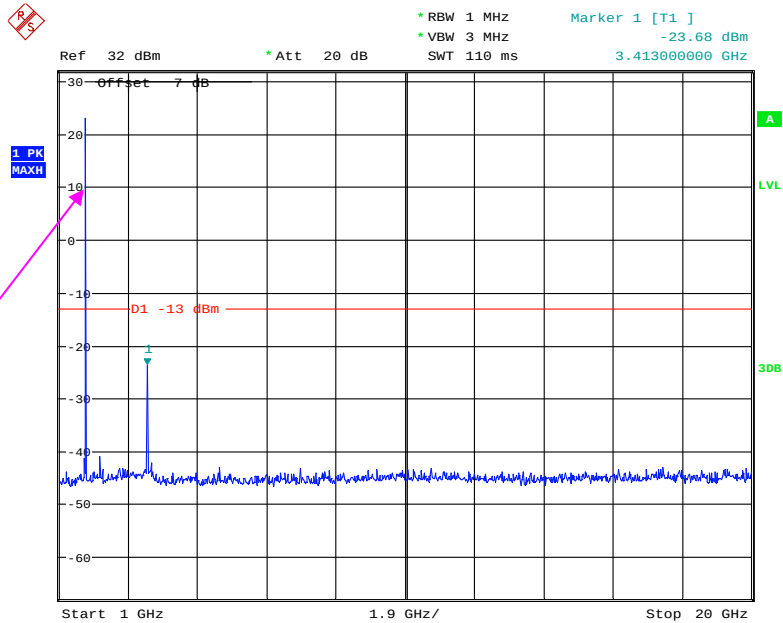
AWS Band (Part 27) Low Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 19.MAY.2021 03:36:37

1 GHz – 20 GHz (WCDMA Mode)

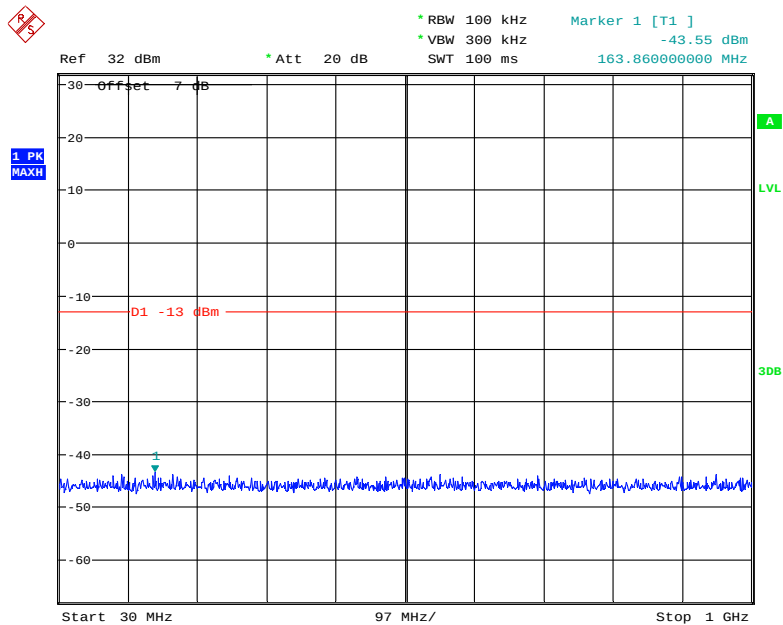


Fundamental test

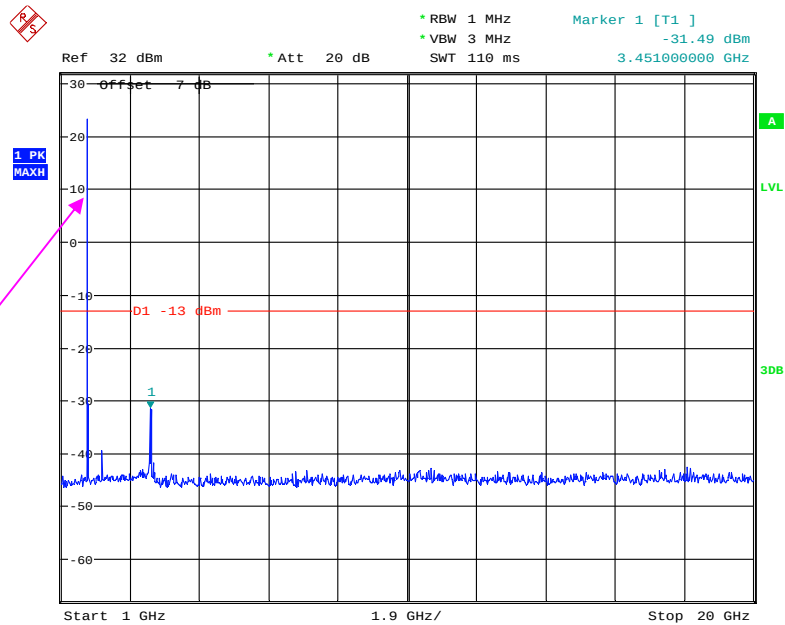
Date: 19.MAY.2021 03:42:29

Middle Channel

30 MHz – 1 GHz (WCDMA Mode)

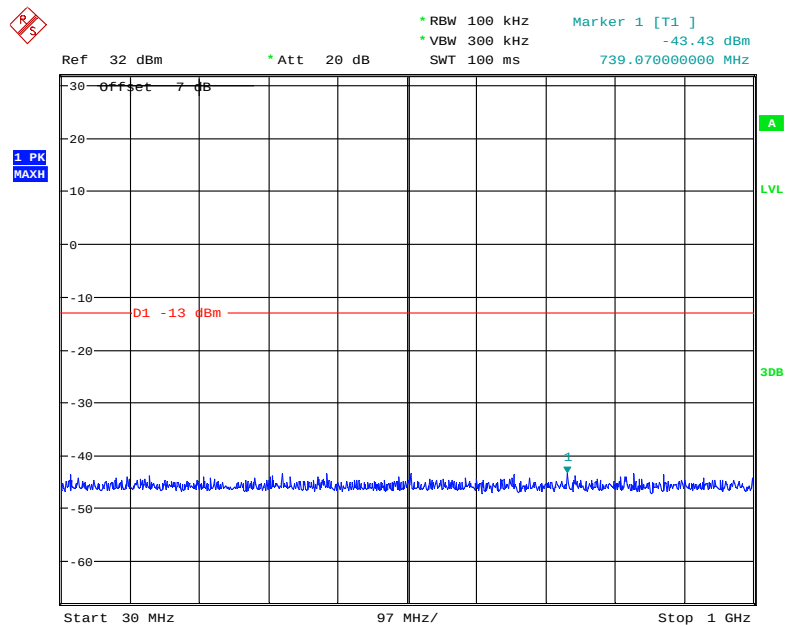


Date: 19.MAY.2021 03:37:37

1 GHz – 20 GHz (WCDMA Mode)

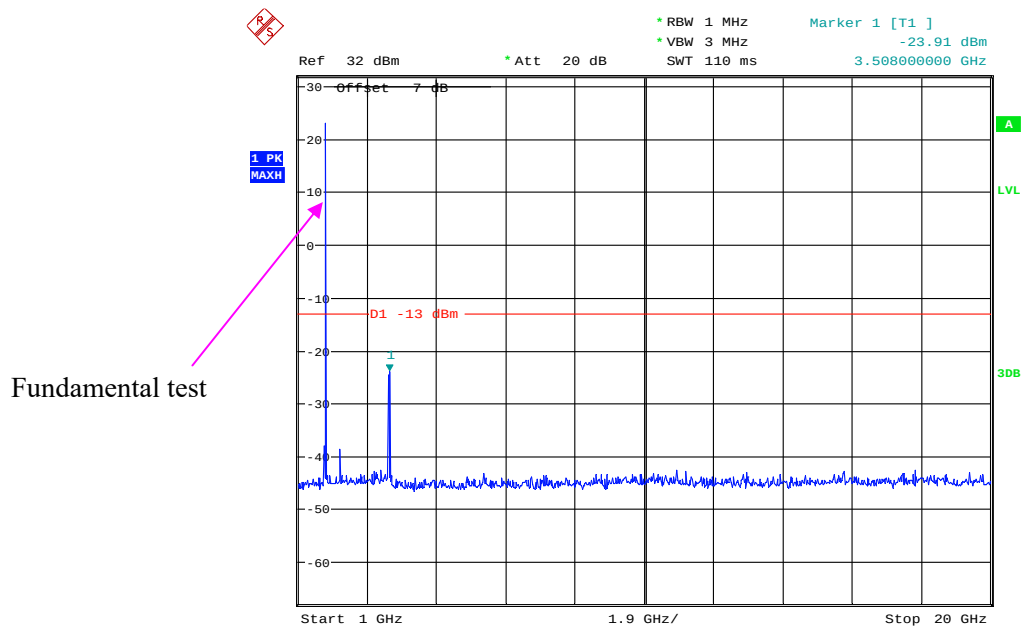
Fundamental test

Date: 19.MAY.2021 03:41:22

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

Date: 19.MAY.2021 03:38:17

1 GHz – 20 GHz (WCDMA Mode)



Date: 19.MAY.2021 03:42:04

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) and § 24.238(a) and § 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:	24~28.3 °C
Relative Humidity:	46~58 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Zero Yan from 2021-05-01 to 2021-05-17 for below 1GHz, Troy Wang ,Alan He and Hanic Pan form 2021-04-26 to 2021-05-18 for above 1GHz.

