

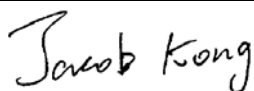
FCC PART 27
FCC PART 22H, PART 24E
TEST REPORT

For

Shenzhen CWELL Electronic Technology Co., Ltd.

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Shenzhen, China

FCC ID: 2A2CNV1000

Report Type: Original Report	Product Type: 4G Feature Phone
Report Number: SZ1210602-21026E-00B	
Report Date: 2021-07-16	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	4G Feature Phone
Tested Model	V1000
Multiple Model	V2000, V3000
Model Differences	Refer to the DoS letter
Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA B2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA B5: 824-849MHz(TX); 869-894MHz(RX) WCDMA B4: 1710- 1755 MHz(TX); 2110-2155MHz(RX) LTE B2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE B4: 1710- 1755 MHz(TX); 2110-2155MHz(RX) LTE B5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE B12: 699-716 MHz(TX); 729 – 746 MHz(RX) LTE B13: 777-787 MHz(TX); 746 – 756 MHz(RX) LTE Band 17: 704-716MHz(TX); 734-746MHz(RX) LTE Band 66: 1710-1780MHz(TX); 2110-2180MHz(RX)
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	GSM850: 0.4dBi PCS1900: 1.1dBi WCDMA Band 2/ LTE Band 2: 1.1dBi WCDMA Band 4/LTE Band 4/Band 66: 0.8dBi WCDMA Band 5/LTE Band 5: 0.4dBi LTE Band 7: 1.5dBi LTE Band 12/ LTE Band 13/ LTE Band 17: 0.3dBi (provided by the applicant)
Voltage Range	DC 3.7V from battery or DC 5.0V from adapter
Date of Test	2021-06-09 to 2021-07-16
Sample number	SZ1210602-21026E-RF-S1(Assigned by BACL, Shenzhen)
Received date	2021-06-02
Sample/EUT Status	Good condition
Normal/Extreme Condition	L.V.: Low Voltage 3.2V _{DC} N.V.: Normal Voltage 3.7V _{DC} H.V.: High Voltage 4.2V _{DC} The extreme condition was declared by the applicant
Adapter information	Input: AC 100-240V Output: DC 5V, 500mA

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.

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
DCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B4	4.2	1712.4	1732.6	1752.6
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 B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE B13	5	779.5	782	784.5
	10	/	782	/

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B17	5	706.5	710	713.5
	10	709	710	711
LTE B66	1.4	1710.7	1745	1779.3
	3	1711.5	1745	1778.5
	5	1712.5	1745	1777.5
	10	1715	1745	1775
	15	1717.5	1745	1772.5
	20	1720	1745	1770

Equipment Modifications

No modification was made to the EUT.

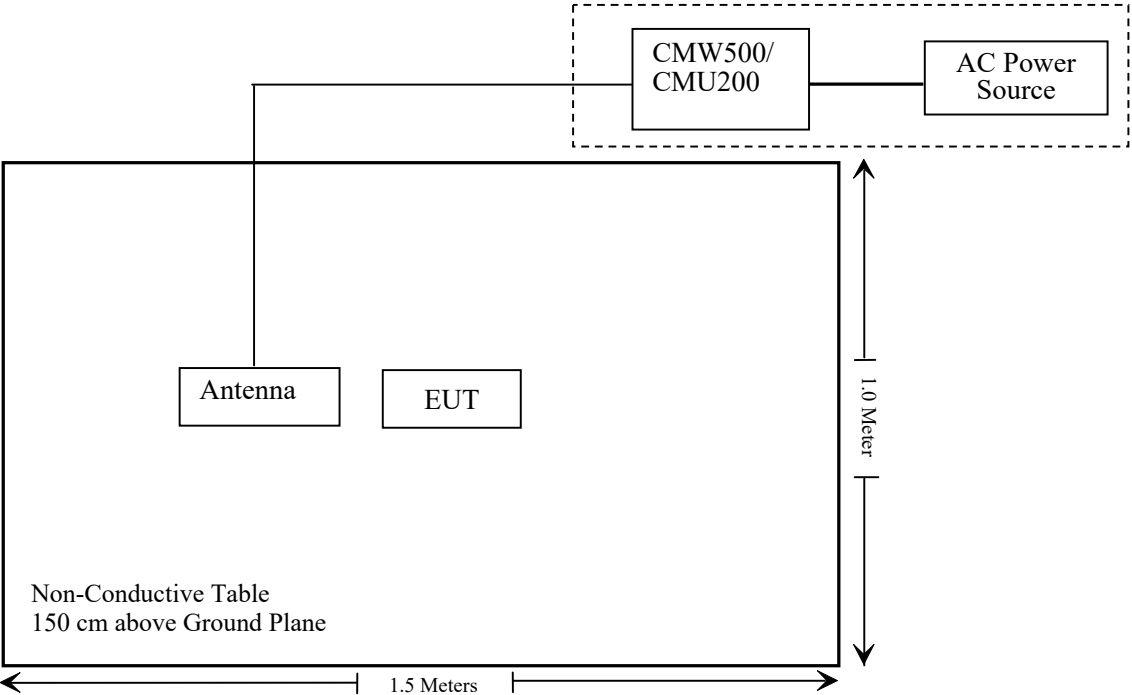
Support Equipment List and Details

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

Support Cable Description

Cable Description	Length (m)	From / Port	To
/	/	/	/

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	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53(c)(h) (m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

Note: * Please refer to SAR report released by BACL, report number: SZ1210602-21026E-SA.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/07/06	2021/07/05
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	2020/07/06	2021/07/05
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
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/07/06	2021/07/05
Rohde & Schwarz	Wideband Radio Communication Tester	CMU200	106891	2020/10/23	2021/10/22

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2020/07/06	2021/07/05
Rohde & Schwarz	Signal and Spectrum Analyzer	FSV40	101473	2021/07/06	2022/07/05
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/07/06	2021/07/05
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2021/07/06	2022/07/05
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	2020/07/06	2021/07/05
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500	2021/07/06	2022/07/05
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2021/02/23	2022/02/22
Fluke	Digital Multimeter	287	19000011	2021/02/22	2022/02/21

* 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: SZ1210602-21026E-SA.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 22.913 (a) & § 24.232 (c); §27.50 (b) (c) (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(b), Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

According to §27.50(c), 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.

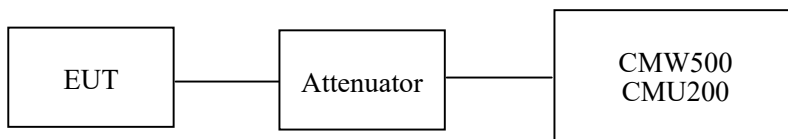
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

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.



Test Data

Environmental Conditions

Temperature:	26~28.1 °C
Relative Humidity:	53~65 %
ATM Pressure:	101.0 kPa

The testing was performed by Orlo Yang and Pedro Yun from 2021-06-09 to 2021-06-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Conducted Power**Cellular Band (Part22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	33.40	31.65	38.45
	190	836.6	33.60	31.85	38.45
	251	848.8	33.50	31.75	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	33.37	33.31	29.57	27.26	31.62	31.56	27.82	25.51	38.45
	190	836.6	33.60	31.45	29.52	27.30	31.85	29.7	27.77	25.55	38.45
	251	848.8	33.51	31.52	29.37	27.18	31.76	29.77	27.62	25.43	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.50	25.23	22.53	20.34	24.75	23.48	20.78	18.59	38.45
	190	836.6	26.84	25.58	22.77	20.79	25.09	23.83	21.02	19.04	38.45
	251	848.8	26.70	25.49	22.64	20.67	24.95	23.74	20.89	18.92	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		23.38	23.30	23.21	21.63	21.55	21.46
	HSDPA	1	22.33	22.44	22.29	20.58	20.69	20.54
		2	22.40	22.57	22.42	20.65	20.82	20.67
		3	22.21	22.33	22.18	20.46	20.58	20.43
		4	22.42	22.50	22.40	20.67	20.75	20.65
	HSUPA	1	22.41	22.44	22.30	20.66	20.69	20.55
		2	22.89	22.9	22.83	21.14	21.15	21.08
		3	22.46	22.50	22.40	20.71	20.75	20.65
		4	22.28	22.33	22.21	20.53	20.58	20.46
		5	22.52	22.47	22.43	20.77	20.72	20.68

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)

Antenna Gain = 0.4dBi = -1.75dBd (0dBd=2.15dBi)

Limit: ERP ≤ 38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	30.30	31.4	33
	661	1880.0	30.20	31.3	33
	810	1909.8	30.20	31.3	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	30.13	27.94	26.37	24.20	31.23	29.04	27.47	25.30	33
	661	1880.0	30.02	27.71	26.08	23.93	31.12	28.81	27.18	25.03	33
	810	1909.8	30.04	27.46	25.80	23.62	31.14	28.56	26.9	24.72	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.98	26.64	24.46	22.00	28.08	27.74	25.56	23.10	33
	661	1880.0	27.69	27.22	25.02	23.01	28.79	28.32	26.12	24.11	33
	810	1909.8	27.26	26.98	24.74	22.78	28.36	28.08	25.84	23.88	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		23.19	23.15	22.97	24.29	24.25	24.07
	HSDPA	1	21.10	22.00	22.05	22.20	23.10	23.15
		2	21.19	22.06	22.15	22.29	23.16	23.25
		3	21.05	21.93	21.95	22.15	23.03	23.05
		4	21.18	22.12	22.09	22.28	23.22	23.19
	HSUPA	1	21.28	21.96	21.94	22.38	23.06	23.04
		2	21.89	21.90	21.83	22.99	23.00	22.93
		3	21.39	22.07	21.05	22.49	23.17	22.15
		4	21.23	21.86	21.86	22.33	22.96	22.96
		5	21.33	21.08	21.04	22.43	22.18	22.14

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

Antenna Gain = 1.1dBi

The limit: EIRP ≤ 33dBm

AWS Band (Part 27)

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		22.85	22.80	22.85	23.65	23.60	23.65
	HSDPA	1	21.82	21.77	21.78	22.62	22.57	22.58
		2	21.61	21.61	21.60	22.41	22.41	22.40
		3	21.85	21.71	21.90	22.65	22.51	22.70
		4	21.82	21.77	21.92	22.62	22.57	22.72
	HSUPA	1	21.42	21.37	21.39	22.22	22.17	22.19
		2	21.55	21.28	21.43	22.35	22.08	22.23
		3	21.29	21.40	21.28	22.09	22.2	22.08
		4	21.45	21.35	21.33	22.25	22.15	22.13
		5	21.31	21.36	21.35	22.11	22.16	22.15