EUT operation mode: Transmitting

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

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode										
Low channel										
903.82	36.64	122	2.3	H	-59.7	1.33	0.0	-61.03	-13	48.03
903.82	38.08	165	1.7	V	-58.0	1.33	0.0	-59.33	-13	46.33
1648.40	44.45	235	2.2	H	-63.9	1.40	8.70	-56.60	-13	43.60
1648.40	45.72	81	2.3	V	-62.4	1.40	8.70	-55.10	-13	42.10
2472.60	52.86	340	2.0	H	-51.2	2.60	10.20	-43.60	-13	30.60
2472.60	50.37	224	1.3	V	-53.0	2.60	10.20	-45.40	-13	32.40
3296.80	44.93	358	1.7	H	-56.0	1.50	11.70	-45.80	-13	32.80
3296.80	44.45	287	1.5	V	-56.5	1.50	11.70	-46.30	-13	33.30
Middle channel										
905.86	36.75	106	1.1	H	-59.6	1.33	0.0	-60.93	-13	47.93
905.86	38.26	280	1.1	V	-57.8	1.33	0.0	-59.13	-13	46.13
1673.20	44.35	358	1.8	H	-62.0	1.30	8.90	-54.40	-13	41.40
1673.20	45.67	33	2.4	V	-60.1	1.30	8.90	-52.50	-13	39.50
2509.80	52.52	62	1.9	H	-50.8	2.60	10.20	-43.20	-13	30.20
2509.80	50.39	173	2.0	V	-52.4	2.60	10.20	-44.80	-13	31.80
3346.40	44.87	41	1.9	H	-56.0	1.50	11.70	-45.80	-13	32.80
3346.40	44.39	341	2.3	V	-56.5	1.50	11.70	-46.30	-13	33.30
High channel										
916.32	36.61	129	2.3	H	-59.7	1.33	0.0	-61.03	-13	48.03
916.32	38.15	128	1.9	V	-57.9	1.33	0.0	-59.23	-13	46.23
1697.60	44.57	119	2.3	H	-61.8	1.30	8.90	-54.20	-13	41.20
1697.60	45.85	7	1.1	V	-59.9	1.30	8.90	-52.30	-13	39.30
2546.40	52.70	23	1.3	H	-50.7	2.60	10.20	-43.10	-13	30.10
2546.40	50.45	259	1.0	V	-52.3	2.60	10.20	-44.70	-13	31.70
3395.20	44.97	49	2.1	H	-56.3	1.40	11.80	-45.90	-13	32.90
3395.20	44.52	31	2.2	V	-56.5	1.40	11.80	-46.10	-13	33.10

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
912.15	31.99	253	1.0	H	-64.4	1.33	0.0	-65.73	-13	52.73
912.15	33.65	26	1.3	V	-62.4	1.33	0.0	-63.73	-13	50.73
1652.80	49.41	78	2.2	H	-56.9	1.30	8.90	-49.30	-13	36.30
1652.80	48.66	61	1.4	V	-57.1	1.30	8.90	-49.50	-13	36.50
2479.20	46.82	113	1.1	H	-56.5	2.60	10.20	-48.90	-13	35.90
2479.20	45.14	319	2.1	V	-57.6	2.60	10.20	-50.00	-13	37.00
3305.60	55.81	18	1.4	H	-45.1	1.50	11.70	-34.90	-13	21.90
3305.60	53.53	181	1.5	V	-47.4	1.50	11.70	-37.20	-13	24.20
4132.00	51.53	171	2.1	H	-50.6	1.40	12.20	-39.80	-13	26.80
4132.00	49.88	214	2.2	V	-51.2	1.40	12.20	-40.40	-13	27.40
Middle channel										
908.36	32.05	234	1.2	H	-64.3	1.33	0.0	-65.63	-13	52.63
908.36	33.96	208	2.3	V	-62.1	1.33	0.0	-63.43	-13	50.43
1673.20	53.55	259	1.5	H	-52.8	1.30	8.90	-45.20	-13	32.20
1673.20	50.49	295	1.0	V	-55.2	1.30	8.90	-47.60	-13	34.60
2509.80	47.95	206	1.7	H	-55.4	2.60	10.20	-47.80	-13	34.80
2509.80	46.93	323	2.1	V	-55.8	2.60	10.20	-48.20	-13	35.20
3346.40	53.46	176	1.4	H	-47.4	1.50	11.70	-37.20	-13	24.20
3346.40	51.98	331	2.0	V	-48.9	1.50	11.70	-38.70	-13	25.70
4183.00	51.65	138	1.3	H	-50.3	1.50	11.80	-40.00	-13	27.00
4183.00	49.66	291	1.6	V	-51.5	1.50	11.80	-41.20	-13	28.20
High channel										
905.68	32.18	310	1.8	H	-64.2	1.33	0.0	-65.53	-13	52.53
905.68	34.02	35	1.5	V	-62.1	1.33	0.0	-63.43	-13	50.43
1693.20	52.14	234	2.2	H	-54.2	1.30	8.90	-46.60	-13	33.60
1693.20	50.21	59	1.7	V	-55.5	1.30	8.90	-47.90	-13	34.90
2539.80	49.75	292	2.0	H	-53.6	2.60	10.20	-46.00	-13	33.00
2539.80	48.33	200	2.0	V	-54.4	2.60	10.20	-46.80	-13	33.80
3386.40	56.72	223	1.4	H	-44.5	1.40	11.80	-34.10	-13	21.10
3386.40	54.03	91	1.5	V	-47.0	1.40	11.80	-36.60	-13	23.60
4233.00	53.09	9	1.4	H	-48.9	1.50	11.80	-38.60	-13	25.60
4233.00	51.60	356	2.1	V	-49.6	1.50	11.80	-39.30	-13	26.30

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

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode										
Low channel										
921.39	35.48	236	1.7	H	-60.9	1.33	0.0	-62.23	-13	49.23
921.39	37.91	186	2.0	V	-58.2	1.33	0.0	-59.53	-13	46.53
3700.40	60.39	131	1.5	H	-41.4	1.60	11.90	-31.10	-13	18.10
3700.40	61.29	15	1.8	V	-39.9	1.60	11.90	-29.60	-13	16.60
5550.60	56.28	213	1.1	H	-43.4	1.70	12.40	-32.70	-13	19.70
5550.60	59.39	326	1.1	V	-40.0	1.70	12.40	-29.30	-13	16.30
Middle channel										
915.35	35.98	212	2.0	H	-60.4	1.33	0.0	-61.73	-13	48.73
915.35	38.35	265	1.9	V	-57.7	1.33	0.0	-59.03	-13	46.03
3760.00	59.86	313	1.3	H	-42.2	1.50	11.80	-31.90	-13	18.90
3760.00	60.94	239	2.4	V	-40.6	1.50	11.80	-30.30	-13	17.30
5640.00	57.24	94	2.2	H	-42.4	1.70	12.40	-31.70	-13	18.70
5640.00	59.47	213	1.3	V	-39.9	1.70	12.40	-29.20	-13	16.20
High channel										
909.38	36.34	306	1.5	H	-60.0	1.33	0.0	-61.33	-13	48.33
909.38	38.96	325	2.2	V	-57.1	1.33	0.0	-58.43	-13	45.43
3819.60	59.24	353	1.3	H	-42.8	1.50	11.80	-32.50	-13	19.50
3819.60	61.83	226	1.3	V	-39.8	1.50	11.80	-29.50	-13	16.50
5729.40	57.37	233	1.2	H	-42.5	1.60	12.10	-32.00	-13	19.00
5729.40	59.69	50	1.2	V	-39.6	1.60	12.10	-29.10	-13	16.10

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
915.95	32.11	220	1.2	H	-64.2	1.33	0.0	-65.53	-13	52.53
915.95	33.84	288	1.8	V	-62.2	1.33	0.0	-63.53	-13	50.53
3704.80	54.66	111	1.1	H	-47.1	1.60	11.90	-36.80	-13	23.80
3704.80	52.19	159	2.0	V	-49.0	1.60	11.90	-38.70	-13	25.70
Middle channel										
921.63	31.85	158	2.1	H	-64.5	1.33	0.0	-65.83	-13	52.83
921.63	33.36	81	2.0	V	-62.7	1.33	0.0	-64.03	-13	51.03
3760.00	56.37	294	1.5	H	-45.7	1.50	11.80	-35.40	-13	22.40
3760.00	54.57	176	2.0	V	-47.0	1.50	11.80	-36.70	-13	23.70
High channel										
916.17	31.41	10	2.1	H	-64.9	1.33	0.0	-66.23	-13	53.23
916.17	32.48	346	1.4	V	-63.6	1.33	0.0	-64.93	-13	51.93
3815.20	57.34	232	1.8	H	-44.7	1.50	11.80	-34.40	-13	21.40
3815.20	55.09	254	2.5	V	-46.5	1.50	11.80	-36.20	-13	23.20