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

Antenna Gain = 0.8dBi

The limit: EIRP ≤ 30dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.22	13
	Middle	3.37	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.26	13
	Middle	3.15	13
	High	3.33	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.21	13
	Middle	3.29	13
	High	3.42	13
HSDPA (16QAM)	Low	3.24	13
	Middle	3.45	13
	High	3.63	13
HSUPA (BPSK)	Low	3.25	13
	Middle	3.29	13
	High	3.42	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.32	13
	Middle	3.18	13
	High	3.36	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.15	13
	Middle	3.21	13
	High	3.56	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.68	13
	Middle	3.27	13
	High	3.58	13
HSDPA (16QAM)	Low	3.48	13
	Middle	3.37	13
	High	3.62	13
HSUPA (BPSK)	Low	3.02	13
	Middle	3.33	13
	High	3.72	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	3.46	13
	Middle	3.13	13
	High	3.25	13
HSDPA (16QAM)	Low	3.15	13
	Middle	3.43	13
	High	3.73	13
HSUPA (BPSK)	Low	3.62	13
	Middle	3.72	13
	High	3.61	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	22.87	23.12	23.17	23.97	24.22	24.27
		RB1#3	22.94	23.20	23.17	24.04	24.30	24.27
		RB1#5	22.88	23.12	23.18	23.98	24.22	24.28
		RB3#0	23.08	23.17	23.38	24.18	24.27	24.48
		RB3#3	23.05	23.19	23.38	24.15	24.29	24.48
		RB6#0	22.01	22.10	22.36	23.11	23.20	23.46
	16QAM	RB1#0	21.73	22.54	23.09	22.83	23.64	24.19
		RB1#3	21.74	22.49	23.12	22.84	23.59	24.22
		RB1#5	21.75	22.59	23.06	22.85	23.69	24.16
		RB3#0	22.12	22.19	22.27	23.22	23.29	23.37
		RB3#3	22.06	22.19	22.26	23.16	23.29	23.36
		RB6#0	21.27	21.41	21.44	22.37	22.51	22.54
3.0	QPSK	RB1#0	22.90	23.11	23.29	24.00	24.21	24.39
		RB1#8	22.88	23.08	23.29	23.98	24.18	24.39
		RB1#14	22.93	23.17	23.31	24.03	24.27	24.41
		RB6#0	21.90	22.22	22.34	23.00	23.32	23.44
		RB6#9	21.90	22.14	22.32	23.00	23.24	23.42
		RB15#0	21.89	22.09	22.31	22.99	23.19	23.41
	16QAM	RB1#0	22.17	22.65	22.08	23.27	23.75	23.18
		RB1#8	22.16	22.63	22.07	23.26	23.73	23.17
		RB1#14	22.19	22.67	22.11	23.29	23.77	23.21
		RB6#0	21.15	21.38	21.62	22.25	22.48	22.72
		RB6#9	21.18	21.39	21.62	22.28	22.49	22.72
		RB15#0	21.09	21.16	21.42	22.19	22.26	22.52

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	22.87	23.26	23.24	23.97	24.36	24.34
		RB1#13	22.88	23.26	23.25	23.98	24.36	24.35
		RB1#24	22.86	23.33	23.25	23.96	24.43	24.35
		RB15#0	21.93	22.16	22.28	23.03	23.26	23.38
		RB15#10	22.00	22.11	22.30	23.10	23.21	23.40
		RB25#0	21.93	22.07	22.26	23.03	23.17	23.36
	16QAM	RB1#0	21.16	22.35	21.97	22.26	23.45	23.07
		RB1#13	21.19	22.29	22.02	22.29	23.39	23.12
		RB1#24	21.25	22.30	22.12	22.35	23.40	23.22
		RB15#0	21.05	21.17	21.47	22.15	22.27	22.57
		RB15#10	21.11	21.12	21.41	22.21	22.22	22.51
		RB25#0	21.21	21.27	21.35	22.31	22.37	22.45
10.0	QPSK	RB1#0	22.84	23.08	23.31	23.94	24.18	24.41
		RB1#25	22.89	23.09	23.23	23.99	24.19	24.33
		RB1#49	22.96	23.14	23.25	24.06	24.24	24.35
		RB25#0	21.97	22.19	22.32	23.07	23.29	23.42
		RB25#25	21.92	22.15	22.22	23.02	23.25	23.32
		RB50#0	22.05	22.09	22.22	23.15	23.19	23.32
	16QAM	RB1#0	22.16	22.16	21.81	23.26	23.26	22.91
		RB1#25	22.23	22.26	21.78	23.33	23.36	22.88
		RB1#49	22.18	22.24	21.87	23.28	23.34	22.97
		RB25#0	21.09	21.35	21.46	22.19	22.45	22.56
		RB25#25	21.14	21.38	21.50	22.24	22.48	22.60
		RB50#0	21.16	21.32	21.36	22.26	22.42	22.46

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	22.88	22.93	23.26	23.98	24.03	24.36
		RB1#38	22.89	23.00	23.22	23.99	24.10	24.32
		RB1#74	22.88	23.04	23.24	23.98	24.14	24.34
		RB36#0	21.97	22.10	22.19	23.07	23.20	23.29
		RB36#39	21.94	22.12	22.21	23.04	23.22	23.31
		RB75#0	21.94	22.14	22.26	23.04	23.24	23.36
	16QAM	RB1#0	22.39	22.45	22.64	23.49	23.55	23.74
		RB1#38	22.15	22.48	22.66	23.25	23.58	23.76
		RB1#74	22.19	22.56	22.67	23.29	23.66	23.77
		RB36#0	21.17	21.23	21.33	22.27	22.33	22.43
		RB36#39	21.21	21.33	21.40	22.31	22.43	22.50
		RB75#0	21.21	21.26	21.33	22.31	22.36	22.43
20.0	QPSK	RB1#0	23.01	22.99	23.14	24.11	24.09	24.24
		RB1#50	23.05	22.98	23.23	24.15	24.08	24.33
		RB1#99	23.11	23.15	23.30	24.21	24.25	24.40
		RB50#0	21.91	22.03	22.21	23.01	23.13	23.31
		RB50#50	21.93	22.05	22.15	23.03	23.15	23.25
		RB100#0	21.95	22.08	22.17	23.05	23.18	23.27
	16QAM	RB1#0	22.03	22.08	22.91	23.13	23.18	24.01
		RB1#50	22.05	22.14	22.90	23.15	23.24	24.00
		RB1#99	22.18	22.28	22.91	23.28	23.38	24.01
		RB50#0	21.11	21.04	21.25	22.21	22.14	22.35
		RB50#50	21.15	21.26	21.28	22.25	22.36	22.38
		RB100#0	21.09	21.10	21.36	22.19	22.20	22.46

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

Antenna Gain = 1.1dBi

The 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)	4.81	4.97	4.36	13	Pass
QPSK (100RB Size)	5.54	5.61	5.51	13	Pass
16QAM (1RB Size)	6.09	5.90	5.58	13	Pass
16QAM (100RB Size)	6.35	6.41	6.28	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	24.05	23.83	23.61	24.85	24.63	24.41
		RB1#3	23.99	23.74	23.64	24.79	24.54	24.44
		RB1#5	24.04	23.78	23.66	24.84	24.58	24.46
		RB3#0	24.13	23.83	23.50	24.93	24.63	24.30
		RB3#3	24.04	23.87	23.50	24.84	24.67	24.30
		RB6#0	22.96	22.84	22.42	23.76	23.64	23.22
	16QAM	RB1#0	23.16	23.57	22.62	23.96	24.37	23.42
		RB1#3	23.23	23.57	22.62	24.03	24.37	23.42
		RB1#5	23.15	23.55	22.60	23.95	24.35	23.40
		RB3#0	22.97	22.70	22.52	23.77	23.50	23.32
		RB3#3	22.92	22.77	22.50	23.72	23.57	23.30
		RB6#0	22.13	22.00	21.76	22.93	22.80	22.56
3.0	QPSK	RB1#0	23.87	23.77	23.65	24.67	24.57	24.45
		RB1#8	23.97	23.80	23.68	24.77	24.60	24.48
		RB1#14	23.95	23.76	23.65	24.75	24.56	24.45
		RB6#0	23.00	22.87	22.47	23.80	23.67	23.27
		RB6#9	22.90	22.74	22.46	23.70	23.54	23.26
		RB15#0	22.93	22.78	22.42	23.73	23.58	23.22
	16QAM	RB1#0	23.27	23.65	22.64	24.07	24.45	23.44
		RB1#8	23.26	23.60	22.68	24.06	24.40	23.48
		RB1#14	23.21	23.57	22.62	24.01	24.37	23.42
		RB6#0	22.33	21.99	21.81	23.13	22.79	22.61
		RB6#9	22.28	22.03	21.84	23.08	22.83	22.64
		RB15#0	22.12	21.93	21.63	22.92	22.73	22.43

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	23.95	23.90	23.35	24.75	24.70	24.15
		RB1#13	23.85	23.88	23.36	24.65	24.68	24.16
		RB1#24	23.85	23.93	23.31	24.65	24.73	24.11
		RB15#0	23.03	22.87	22.45	23.83	23.67	23.25
		RB15#10	23.00	22.71	22.53	23.80	23.51	23.33
		RB25#0	22.96	22.80	22.48	23.76	23.60	23.28
	16QAM	RB1#0	22.31	23.02	22.10	23.11	23.82	22.90
		RB1#13	22.27	22.98	22.10	23.07	23.78	22.90
		RB1#24	22.29	23.00	22.10	23.09	23.80	22.90
		RB15#0	22.23	21.84	21.65	23.03	22.64	22.45
		RB15#10	22.21	21.79	21.54	23.01	22.59	22.34
		RB25#0	22.20	21.88	21.44	23.00	22.68	22.24
10.0	QPSK	RB1#0	23.91	23.88	23.70	24.71	24.68	24.50
		RB1#25	23.87	23.82	23.75	24.67	24.62	24.55
		RB1#49	23.80	23.75	23.60	24.60	24.55	24.40
		RB25#0	23.03	22.77	22.56	23.83	23.57	23.36
		RB25#25	22.98	22.74	22.50	23.78	23.54	23.30
		RB50#0	22.94	22.81	22.58	23.74	23.61	23.38
	16QAM	RB1#0	23.44	22.96	22.18	24.24	23.76	22.98
		RB1#25	23.41	22.95	22.26	24.21	23.75	23.06
		RB1#49	23.35	22.89	22.11	24.15	23.69	22.91
		RB25#0	22.13	22.01	21.80	22.93	22.81	22.60
		RB25#25	22.11	21.99	21.72	22.91	22.79	22.52
		RB50#0	22.03	21.96	21.77	22.83	22.76	22.57