30 MHz ~ 20 GHz:**AWS Band**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
958.3	32.34	267	2.2	H	-64.2	1.36	0.0	-65.56	-13	52.56
958.3	33.66	38	1.9	V	-60.4	1.36	0.0	-61.76	-13	48.76
3424.80	55.67	260	2.5	H	-45.8	1.40	11.80	-35.40	-13	22.40
3424.80	57.08	148	1.5	V	-44.2	1.40	11.80	-33.80	-13	20.80
Middle channel										
951.6	32.66	170	1.1	H	-63.8	1.36	0.0	-65.16	-13	52.16
951.6	33.49	322	2.0	V	-60.6	1.36	0.0	-61.96	-13	48.96
3465.20	55.76	264	1.4	H	-45.7	1.50	12.00	-35.20	-13	22.20
3465.20	55.83	183	1.8	V	-46.4	1.50	12.00	-35.90	-13	22.90
High channel										
954. 7	32.55	348	1.0	H	-64.0	1.36	0.0	-65.36	-13	52.36
954.7	33.85	357	2.5	V	-60.2	1.36	0.0	-61.56	-13	48.56
3505.20	59.62	154	1.2	H	-41.9	1.50	12.00	-31.40	-13	18.40
3505.20	58.93	88	1.0	V	-43.3	1.50	12.00	-32.80	-13	19.80

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
937.42	31.54	264	2.4	H	-64.8	1.33	0.0	-66.13	-13	53.13
937.42	33.38	285	2.4	V	-62.7	1.33	0.0	-64.03	-13	51.03
3701.40	58.78	121	1.6	H	-43.0	1.60	11.90	-32.70	-13	19.70
3701.40	63.24	154	1.8	V	-38.0	1.60	11.90	-27.70	-13	14.70
1.4 MHz, Middle channel										
916.66	31.22	66	1.9	H	-65.1	1.33	0.0	-66.43	-13	53.43
916.66	33.72	194	1.9	V	-62.4	1.33	0.0	-63.73	-13	50.73
3760.00	58.24	23	2.2	H	-43.8	1.50	11.80	-33.50	-13	20.50
3760.00	62.91	274	1.8	V	-38.7	1.50	11.80	-28.40	-13	15.40
1.4 MHz, High channel										
920.70	31.14	269	1.4	H	-65.2	1.33	0.0	-66.53	-13	53.53
920.70	33.59	36	1.8	V	-62.5	1.33	0.0	-63.83	-13	50.83
3818.60	58.23	63	1.3	H	-43.8	1.50	11.80	-33.50	-13	20.50
3818.60	62.17	136	1.3	V	-39.4	1.50	11.80	-29.10	-13	16.10
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
907.63	31.05	188	2.0	H	-65.3	1.33	0.0	-66.63	-13	53.63
907.63	33.77	95	1.5	V	-62.3	1.33	0.0	-63.63	-13	50.63
3421.40	52.73	115	2.1	H	-48.1	1.40	11.80	-37.70	-13	24.70
3421.40	55.28	85	1.7	V	-45.3	1.40	11.80	-34.90	-13	21.90
1.4 MHz, Middle channel										
912.9	31.66	149	2.5	H	-64.7	1.33	0.0	-66.03	-13	53.03
912.9	32.98	346	1.9	V	-63.1	1.33	0.0	-64.43	-13	51.43
3465.00	53.26	187	1.8	H	-47.5	1.50	12.00	-37.00	-13	24.00
3465.00	56.01	168	2.5	V	-45.5	1.50	12.00	-35.00	-13	22.00
1.4 MHz, High channel										
927.3	31.72	13	2.2	H	-64.6	1.33	0.0	-65.93	-13	52.93
927.3	32.81	328	1.2	V	-63.3	1.33	0.0	-64.63	-13	51.63
3508.60	52.34	358	1.2	H	-48.4	1.50	12.00	-37.90	-13	24.90
3508.60	55.78	120	1.7	V	-45.7	1.50	12.00	-35.20	-13	22.20

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
907.96	31.61	79	1.4	H	-64.7	1.33	0.0	-66.03	-13	53.03
907.96	32.74	200	1.3	V	-63.3	1.33	0.0	-64.63	-13	51.63
1649.40	55.32	224	1.6	H	-52.8	1.40	8.70	-45.50	-13	32.50
1649.40	51.76	160	1.9	V	-56.1	1.40	8.70	-48.80	-13	35.80
2474.10	57.43	302	1.5	H	-45.9	2.60	10.20	-38.30	-13	25.30
2474.10	53.54	28	2.5	V	-49.2	2.60	10.20	-41.60	-13	28.60
3298.80	65.78	38	1.4	H	-35.1	1.50	11.70	-24.90	-13	11.90
3298.80	62.89	82	2.2	V	-38.0	1.50	11.70	-27.80	-13	14.80
1.4 MHz, Middle channel										
911.58	31.43	112	1.2	H	-64.9	1.33	0.0	-66.23	-13	53.23
911.58	32.67	29	1.7	V	-63.4	1.33	0.0	-64.73	-13	51.73
1673.00	55.4	171	2.4	H	-50.9	1.30	8.90	-43.30	-13	30.30
1673.00	52.06	42	2.3	V	-53.7	1.30	8.90	-46.10	-13	33.10
2509.50	57.3	212	1.3	H	-46.1	2.60	10.20	-38.50	-13	25.50
2509.50	53.4	280	1.9	V	-49.3	2.60	10.20	-41.70	-13	28.70
3346.00	66.43	51	2.3	H	-34.5	1.50	11.70	-24.30	-13	11.30
3346.00	63.77	198	2.4	V	-37.2	1.50	11.70	-27.00	-13	14.00
1.4 MHz, High channel										
919.8	30.66	339	2.1	H	-65.7	1.33	0.0	-67.03	-13	54.03
919.8	32.29	193	2.4	V	-63.8	1.33	0.0	-65.13	-13	52.13
1696.60	55.23	289	2.3	H	-51.1	1.30	8.90	-43.50	-13	30.50
1696.60	51.59	157	1.9	V	-54.1	1.30	8.90	-46.50	-13	33.50
2544.90	57.36	216	1.2	H	-46.0	2.60	10.20	-38.40	-13	25.40
2544.90	53.52	297	1.2	V	-49.2	2.60	10.20	-41.60	-13	28.60
3393.20	65.66	106	1.1	H	-35.6	1.40	11.80	-25.20	-13	12.20
3393.20	62.78	238	1.1	V	-38.3	1.40	11.80	-27.90	-13	14.90

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 7										
Test frequency range: 30 MHz ~26.5GHz										
5 MHz, Low channel										
909.31	30.81	209	1.3	H	-65.5	1.33	0.0	-66.83	-25	41.83
909.31	32.41	180	1.4	V	-63.7	1.33	0.0	-65.03	-25	40.03
5000.00	50.68	303	1.5	H	-48.1	1.70	12.00	-37.80	-25	12.80
5000.00	52.45	344	1.4	V	-45.8	1.70	12.00	-35.50	-25	10.50
5 MHz, Middle channel										
926.82	31.25	155	1.6	H	-65.1	1.33	0.0	-66.43	-25	41.43
926.82	33.07	78	1.4	V	-63.0	1.33	0.0	-64.33	-25	39.33
5070.00	51.97	355	1.9	H	-45.7	1.60	12.10	-35.20	-25	10.20
5070.00	53.40	358	1.4	V	-44.2	1.60	12.10	-33.70	-25	8.70
5 MHz, High channel										
921.74	31.36	245	1.7	H	-65.0	1.33	0.0	-66.33	-25	41.33
921.74	33.19	220	1.3	V	-62.9	1.33	0.0	-64.23	-25	39.23
5139.80	52.91	1	2.3	H	-44.7	1.60	12.10	-34.20	-25	9.20
5139.80	54.17	277	2.0	V	-43.5	1.60	12.10	-33.00	-25	8.00
Band 66										
Test frequency range: 30 MHz ~ 20GHz										
1.4 MHz, Low channel										
931.28	31.82	200	1.2	H	-64.5	1.33	0.0	-65.83	-13	52.83
931.28	33.26	331	1.4	V	-62.8	1.33	0.0	-64.13	-13	51.13
3421.40	54.89	58	2.4	H	-46.3	1.40	11.80	-35.90	-13	22.90
3421.40	52.12	169	1.0	V	-48.9	1.40	11.80	-38.50	-13	25.50
1.4 MHz, Middle channel										
914.82	31.67	27	2.4	H	-64.7	1.33	0.0	-66.03	-13	53.03
914.82	33.29	298	2.1	V	-62.8	1.33	0.0	-64.13	-13	51.13
3490.00	55.25	90	1.9	H	-45.6	1.50	12.00	-35.10	-13	22.10
3490.00	52.52	18	1.4	V	-49.1	1.50	12.00	-38.60	-13	25.60
1.4 MHz, High channel										
920.8	31.48	312	2.2	H	-64.9	1.33	0.0	-66.23	-13	53.23
920.8	33.31	185	1.7	V	-62.8	1.33	0.0	-64.13	-13	51.13
3558.60	55.34	198	2.2	H	-46.4	1.50	12.10	-35.80	-13	22.80
3558.60	52.23	42	1.8	V	-49.0	1.50	12.10	-38.40	-13	25.40

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

dBd is for the below 1GHz, dBi is for above 1GHz.

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

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

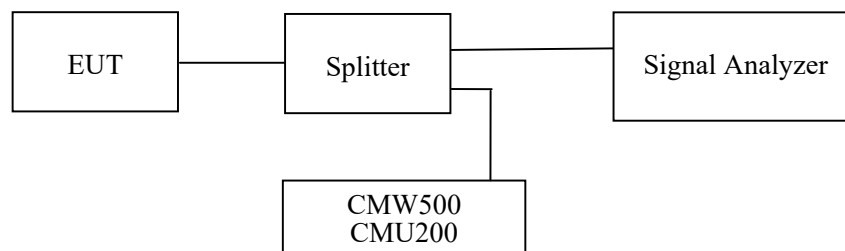
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

Test Procedure

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

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

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

Temperature:	25~27 °C
Relative Humidity:	52~55 %
ATM Pressure:	100.9~101.0 kPa

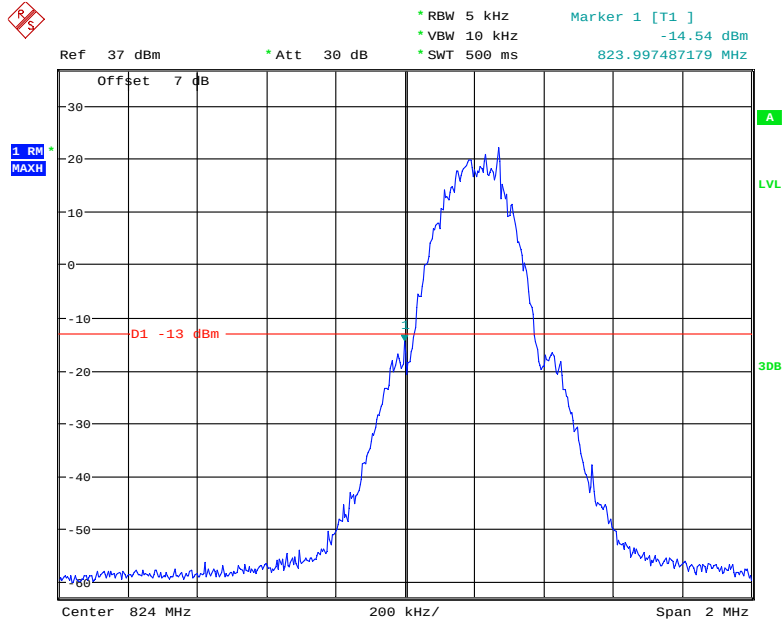
The testing was performed by Pedro Yun from 2021-04-23 to 2021-05-19.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

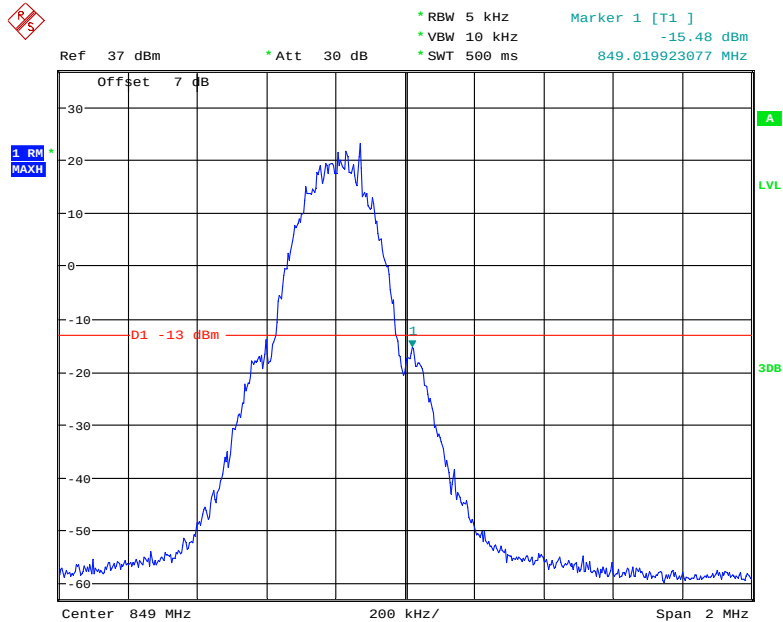
Please refer to the following plots.

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



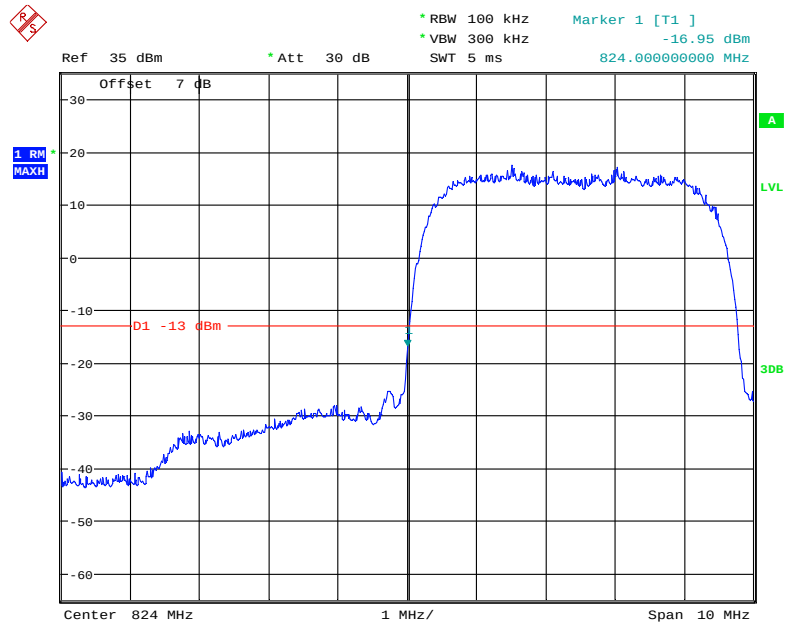
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Cellular Band, Right Band Edge for GSM (GMSK) Mode