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	23.96	23.96	23.80	24.76	24.76	24.60
		RB1#38	23.86	23.83	23.65	24.66	24.63	24.45
		RB1#74	23.82	23.75	23.67	24.62	24.55	24.47
		RB36#0	22.95	22.89	22.60	23.75	23.69	23.40
		RB36#39	22.94	22.75	22.48	23.74	23.55	23.28
		RB75#0	22.92	22.78	22.54	23.72	23.58	23.34
	16QAM	RB1#0	23.41	23.05	23.02	24.21	23.85	23.82
		RB1#38	23.35	22.96	22.99	24.15	23.76	23.79
		RB1#74	23.42	22.91	22.86	24.22	23.71	23.66
		RB36#0	22.01	22.02	21.78	22.81	22.82	22.58
		RB36#39	22.05	22.02	21.72	22.85	22.82	22.52
		RB75#0	22.04	21.91	21.74	22.84	22.71	22.54
20.0	QPSK	RB1#0	24.18	23.87	23.83	24.98	24.67	24.63
		RB1#50	24.06	23.74	23.69	24.86	24.54	24.49
		RB1#99	23.96	23.67	23.64	24.76	24.47	24.44
		RB50#0	22.94	22.87	22.59	23.74	23.67	23.39
		RB50#50	22.89	22.72	22.67	23.69	23.52	23.47
		RB100#0	22.92	22.73	22.54	23.72	23.53	23.34
	16QAM	RB1#0	23.04	23.35	23.41	23.84	24.15	24.21
		RB1#50	22.86	23.23	23.20	23.66	24.03	24.00
		RB1#99	22.81	23.07	23.16	23.61	23.87	23.96
		RB50#0	22.15	22.09	21.70	22.95	22.89	22.50
		RB50#50	22.11	22.00	21.72	22.91	22.80	22.52
		RB100#0	22.03	21.88	21.74	22.83	22.68	22.54

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

For LTE Band 4: Antenna Gain = 0.8dBi

The 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)	4.29	5.00	4.39	13	Pass
QPSK (100RB Size)	5.51	5.58	5.42	13	Pass
16QAM (1RB Size)	5.54	6.47	4.87	13	Pass
16QAM (100RB Size)	6.35	6.41	6.25	13	Pass

LTE Band5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.66	23.56	23.35	21.91	21.81	21.60
		RB1#3	23.61	23.52	23.45	21.86	21.77	21.70
		RB1#5	23.68	23.56	23.54	21.93	21.81	21.79
		RB3#0	23.73	23.68	23.49	21.98	21.93	21.74
		RB3#3	23.68	23.67	23.65	21.93	21.92	21.90
		RB6#0	22.61	22.61	22.45	20.86	20.86	20.70
	16QAM	RB1#0	23.13	23.14	22.25	21.38	21.39	20.50
		RB1#3	23.10	23.22	22.23	21.35	21.47	20.48
		RB1#5	23.12	23.25	22.23	21.37	21.50	20.48
		RB3#0	22.72	22.48	22.59	20.97	20.73	20.84
		RB3#3	22.77	22.51	22.55	21.02	20.76	20.80
		RB6#0	22.36	21.66	21.88	20.61	19.91	20.13
3.0	QPSK	RB1#0	23.58	23.61	23.47	21.83	21.86	21.72
		RB1#8	23.57	23.52	23.49	21.82	21.77	21.74
		RB1#14	23.62	23.61	23.56	21.87	21.86	21.81
		RB6#0	22.62	22.53	22.54	20.87	20.78	20.79
		RB6#9	22.57	22.69	22.34	20.82	20.94	20.59
		RB15#0	22.64	22.69	22.45	20.89	20.94	20.70
	16QAM	RB1#0	22.99	23.17	22.15	21.24	21.42	20.40
		RB1#8	22.98	23.25	22.10	21.23	21.50	20.35
		RB1#14	22.93	23.22	22.03	21.18	21.47	20.28
		RB6#0	22.09	21.62	21.78	20.34	19.87	20.03
		RB6#9	21.58	21.67	21.75	19.83	19.92	20.00
		RB15#0	22.12	21.61	21.56	20.37	19.86	19.81

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	23.68	23.72	23.53	21.93	21.97	21.78
		RB1#13	23.60	23.63	23.36	21.85	21.88	21.61
		RB1#24	23.66	23.66	23.48	21.91	21.91	21.73
		RB15#0	22.65	22.52	22.56	20.90	20.77	20.81
		RB15#10	22.59	22.56	22.47	20.84	20.81	20.72
		RB25#0	22.63	22.59	22.52	20.88	20.84	20.77
	16QAM	RB1#0	21.86	22.63	22.23	20.11	20.88	20.48
		RB1#13	21.86	22.73	22.22	20.11	20.98	20.47
		RB1#24	21.80	22.78	22.06	20.05	21.03	20.31
		RB15#0	22.19	21.47	21.59	20.44	19.72	19.84
		RB15#10	21.66	21.59	21.55	19.91	19.84	19.80
		RB25#0	21.74	21.65	21.41	19.99	19.90	19.66
10.0	QPSK	RB1#0	23.63	23.70	23.56	21.88	21.95	21.81
		RB1#25	23.69	23.66	23.60	21.94	21.91	21.85
		RB1#49	23.66	23.75	23.51	21.91	22.00	21.76
		RB25#0	22.56	22.47	22.68	20.81	20.72	20.93
		RB25#25	22.54	22.59	22.42	20.79	20.84	20.67
		RB50#0	22.56	22.60	22.50	20.81	20.85	20.75
	16QAM	RB1#0	22.97	22.76	22.06	21.22	21.01	20.31
		RB1#25	22.98	22.79	22.02	21.23	21.04	20.27
		RB1#49	22.99	22.85	21.92	21.24	21.10	20.17
		RB25#0	21.64	21.75	21.70	19.89	20.00	19.95
		RB25#25	21.66	22.13	21.62	19.91	20.38	19.87
		RB50#0	21.63	21.73	21.49	19.88	19.98	19.74

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)

Antenna Gain = 0.4dBi = -1.75dBd (0dBd=2.15dBi)

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)	4.84	5.00	4.55	13	Pass
QPSK (50RB Size)	5.54	5.48	5.67	13	Pass
16QAM (1RB Size)	5.77	5.87	5.93	13	Pass
16QAM (50RB Size)	6.47	6.28	6.41	13	Pass

LTE Band 7

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.26	22.40	22.49	23.76	23.90	23.99
		RB1#13	22.10	22.37	22.49	23.60	23.87	23.99
		RB1#24	22.24	22.44	22.48	23.74	23.94	23.98
		RB15#0	21.21	21.42	21.61	22.71	22.92	23.11
		RB15#10	21.17	21.31	21.65	22.67	22.81	23.15
		RB25#0	21.22	21.31	21.63	22.72	22.81	23.13
	16QAM	RB1#0	20.47	21.40	21.34	21.97	22.90	22.84
		RB1#13	20.44	21.41	21.27	21.94	22.91	22.77
		RB1#24	20.52	21.51	21.24	22.02	23.01	22.74
		RB15#0	20.38	20.39	20.81	21.88	21.89	22.31
		RB15#10	20.33	20.40	20.82	21.83	21.90	22.32
		RB25#0	20.40	20.56	20.64	21.90	22.06	22.14
10.0	QPSK	RB1#0	22.05	22.27	22.61	23.55	23.77	24.11
		RB1#25	22.03	22.30	22.74	23.53	23.80	24.24
		RB1#49	22.06	22.37	22.72	23.56	23.87	24.22
		RB25#0	21.13	21.29	21.52	22.63	22.79	23.02
		RB25#25	21.23	21.42	21.63	22.73	22.92	23.13
		RB50#0	21.18	21.38	21.73	22.68	22.88	23.23
	16QAM	RB1#0	21.35	21.56	21.10	22.85	23.06	22.60
		RB1#25	21.42	21.59	21.19	22.92	23.09	22.69
		RB1#49	21.40	21.58	21.18	22.90	23.08	22.68
		RB25#0	20.35	20.58	20.75	21.85	22.08	22.25
		RB25#25	20.38	20.62	20.87	21.88	22.12	22.37
		RB50#0	20.37	20.59	20.80	21.87	22.09	22.30

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	22.03	22.27	22.59	23.53	23.77	24.09
		RB1#38	22.16	22.29	22.59	23.66	23.79	24.09
		RB1#74	22.18	22.42	22.71	23.68	23.92	24.21
		RB36#0	21.26	21.35	21.53	22.76	22.85	23.03
		RB36#39	21.18	21.33	21.59	22.68	22.83	23.09
		RB75#0	21.28	21.40	21.63	22.78	22.90	23.13
	16QAM	RB1#0	21.59	21.70	22.02	23.09	23.20	23.52
		RB1#38	21.62	21.72	22.13	23.12	23.22	23.63
		RB1#74	21.67	21.85	22.06	23.17	23.35	23.56
		RB36#0	20.37	20.64	20.64	21.87	22.14	22.14
		RB36#39	20.41	20.54	20.80	21.91	22.04	22.30
		RB75#0	20.35	20.49	20.71	21.85	21.99	22.21
20.0	QPSK	RB1#0	22.35	22.39	22.61	23.85	23.89	24.11
		RB1#50	22.25	22.48	22.69	23.75	23.98	24.19
		RB1#99	22.33	22.65	22.83	23.83	24.15	24.33
		RB50#0	21.27	21.28	21.56	22.77	22.78	23.06
		RB50#50	21.32	21.41	21.64	22.82	22.91	23.14
		RB100#0	21.22	21.44	21.67	22.72	22.94	23.17
	16QAM	RB1#0	21.15	21.93	22.22	22.65	23.43	23.72
		RB1#50	21.10	22.00	22.27	22.60	23.50	23.77
		RB1#99	21.12	22.03	22.34	22.62	23.53	23.84
		RB50#0	20.36	20.60	20.71	21.86	22.10	22.21
		RB50#50	20.42	20.64	20.86	21.92	22.14	22.36
		RB100#0	20.42	20.48	20.72	21.92	21.98	22.22

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

Antenna Gain = 1.5dBi

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)	4.84	5.16	5.06	13	Pass
QPSK (100RB Size)	5.64	5.54	5.54	13	Pass
16QAM (1RB Size)	5.77	5.90	5.64	13	Pass
16QAM (100RB Size)	6.38	6.38	6.31	13	Pass

LTE Band12

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	23.86	23.62	23.81	22.01	21.77	21.96
		RB1#3	23.82	23.64	23.89	21.97	21.79	22.04
		RB1#5	23.82	23.60	23.85	21.97	21.75	22.00
		RB3#0	23.82	23.73	23.75	21.97	21.88	21.90
		RB3#3	23.83	23.72	23.79	21.98	21.87	21.94
		RB6#0	22.59	22.47	22.71	20.74	20.62	20.86
	16QAM	RB1#0	22.93	23.18	22.25	21.08	21.33	20.40
		RB1#3	22.85	23.12	22.42	21.00	21.27	20.57
		RB1#5	22.89	23.15	22.46	21.04	21.30	20.61
		RB3#0	22.60	22.35	22.70	20.75	20.50	20.85
		RB3#3	22.70	22.33	22.75	20.85	20.48	20.90
		RB6#0	21.73	22.17	22.25	19.88	20.32	20.40
3.0	QPSK	RB1#0	23.77	23.60	23.84	21.92	21.75	21.99
		RB1#8	23.74	23.65	23.83	21.89	21.80	21.98
		RB1#14	23.65	23.58	23.84	21.80	21.73	21.99
		RB6#0	22.72	22.58	22.60	20.87	20.73	20.75
		RB6#9	23.11	22.57	22.63	21.26	20.72	20.78
		RB15#0	22.68	22.48	22.50	20.83	20.63	20.65
	16QAM	RB1#0	22.88	23.24	22.33	21.03	21.39	20.48
		RB1#8	22.83	23.25	22.32	20.98	21.40	20.47
		RB1#14	23.27	23.17	22.43	21.42	21.32	20.58
		RB6#0	21.81	21.77	21.92	19.96	19.92	20.07
		RB6#9	22.28	22.18	22.28	20.43	20.33	20.43
		RB15#0	21.75	22.19	21.72	19.90	20.34	19.87

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	23.75	23.78	23.65	21.90	21.93	21.80
		RB1#13	23.64	23.62	23.65	21.79	21.77	21.80
		RB1#24	23.60	23.82	23.76	21.75	21.97	21.91
		RB15#0	22.66	22.55	22.58	20.81	20.70	20.73
		RB15#10	23.16	22.51	22.60	21.31	20.66	20.75
		RB25#0	23.19	22.54	22.58	21.34	20.69	20.73
	16QAM	RB1#0	21.86	22.56	22.17	20.01	20.71	20.32
		RB1#13	22.29	22.52	22.19	20.44	20.67	20.34
		RB1#24	21.82	22.80	22.43	19.97	20.95	20.58
		RB15#0	21.82	21.53	21.69	19.97	19.68	19.84
		RB15#10	22.21	22.01	21.69	20.36	20.16	19.84
		RB25#0	22.32	22.16	21.57	20.47	20.31	19.72
10.0	QPSK	RB1#0	23.73	23.59	23.85	21.88	21.74	22.00
		RB1#25	23.54	23.66	23.91	21.69	21.81	22.06
		RB1#49	23.57	23.66	23.89	21.72	21.81	22.04
		RB25#0	23.10	22.54	22.50	21.25	20.69	20.65
		RB25#25	22.52	22.74	22.60	20.67	20.89	20.75
		RB50#0	22.63	22.48	22.72	20.78	20.63	20.87
	16QAM	RB1#0	22.82	23.32	22.01	20.97	21.47	20.16
		RB1#25	22.69	22.75	22.32	20.84	20.90	20.47
		RB1#49	22.67	22.85	22.24	20.82	21.00	20.39
		RB25#0	22.15	21.77	22.26	20.30	19.92	20.41
		RB25#25	21.73	22.25	21.81	19.88	20.40	19.96
		RB50#0	21.45	22.23	22.22	19.60	20.38	20.37

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)

Antenna Gain = 0.3dBi = -1.85dBd (0dBd=2.15dBi)

Limit: ERP ≤ 34.77dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.04	4.46	4.68	13	Pass
QPSK (50RB Size)	5.45	5.58	5.48	13	Pass
16QAM (1RB Size)	5.35	5.64	5.87	13	Pass
16QAM (50RB Size)	6.38	6.28	6.31	13	Pass

LTE Band 13**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5	QPSK	RB1#0	23.09	22.95	22.91	21.24	21.10	21.06
		RB1#13	22.98	23.06	22.93	21.13	21.21	21.08
		RB1#24	23.13	23.07	22.85	21.28	21.22	21.00
		RB15#0	22.10	22.01	21.97	20.25	20.16	20.12
		RB15#10	22.02	22.01	21.88	20.17	20.16	20.03
		RB25#0	22.04	22.07	21.94	20.19	20.22	20.09
	16QAM	RB1#0	21.31	22.12	21.56	19.46	20.27	19.71
		RB1#13	21.30	22.15	21.64	19.45	20.30	19.79
		RB1#24	21.29	22.08	21.67	19.44	20.23	19.82
		RB15#0	21.15	20.91	21.12	19.30	19.06	19.27
		RB15#10	21.21	20.88	21.01	19.36	19.03	19.16
		RB25#0	21.20	21.03	20.88	19.35	19.18	19.03
10	QPSK	RB1#0	/	23.11	/	/	21.26	/
		RB1#25	/	22.99	/	/	21.14	/
		RB1#49	/	23.01	/	/	21.16	/
		RB25#0	/	22.04	/	/	20.19	/
		RB25#25	/	22.01	/	/	20.16	/
		RB50#0	/	21.98	/	/	20.13	/
	16QAM	RB1#0	/	22.12	/	/	20.27	/
		RB1#25	/	22.08	/	/	20.23	/
		RB1#49	/	22.13	/	/	20.28	/
		RB25#0	/	21.07	/	/	19.22	/
		RB25#25	/	21.08	/	/	19.23	/
		RB50#0	/	21.11	/	/	19.26	/

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
 Antenna Gain = 0.3dBi = -1.85dBd (0dBd=2.15dBi)
 Limit: EIRP≤34.77dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.87	/	13	Pass
QPSK (50RB Size)	/	5.42	/	13	Pass
16QAM (1RB Size)	/	5.64	/	13	Pass
16QAM (50RB Size)	/	6.28	/	13	Pass

LTE Band 17**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QP SK	RB1#0	22.95	22.90	22.82	21.10	21.05	20.97
		RB1#13	23.03	22.99	22.82	21.18	21.14	20.97
		RB1#24	22.87	22.96	22.89	21.02	21.11	21.04
		RB15#0	22.09	21.82	21.86	20.24	19.97	20.01
		RB15#10	22.13	21.87	21.98	20.28	20.02	20.13
		RB25#0	22.17	21.80	21.85	20.32	19.95	20.00
	16QAM	RB1#0	21.17	21.49	21.61	19.32	19.64	19.76
		RB1#13	21.24	21.36	21.58	19.39	19.51	19.73
		RB1#24	21.25	21.35	21.79	19.40	19.50	19.94
		RB15#0	21.13	20.88	21.07	19.28	19.03	19.22
		RB15#10	21.06	20.93	20.98	19.21	19.08	19.13
		RB25#0	21.05	20.88	20.98	19.20	19.03	19.13
10.0	QPSK	RB1#0	22.97	22.83	22.93	21.12	20.98	21.08
		RB1#25	22.96	22.88	22.97	21.11	21.03	21.12
		RB1#49	22.94	22.81	23.09	21.09	20.96	21.24
		RB25#0	22.06	21.89	22.00	20.21	20.04	20.15
		RB25#25	22.00	21.90	21.87	20.15	20.05	20.02
		RB50#0	21.97	21.85	21.88	20.12	20.00	20.03
	16QAM	RB1#0	22.39	22.21	21.43	20.54	20.36	19.58
		RB1#25	22.33	22.07	21.52	20.48	20.22	19.67
		RB1#49	22.27	22.03	21.51	20.42	20.18	19.66
		RB25#0	21.06	20.94	21.00	19.21	19.09	19.15
		RB25#25	20.99	20.95	21.05	19.14	19.10	19.20
		RB50#0	20.94	21.03	21.05	19.09	19.18	19.20

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)
 Antenna Gain = 0.3dBi = -1.85dBd (0dBd=2.15dBi)
 Limit: ERP≤34.77dBm

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

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.74	4.58	4.62	13	Pass
QPSK (50RB Size)	5.67	5.54	5.48	13	Pass
16QAM (1RB Size)	6.22	5.71	5.61	13	Pass
16QAM (50RB Size)	6.35	6.35	6.25	13	Pass

LTE Band 66:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QP SK	RB1#0	22.96	22.77	22.94	23.76	23.57	23.74
		RB1#3	22.85	22.85	22.92	23.65	23.65	23.72
		RB1#5	22.86	22.84	22.92	23.66	23.64	23.72
		RB3#0	23.05	23.00	23.00	23.85	23.80	23.80
		RB3#3	23.04	22.99	22.94	23.84	23.79	23.74
		RB6#0	21.88	22.00	21.97	22.68	22.80	22.77
	16QAM	RB1#0	22.37	22.53	21.82	23.17	23.33	22.62
		RB1#3	22.27	22.64	21.82	23.07	23.44	22.62
		RB1#5	22.33	22.64	21.85	23.13	23.44	22.65
		RB3#0	21.95	21.96	22.04	22.75	22.76	22.84
		RB3#3	22.04	21.88	22.05	22.84	22.68	22.85
		RB6#0	21.14	21.06	21.26	21.94	21.86	22.06
3.0	QPSK	RB1#0	22.95	22.80	22.97	23.75	23.60	23.77
		RB1#8	22.90	22.90	23.02	23.70	23.70	23.82
		RB1#14	22.86	22.81	22.99	23.66	23.61	23.79
		RB6#0	21.90	22.00	21.91	22.70	22.80	22.71
		RB6#9	22.02	22.01	21.91	22.82	22.81	22.71
		RB15#0	21.95	21.96	21.90	22.75	22.76	22.70
	16QAM	RB1#0	22.21	22.73	21.58	23.01	23.53	22.38
		RB1#8	22.20	22.67	21.62	23.00	23.47	22.42
		RB1#14	22.29	22.66	21.68	23.09	23.46	22.48
		RB6#0	21.09	20.95	21.18	21.89	21.75	21.98
		RB6#9	21.00	21.00	21.13	21.80	21.80	21.93
		RB15#0	21.05	21.03	20.91	21.85	21.83	21.71