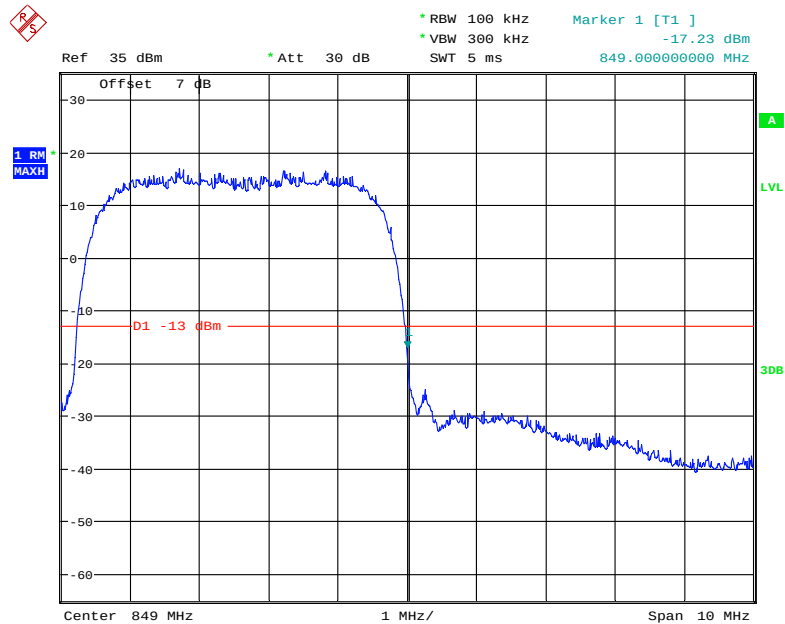
Date: 23.APR.2021 16:03:58

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



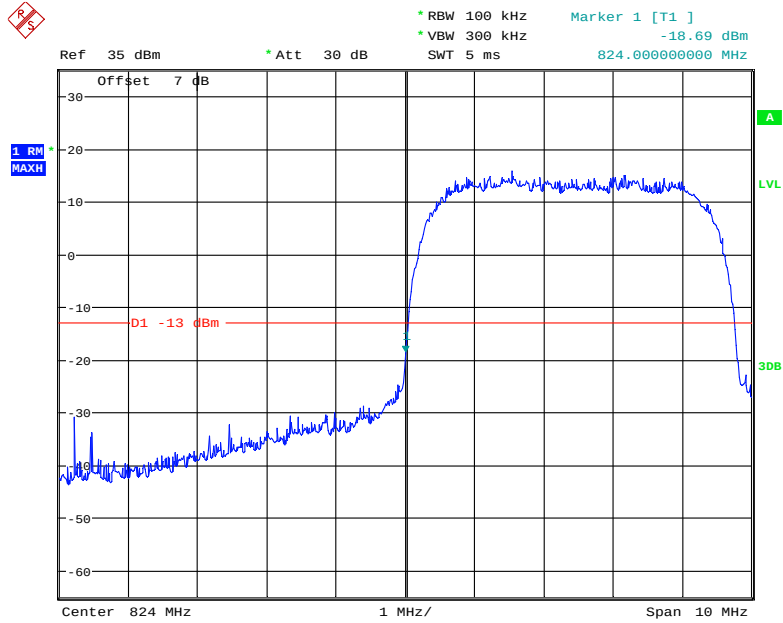
Date: 25.APR.2021 11:18:30

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



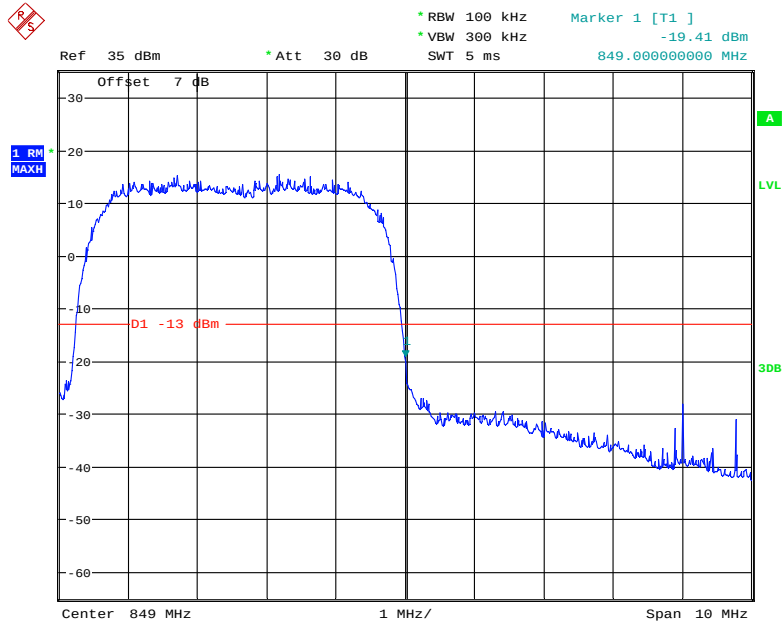
Date: 25.APR.2021 11:20:04

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



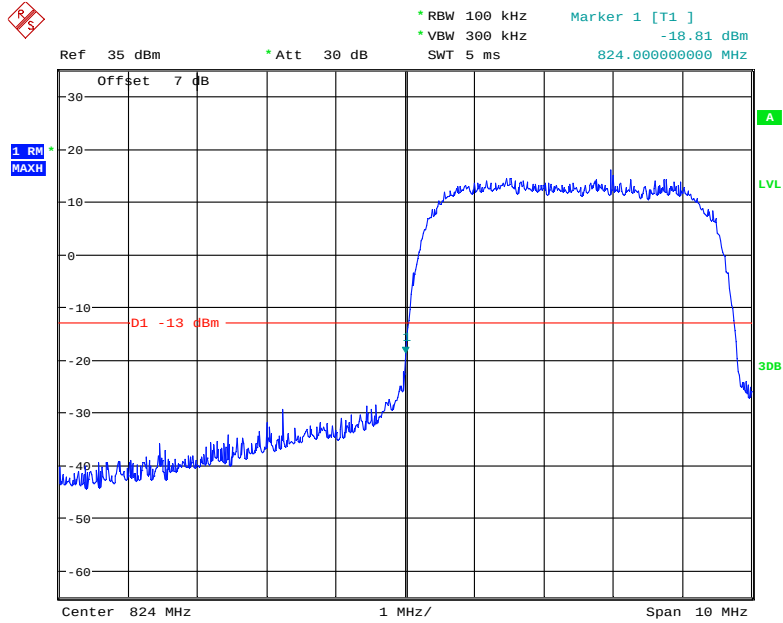
Date: 25.APR.2021 11:53:17

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



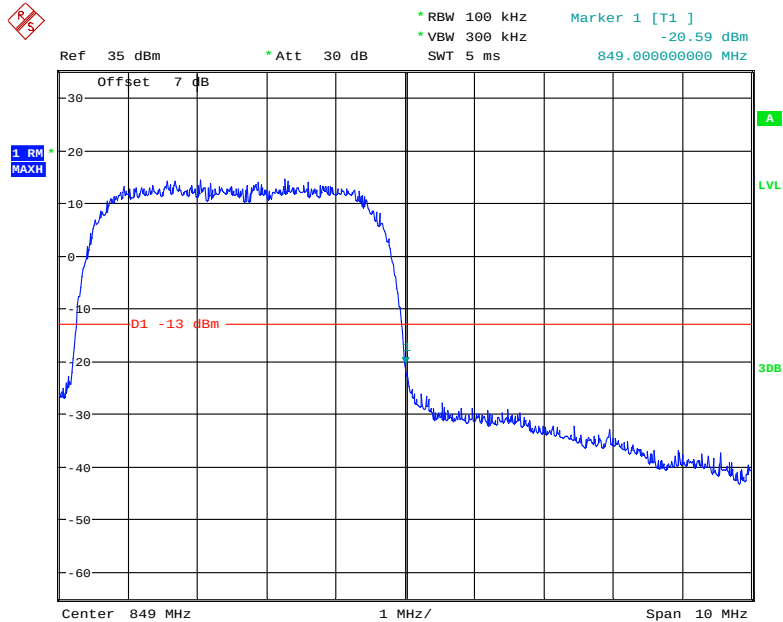
Date: 25.APR.2021 11:54:54

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



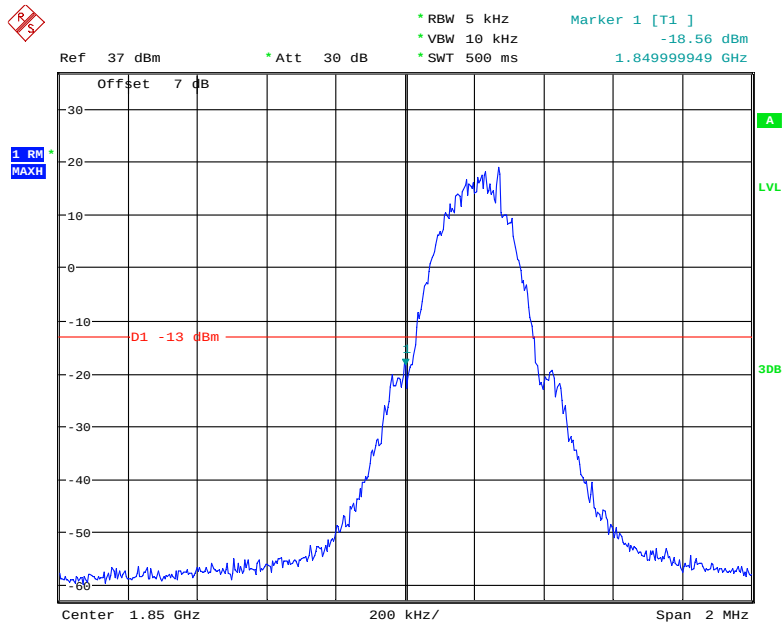
Date: 25.APR.2021 13:17:57

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



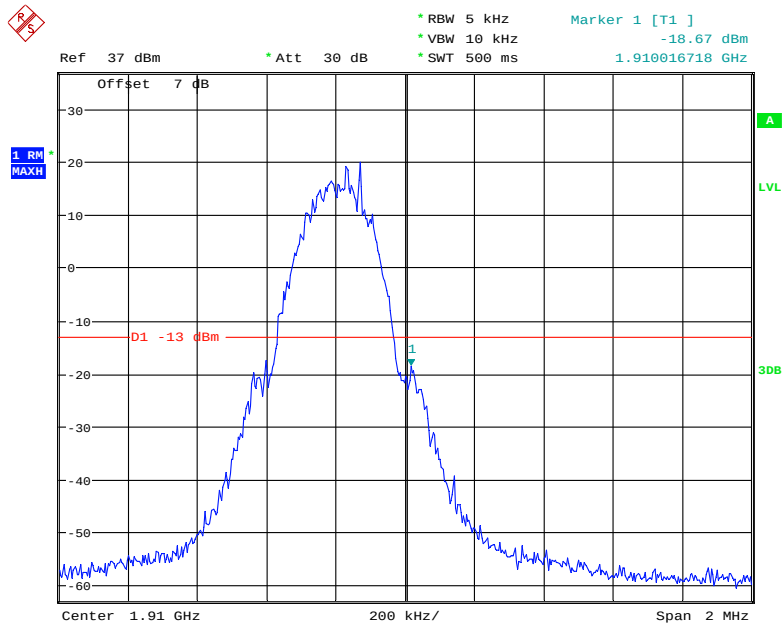
Date: 25.APR.2021 13:16:24

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