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	23.07	22.93	22.89	23.87	23.73	23.69
		RB1#13	22.96	23.04	22.91	23.76	23.84	23.71
		RB1#24	23.11	23.05	22.83	23.91	23.85	23.63
		RB15#0	22.08	21.99	21.95	22.88	22.79	22.75
		RB15#10	22.00	21.99	21.86	22.80	22.79	22.66
		RB25#0	22.02	22.05	21.92	22.82	22.85	22.72
	16QAM	RB1#0	21.29	22.10	21.54	22.09	22.90	22.34
		RB1#13	21.28	22.13	21.62	22.08	22.93	22.42
		RB1#24	21.27	22.06	21.65	22.07	22.86	22.45
		RB15#0	21.13	20.89	21.10	21.93	21.69	21.90
		RB15#10	21.19	20.86	20.99	21.99	21.66	21.79
		RB25#0	21.18	21.01	20.86	21.98	21.81	21.66
10.0	QPSK	RB1#0	23.01	23.09	22.99	23.81	23.89	23.79
		RB1#25	22.99	22.97	22.95	23.79	23.77	23.75
		RB1#49	22.98	22.99	22.83	23.78	23.79	23.63
		RB25#0	22.02	22.02	21.99	22.82	22.82	22.79
		RB25#25	21.96	21.99	21.94	22.76	22.79	22.74
		RB50#0	22.05	21.96	22.00	22.85	22.76	22.80
	16QAM	RB1#0	22.08	22.10	21.41	22.88	22.90	22.21
		RB1#25	22.10	22.06	21.49	22.90	22.86	22.29
		RB1#49	22.06	22.11	21.49	22.86	22.91	22.29
		RB25#0	21.08	21.05	21.07	21.88	21.85	21.87
		RB25#25	21.03	21.06	21.01	21.83	21.86	21.81
		RB50#0	21.15	21.09	20.99	21.95	21.89	21.79

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	22.83	23.08	23.84	23.63	23.88
		RB1#38	22.99	22.92	23.17	23.79	23.72	23.97
		RB1#74	22.98	22.89	23.11	23.78	23.69	23.91
		RB36#0	22.04	21.90	21.91	22.84	22.70	22.71
		RB36#39	22.08	21.92	21.88	22.88	22.72	22.68
		RB75#0	22.14	21.79	21.95	22.94	22.59	22.75
	16QAM	RB1#0	22.09	22.52	21.87	22.89	23.32	22.67
		RB1#38	22.08	22.41	21.95	22.88	23.21	22.75
		RB1#74	22.13	22.41	21.89	22.93	23.21	22.69
		RB36#0	21.18	20.97	21.28	21.98	21.77	22.08
		RB36#39	21.10	21.01	21.18	21.90	21.81	21.98
		RB75#0	21.05	21.03	21.01	21.85	21.83	21.81
20.0	QPSK	RB1#0	22.93	22.88	22.80	23.73	23.68	23.60
		RB1#50	23.01	22.97	22.80	23.81	23.77	23.60
		RB1#99	22.85	22.94	22.87	23.65	23.74	23.67
		RB50#0	22.07	21.80	21.84	22.87	22.60	22.64
		RB50#50	22.11	21.85	21.96	22.91	22.65	22.76
		RB100#0	22.15	21.78	21.83	22.95	22.58	22.63
	16QAM	RB1#0	21.15	21.47	21.59	21.95	22.27	22.39
		RB1#50	21.22	21.34	21.56	22.02	22.14	22.36
		RB1#99	21.23	21.33	21.77	22.03	22.13	22.57
		RB50#0	21.11	20.86	21.05	21.91	21.66	21.85
		RB50#50	21.04	20.91	20.96	21.84	21.71	21.76
		RB100#0	21.03	20.86	20.96	21.83	21.66	21.76

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

Antenna Gain = 0.8dBi

The 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)	8.46	8.21	8.36	13	Pass
QPSK (100RB Size)	5.64	5.62	5.36	13	Pass
16QAM (1RB Size)	5.99	5.87	5.62	13	Pass
16QAM (100RB Size)	6.47	6.39	6.20	13	Pass

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

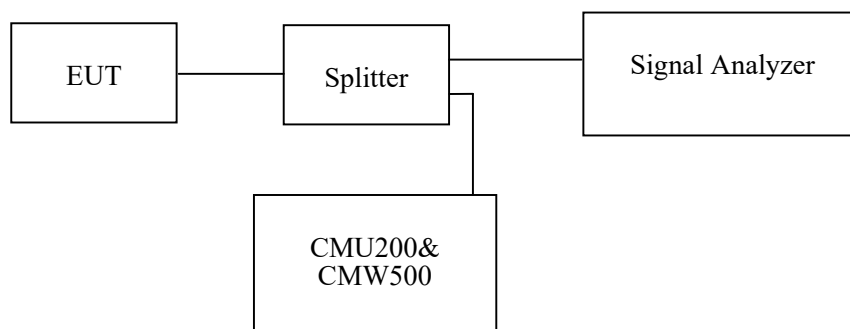
Applicable Standard

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:	26~28.1 °C
Relative Humidity:	53~65 %
ATM Pressure:	101.0 kPa

The testing was performed by Orlo Yang and Pedro Yun from 2021-06-10 to 2021-07-16.

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	245.19	314.10
	190	836.6	241.99	317.31
	251	848.8	243.59	315.71
EGPRS(8PSK)	128	824.2	245.19	314.10
	190	836.6	248.40	317.31
	251	848.8	250.00	314.10

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.68
	836.6	4.15	4.70
	846.6	4.15	4.70
HSDPA	826.4	4.15	4.68
	836.6	4.15	4.68
	846.6	4.17	4.68
HSUPA	826.4	4.15	4.68
	836.6	4.15	4.68
	846.6	4.17	4.68

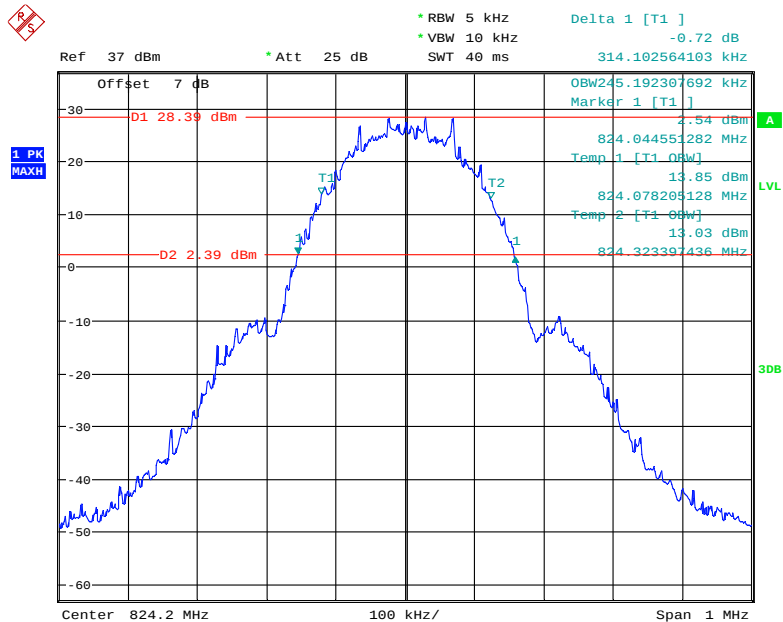
PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	512	1850.2	241.99	310.90
	661	1880.0	241.99	309.29
	810	1909.8	243.59	317.31
EGPRS(8PSK)	512	1850.2	248.40	317.31
	661	1880.0	250.00	325.32
	810	1909.8	250.00	315.71

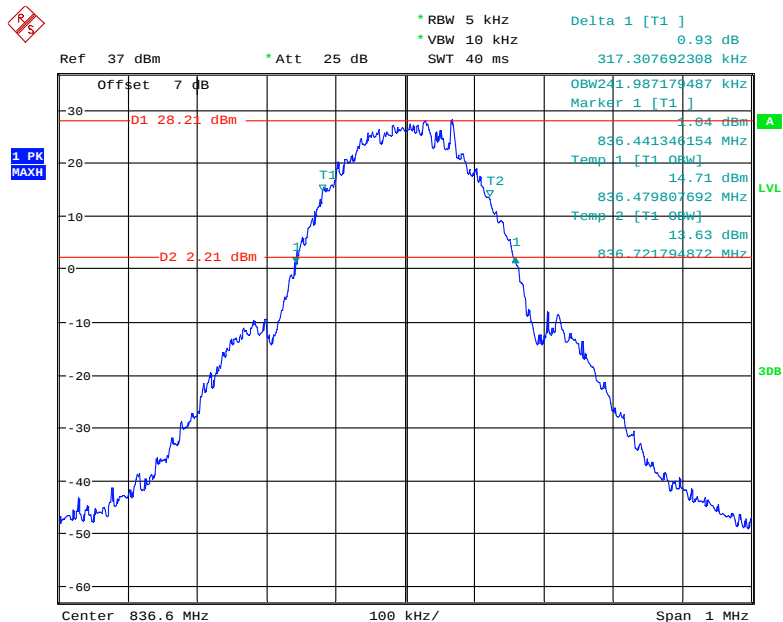
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.70
	1880.0	4.17	4.68
	1907.6	4.15	4.68
HSDPA	1852.4	4.15	4.73
	1880.0	4.17	4.70
	1907.6	4.15	4.71
HSUPA	1852.4	4.15	4.68
	1880.0	4.15	4.76
	1907.6	4.15	4.68

AWS Band (Part 27)

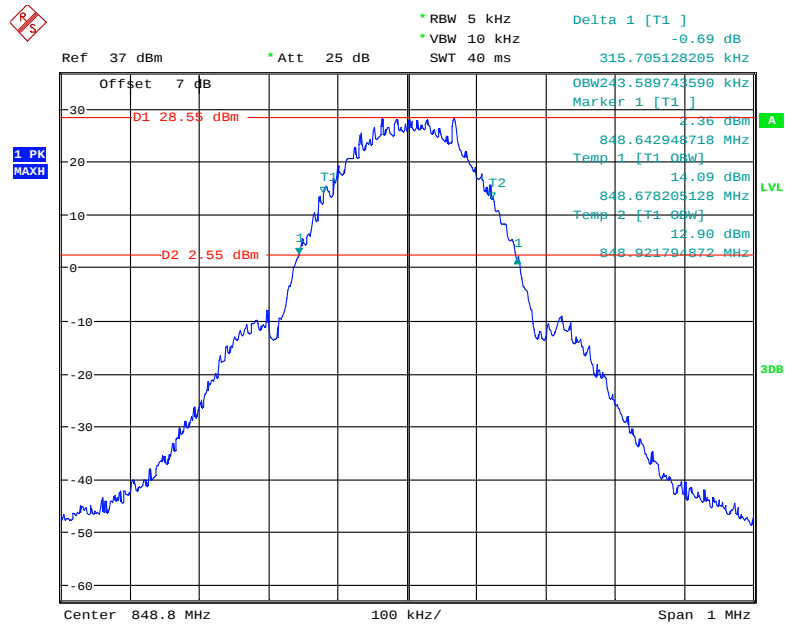
Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.13	4.68
	1732.6	4.15	4.70
	1752.6	4.17	4.70
HSDPA	1712.4	4.17	4.70
	1732.6	4.15	4.70
	1752.6	4.15	4.70
HSUPA	1712.4	4.15	4.68
	1732.6	4.15	4.68
	1752.6	4.17	4.68

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

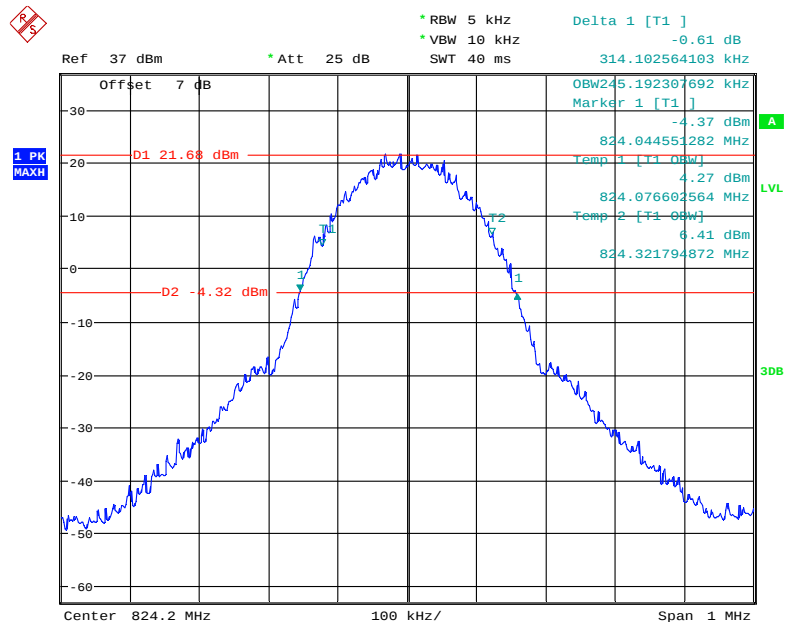
Date: 10.JUN.2021 11:03:18

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

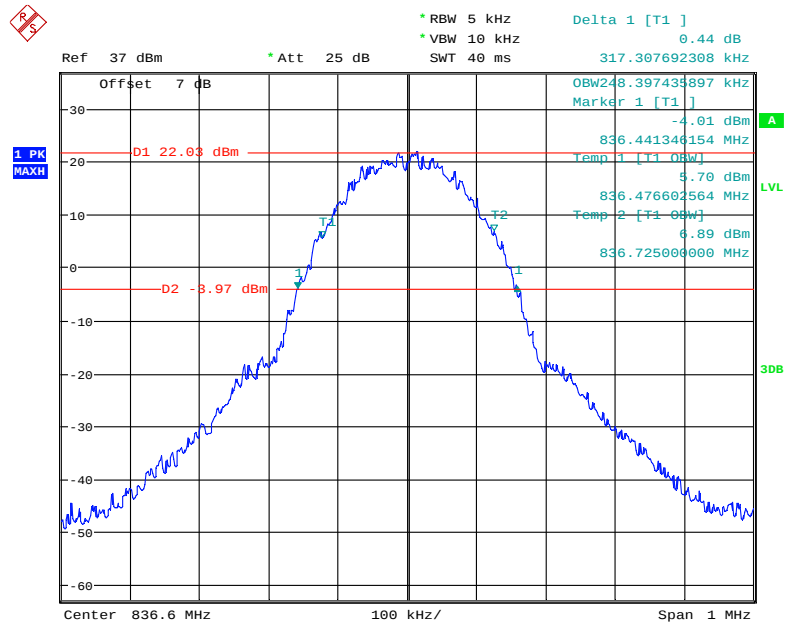
Date: 10.JUN.2021 11:04:54

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

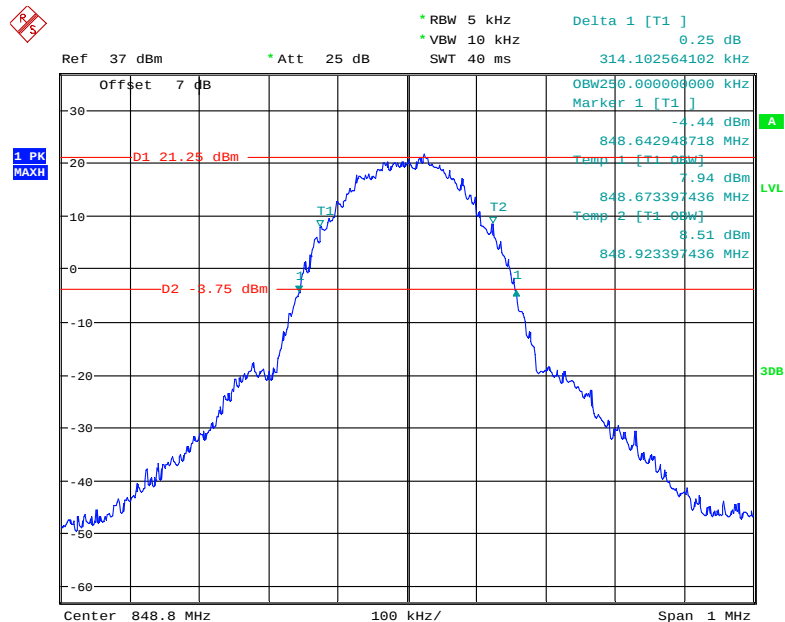
Date: 10.JUN.2021 11:06:26

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

Date: 10.JUN.2021 11:12:40

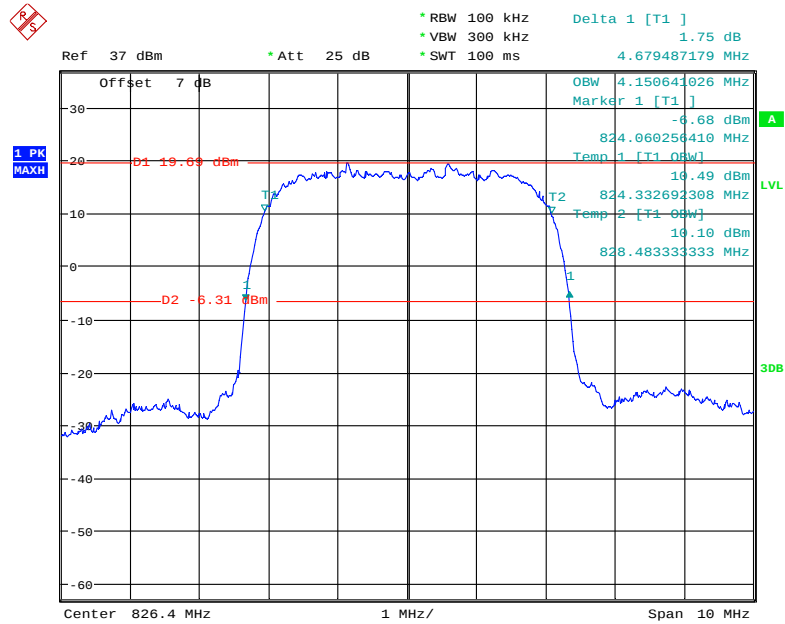
26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, Middle channel