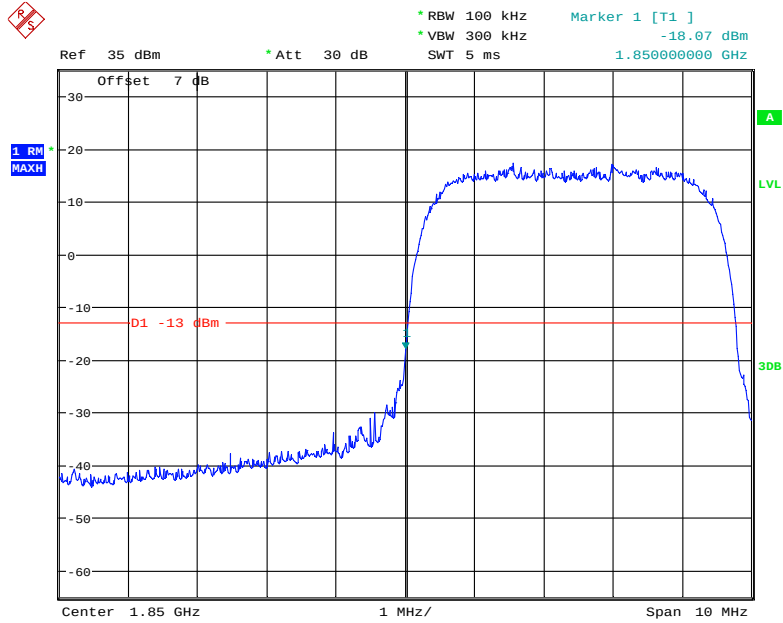
Date: 23.APR.2021 16:08:46

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



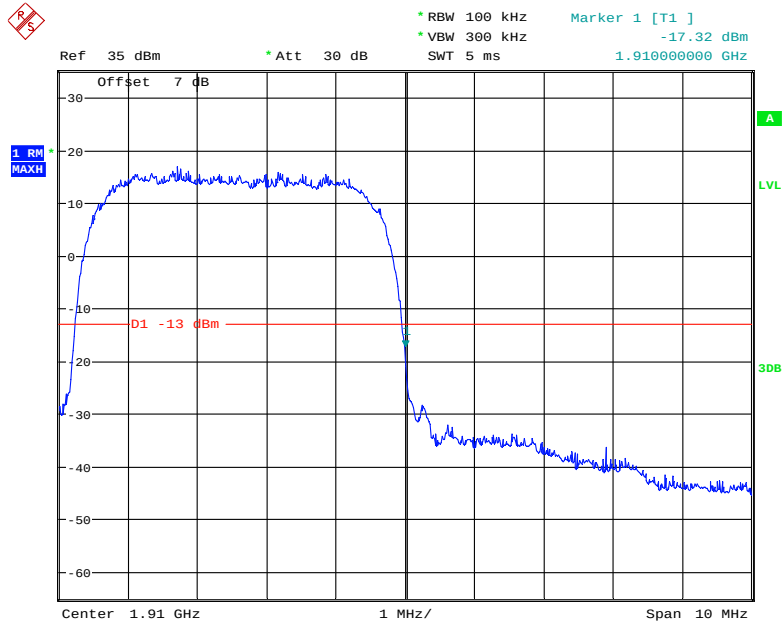
Date: 23.APR.2021 16:11:17

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



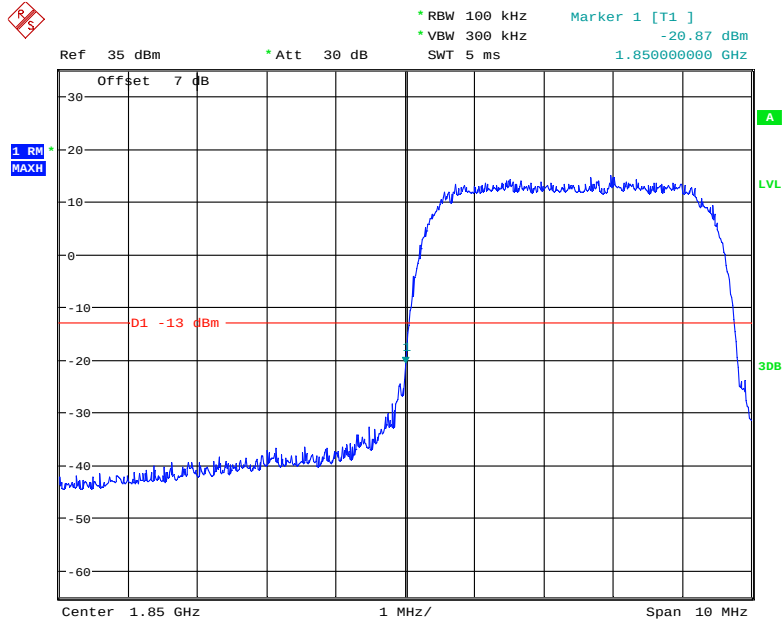
Date: 25.APR.2021 11:11:57

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



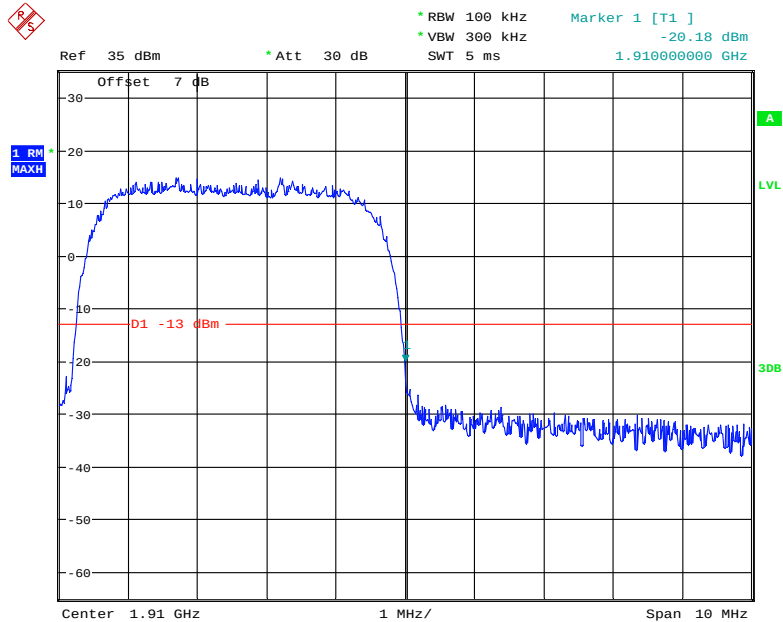
Date: 25.APR.2021 11:15:28

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



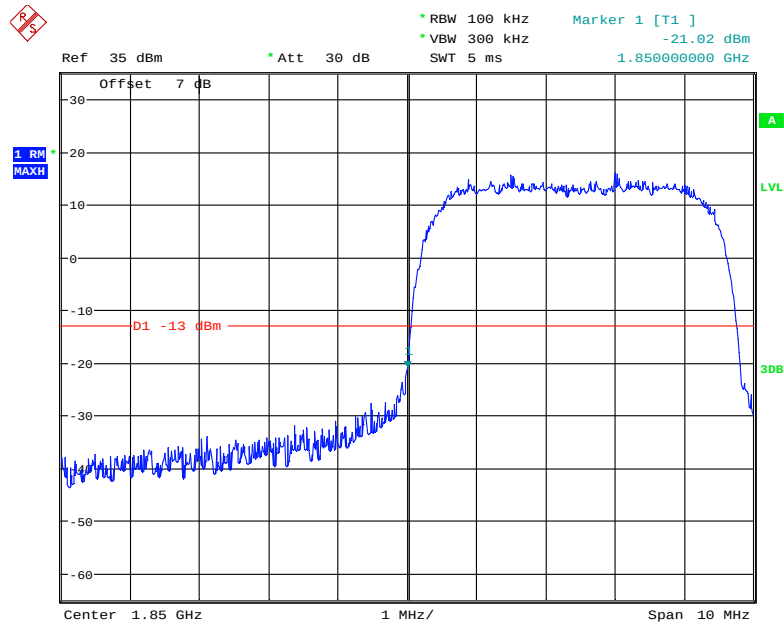
Date: 25.APR.2021 11:47:03

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



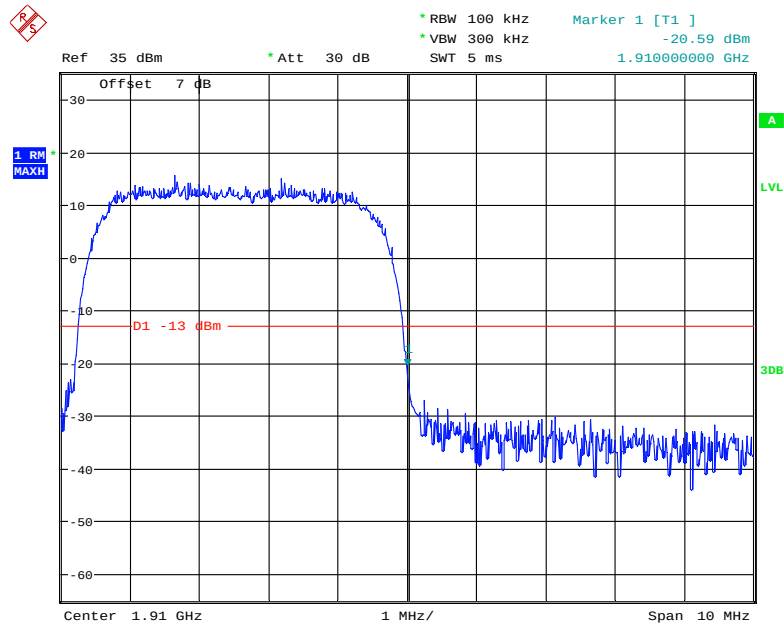
Date: 25.APR.2021 11:50:01

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



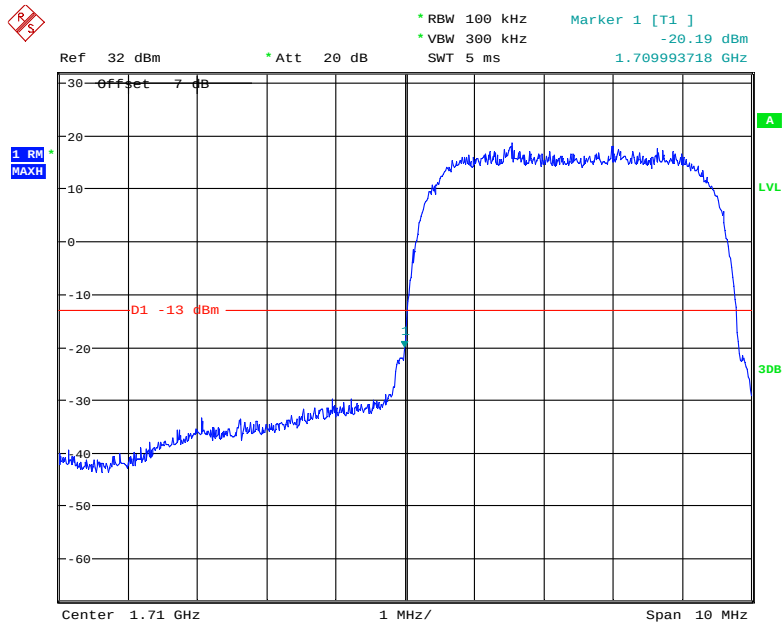
Date: 25.APR.2021 13:10:01

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