Date: 10.JUN.2021 11:10:58

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

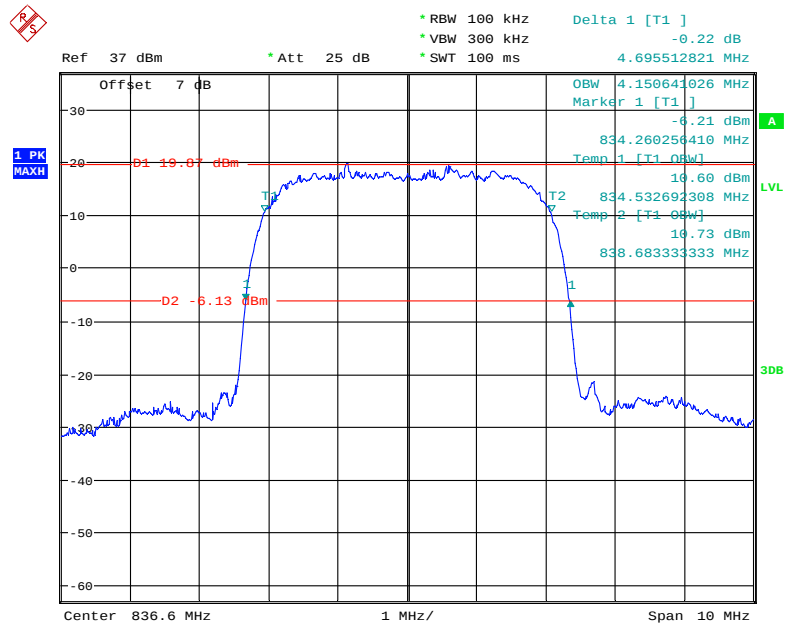
Date: 10.JUN.2021 11:08:52

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

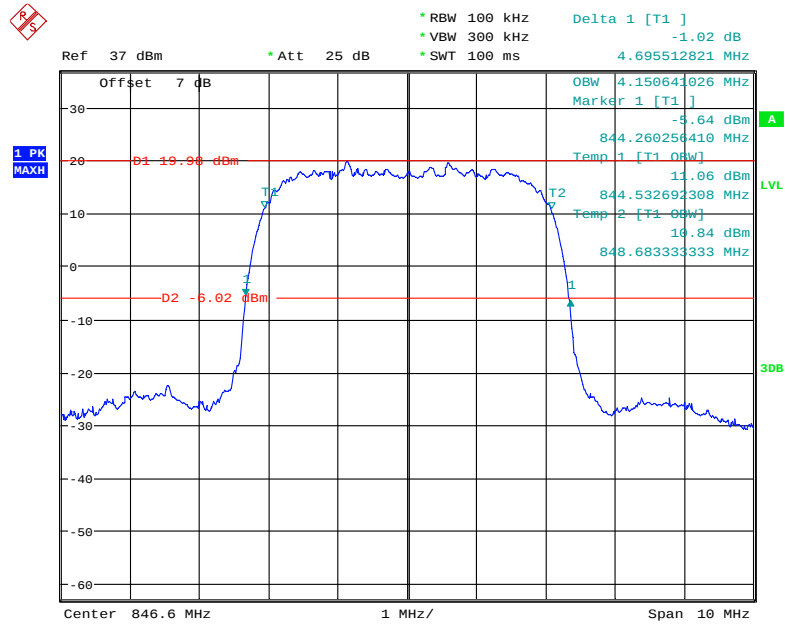


Date: 10.JUN.2021 13:11:14

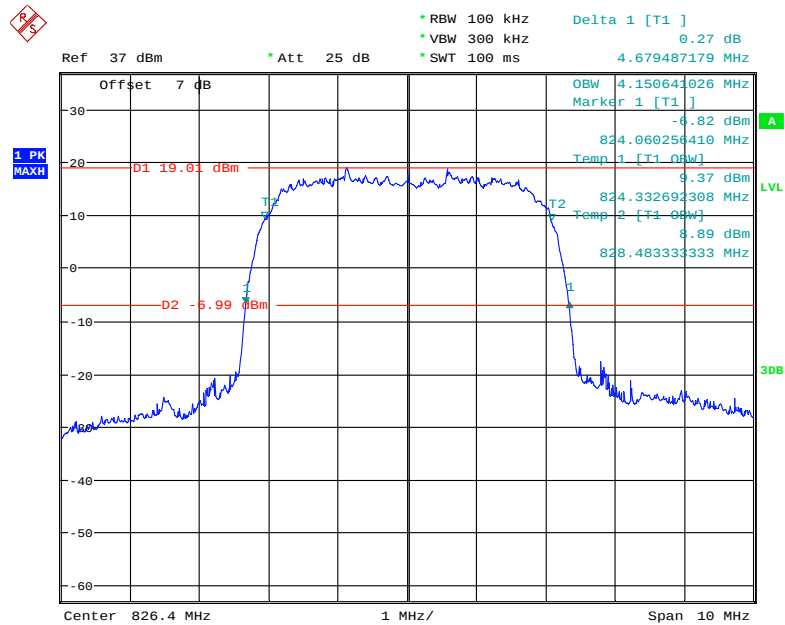
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



Date: 10.JUN.2021 13:10:01

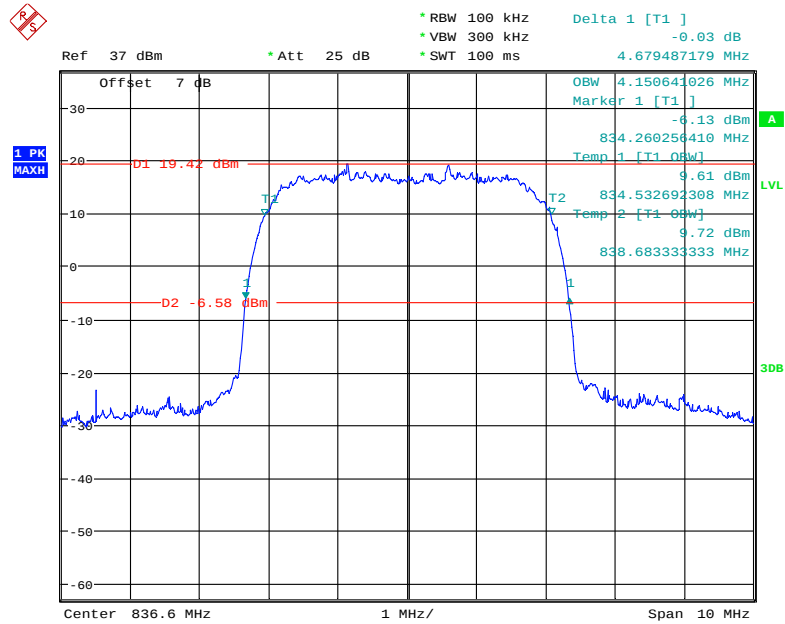
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 10.JUN.2021 13:08:46

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

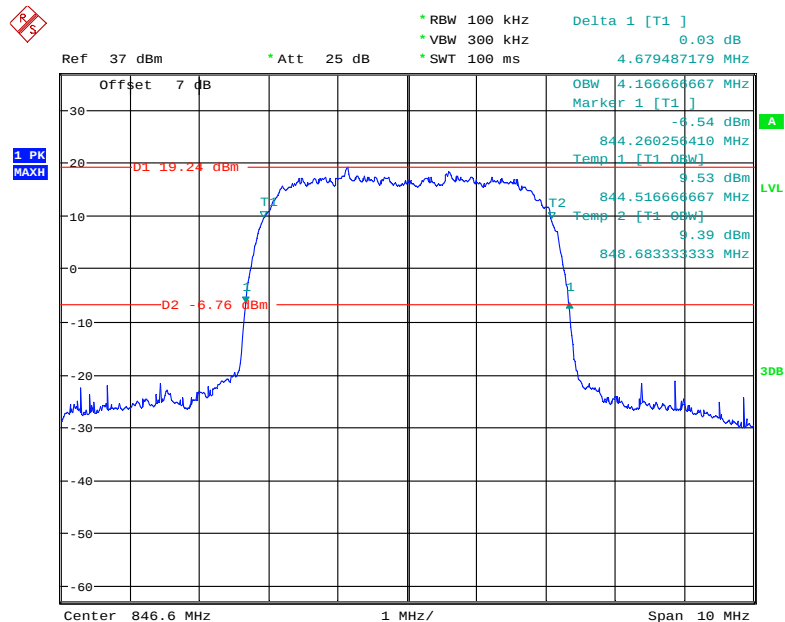
Date: 10.JUN.2021 11:44:51

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

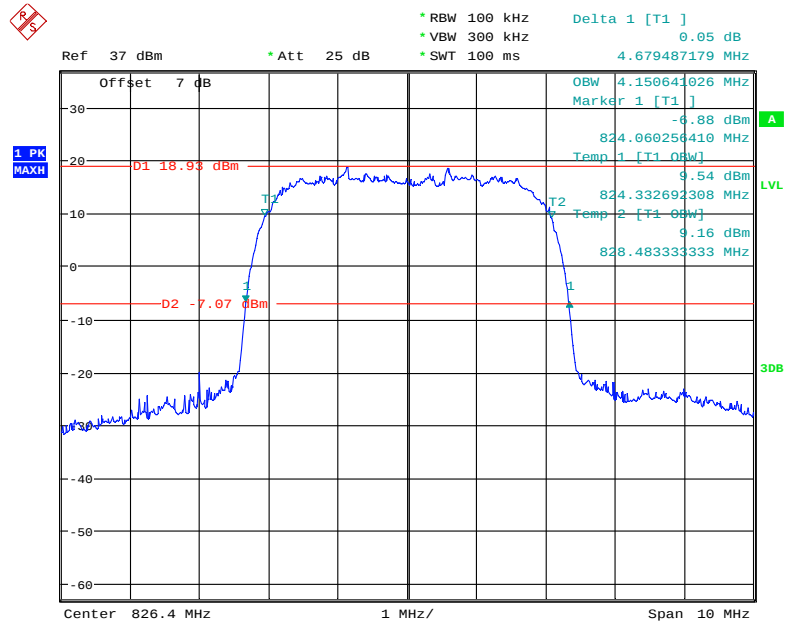


Date: 10.JUN.2021 11:46:05

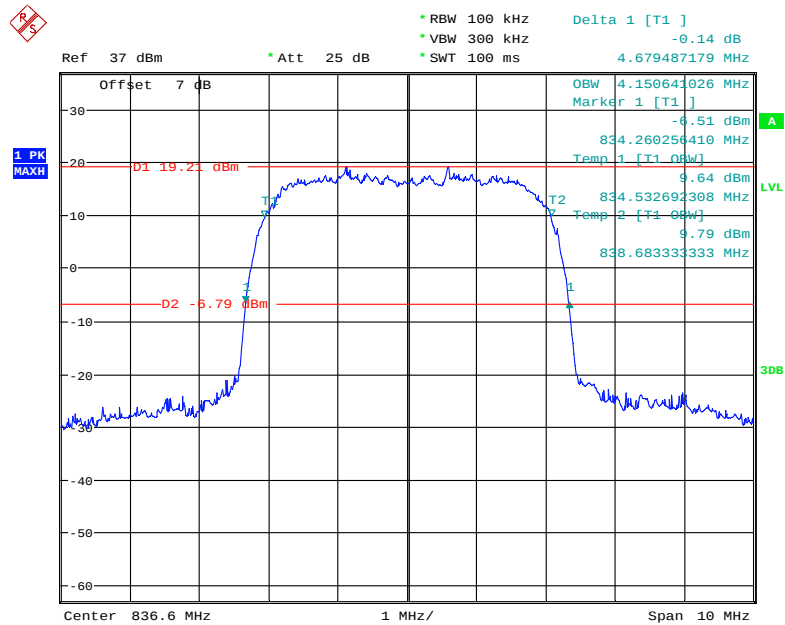
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