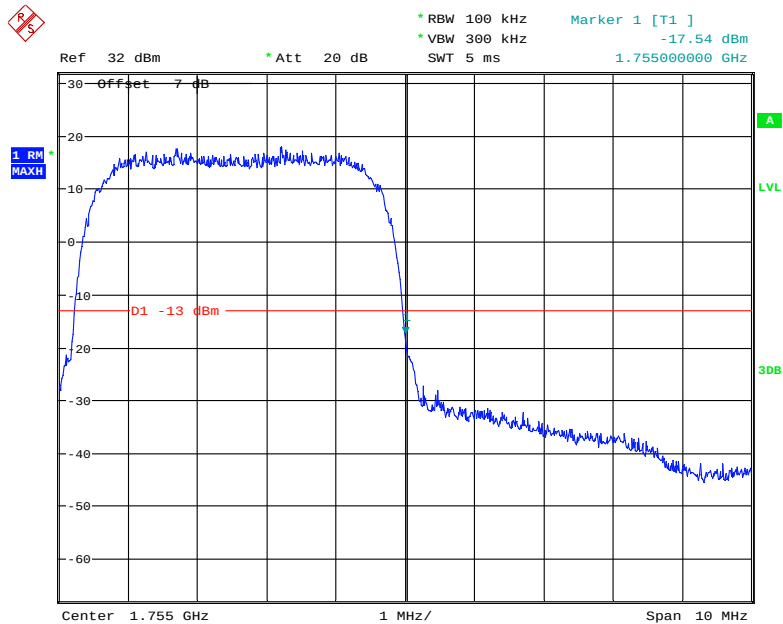
Date: 25.APR.2021 13:11:33

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



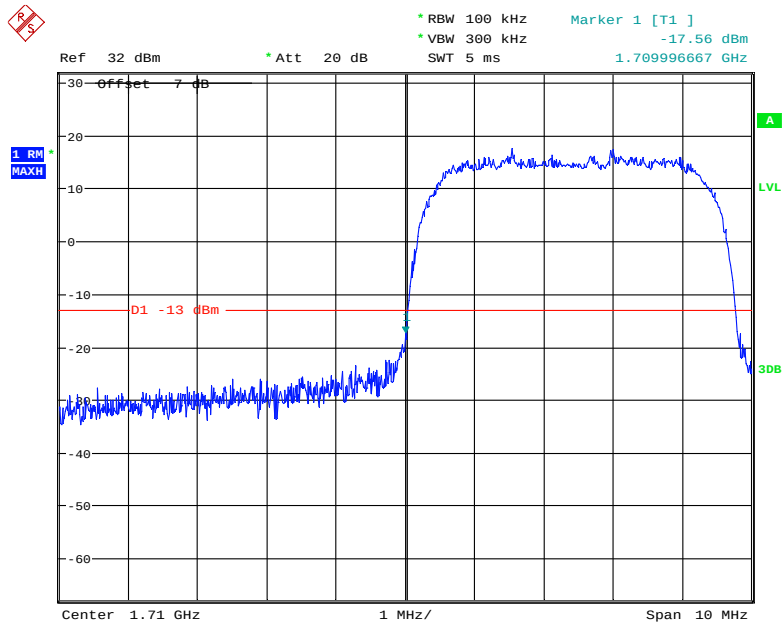
Date: 19.MAY.2021 03:26:31

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



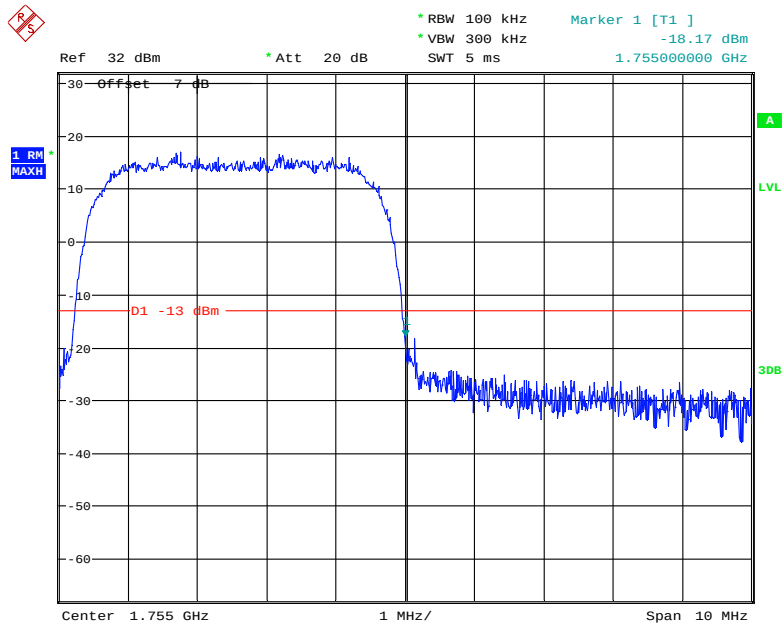
Date: 19.MAY.2021 03:27:43

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



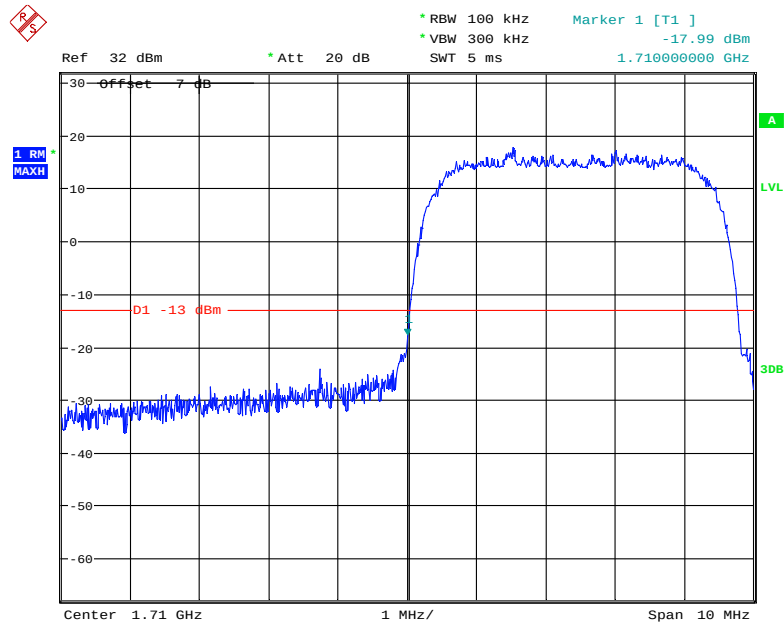
Date: 19.MAY.2021 04:23:23

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



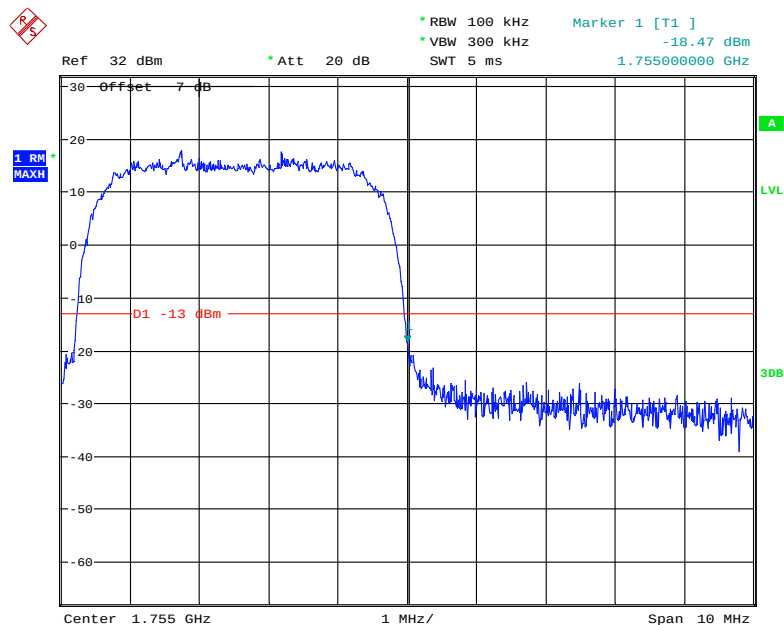
Date: 19.MAY.2021 04:26:15

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



Date: 19.MAY.2021 03:47:05

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



Date: 19.MAY.2021 03:50:52

The test plot of LTE band 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 and & §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

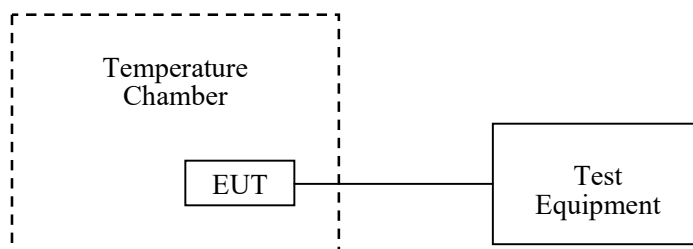
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external 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:	25 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Pedro Yun from 2021-04-23 to 2021-05-19.

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	3.8	5	0.0060	2.5
-20		-8	-0.0096	2.5
-10		-6	-0.0072	2.5
0		7	0.0084	2.5
10		5	0.0060	2.5
20		8	0.0096	2.5
30		-10	-0.0120	2.5
40		3	0.0036	2.5
50		-2	-0.0024	2.5
20	V min.= 3.5	6	0.0072	2.5
	V max.= 4.35	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	3.8	6	0.0072	2.5
-20		4	0.0048	2.5
-10		7	0.0084	2.5
0		8	0.0096	2.5
10		5	0.0060	2.5
20		9	0.0108	2.5
30		-15	-0.0179	2.5
40		3	0.0036	2.5
50		-2	-0.0024	2.5
20	V min.= 3.5	6	0.0072	2.5
	V max.= 4.35	8	0.0096	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	3.8	2	0.0011	pass
-20		10	0.0053	pass
-10		6	0.0032	pass
0		13	0.0069	pass
10		16	0.0085	pass
20		18	0.0096	pass
30		20	0.0106	pass
40		22	0.0117	pass
50		17	0.0090	pass
20	V min.= 3.5	26	0.0138	pass
	V max.= 4.35	29	0.0154	pass

WCDMA Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	4	0.0021	pass
-20		6	0.0032	pass
-10		7	0.0037	pass
0		17	0.0090	pass
10		9	0.0048	pass
20		12	0.0064	pass
30		21	0.0112	pass
40		-9	-0.0048	pass
50		15	0.0080	pass
20	V min.= 3.5	9	0.0048	pass
	V max.= 4.35	-7	-0.0037	pass

AWS Band (Part 27)

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.0354	1754.6718	1710	1755
-20		1710.0366	1754.6773	1710	1755
-10		1710.0303	1754.6756	1710	1755
0		1710.0342	1754.6754	1710	1755
10		1710.0324	1754.6728	1710	1755
20		1710.0322	1754.6725	1710	1755
30		1710.0346	1754.6711	1710	1755
40		1710.0360	1754.6757	1710	1755
50		1710.0303	1754.6732	1710	1755
20	V min.= 3.5	1710.0339	1754.6710	1710	1755
	V max.= 4.35	1710.0371	1754.6719	1710	1755

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-5.67	-0.0030	pass
-20		-9.98	-0.0053	pass
-10		-6.10	-0.0032	pass
0		6.14	0.0033	pass
10		7.87	0.0042	pass
20		6.52	0.0035	pass
30		-6.42	-0.0034	pass
40		7.16	0.0038	pass
50		-9.59	-0.0051	pass
20	V min.= 3.5	-8.12	-0.0043	pass
	V max.= 4.35	-7.01	-0.0037	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	3.8	1710.3996	1754.5601	1710	1755
-20		1710.4165	1754.5323	1710	1755
-10		1710.3975	1754.5281	1710	1755
0		1710.3995	1754.5868	1710	1755
10		1710.4652	1754.5581	1710	1755
20		1710.3978	1754.4942	1710	1755
30		1710.3995	1754.4614	1710	1755
40		1710.4375	1754.5101	1710	1755
50		1710.3879	1754.5515	1710	1755
20	V min.= 3.5	1710.4326	1754.5272	1710	1755
	V max.= 4.35	1710.4642	1754.5885	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_o=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-8.92	-0.0107	2.5
-20		9.13	0.0109	2.5
-10		8.49	0.0101	2.5
0		-7.02	-0.0084	2.5
10		-5.13	-0.0061	2.5
20		7.15	0.0085	2.5
30		-5.75	-0.0069	2.5
40		5.44	0.0065	2.5
50		6.79	0.0081	2.5
20	V min.= 3.5	9.78	0.0117	2.5
	V max.= 4.35	9.86	0.0118	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	3.8	2500.4081	2569.5498	2500	2570
-20		2500.5086	2569.4896	2500	2570
-10		2500.4729	2569.5763	2500	2570
0		2500.4910	2569.5215	2500	2570
10		2500.4689	2569.5292	2500	2570
20		2500.4653	2569.5689	2500	2570
30		2500.5121	2569.4462	2500	2570
40		2500.4258	2569.5365	2500	2570
50		2500.4713	2569.5599	2500	2570
20	V min.= 3.5	2500.4115	2569.5156	2500	2570
	V max.= 4.35	2500.4331	2569.4952	2500	2570

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.3742	1779.6245	1710	1780
-20		1710.3515	1779.6881	1710	1780
-10		1710.3385	1779.6096	1710	1780
0		1710.3272	1779.6035	1710	1780
10		1710.3154	1779.6466	1710	1780
20		1710.3714	1779.6054	1710	1780
30		1710.3491	1779.6642	1710	1780
40		1710.3415	1779.6924	1710	1780
50		1710.3931	1779.6793	1710	1780
20	V min.= 3.5	1710.3324	1779.6561	1710	1780
	V max.= 4.35	1710.3275	1779.6784	1710	1780

16QAM:**Band 2:**

10.0 MHz Middle Channel, f _o =1880MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-6	-0.0032	pass
-20		-5	-0.0027	pass
-10		14	0.0074	pass
0		-3	-0.0016	pass
10		8	0.0043	pass
20		-9	-0.0048	pass
30		-5	-0.0027	pass
40		-3	-0.0016	pass
50		12	0.0064	pass
20	V min.= 3.5	12	0.0064	pass
	V max.= 4.35	12	0.0064	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	3.8	1710.3584	1754.5241	1710	1755
-20		1710.4051	1754.5082	1710	1755
-10		1710.5072	1754.5642	1710	1755
0		1710.3421	1754.5781	1710	1755
10		1710.4154	1754.5575	1710	1755
20		1710.4112	1754.5088	1710	1755
30		1710.4154	1754.5497	1710	1755
40		1710.4421	1754.4756	1710	1755
50		1710.4584	1754.6375	1710	1755
20	V min.= 3.5	1710.4275	1754.5998	1710	1755
	V max.= 4.35	1710.4482	1754.5468	1710	1755

Band 5:

10.0 MHz Middle Channel, f ₀ = 836.5 MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-3.62	-0.0043	2.5
-20		6.83	0.0082	2.5
-10		-9.55	-0.0114	2.5
0		-8.21	-0.0098	2.5
10		-8.91	-0.0107	2.5
20		-9.79	-0.0117	2.5
30		8.48	0.0101	2.5
40		6.82	0.0082	2.5
50		-5.91	-0.0071	2.5
20	V min.= 3.5	8.97	0.0107	2.5
	V max.= 4.35	-7.85	-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	3.8	2500.4823	2569.4736	2500	2570
-20		2500.5124	2569.5664	2500	2570
-10		2500.5102	2569.5386	2500	2570
0		2500.4796	2569.5783	2500	2570
10		2500.5077	2569.5515	2500	2570
20		2500.4455	2569.5275	2500	2570
30		2500.4975	2569.4925	2500	2570
40		2500.4742	2569.5335	2500	2570
50		2500.4415	2569.5699	2500	2570
20	V min.= 3.5	2500.4135	2569.5526	2500	2570
	V max.= 4.35	2500.4542	2569.4982	2500	2570

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.3772	1779.6286	1710	1780
-20		1710.3516	1779.6852	1710	1780
-10		1710.3315	1779.6089	1710	1780
0		1710.3265	1779.6031	1710	1780
10		1710.3213	1779.6541	1710	1780
20		1710.3697	1779.6121	1710	1780
30		1710.3424	1779.6634	1710	1780
40		1710.3451	1779.6882	1710	1780
50		1710.3898	1779.6799	1710	1780
20	V min.= 3.5	1710.3331	1779.6581	1710	1780
	V max.= 4.35	1710.3324	1779.6716	1710	1780

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