Date: 10.JUN.2021 11:43:19

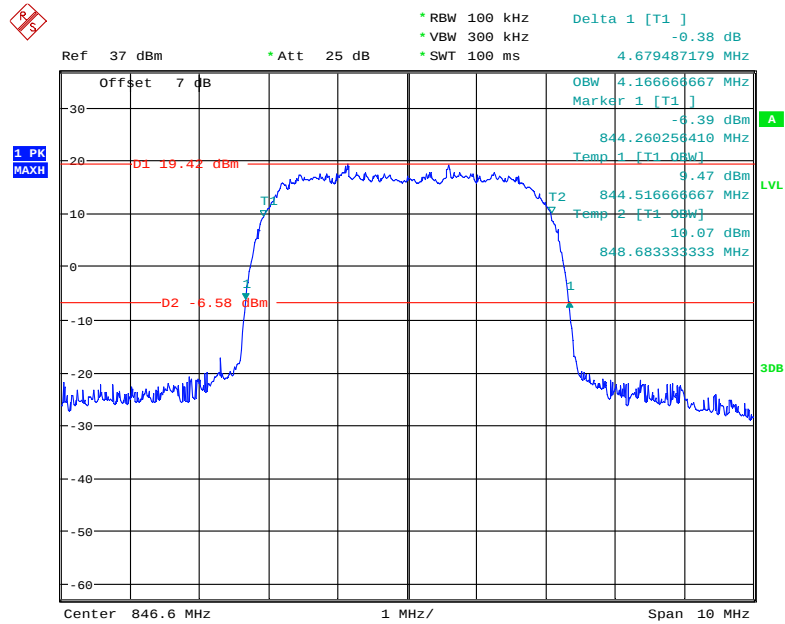
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel

Date: 10.JUN.2021 13:06:00

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

Date: 10.JUN.2021 13:04:28

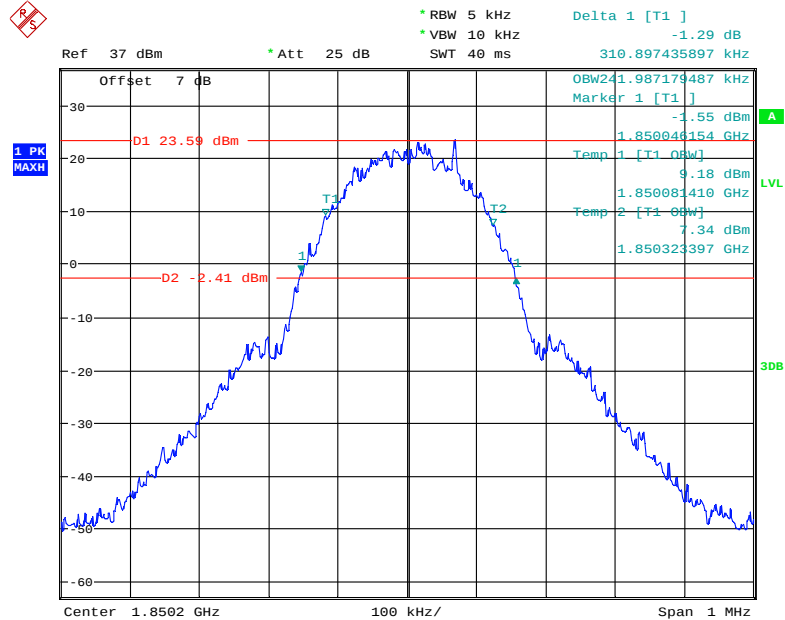
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 10.JUN.2021 13:07:16

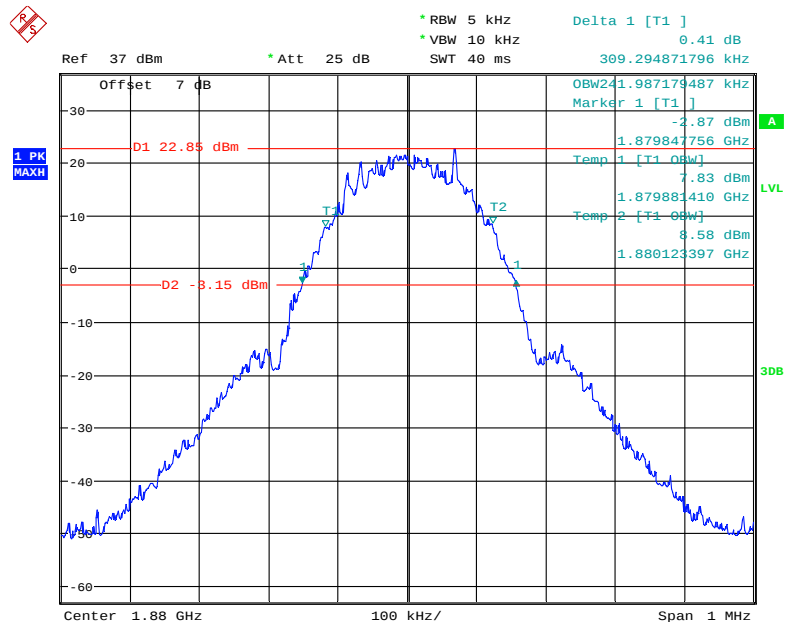
PCS Band (Part 24E)

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

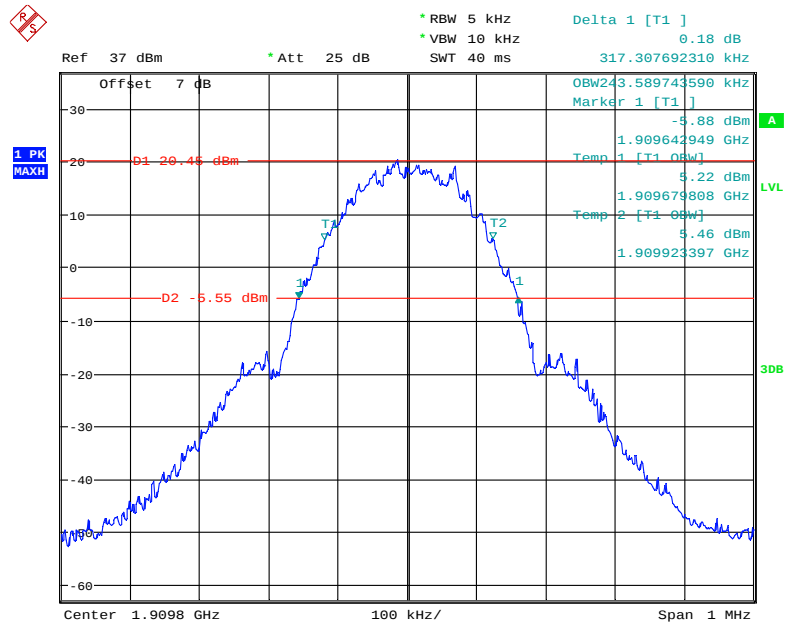


Date: 10. JUN. 2021 10:58:04

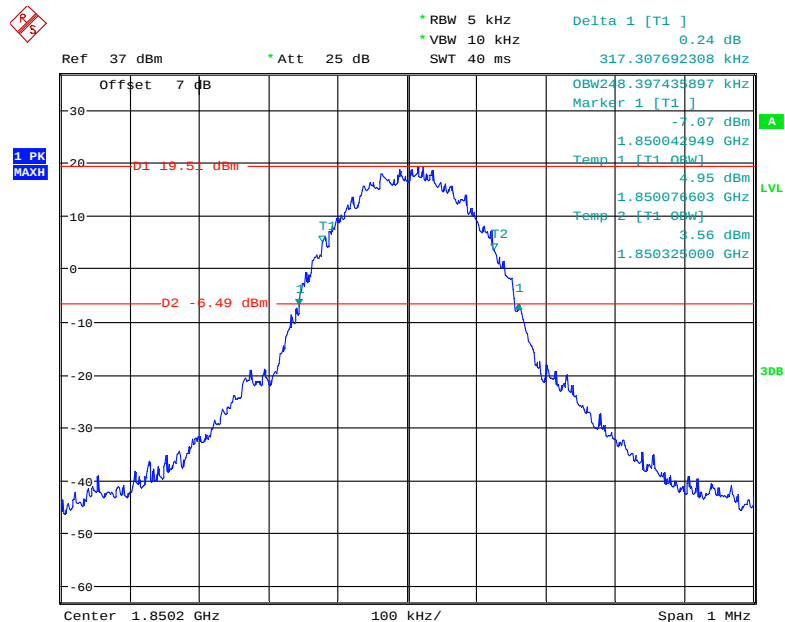
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel



Date: 10. JUN. 2021 10:59:23

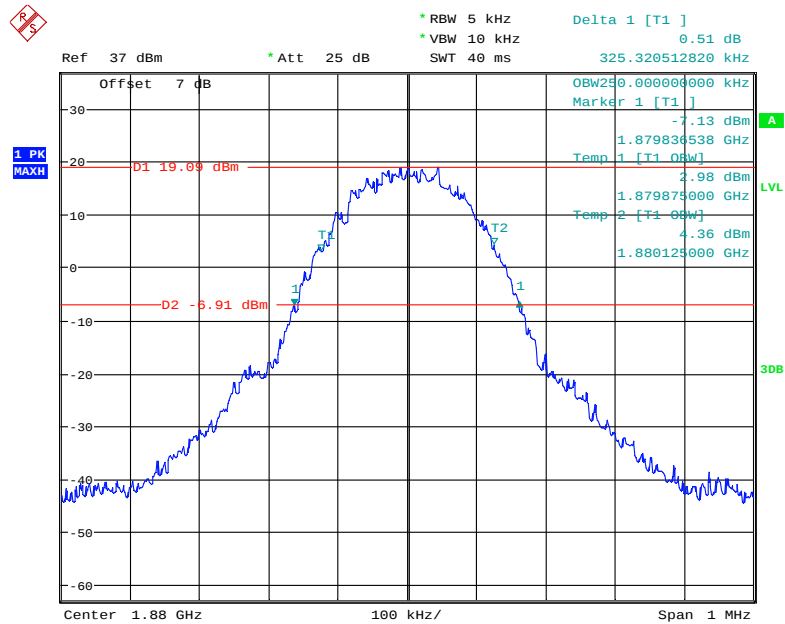
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel

Date: 10.JUN.2021 11:01:08

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

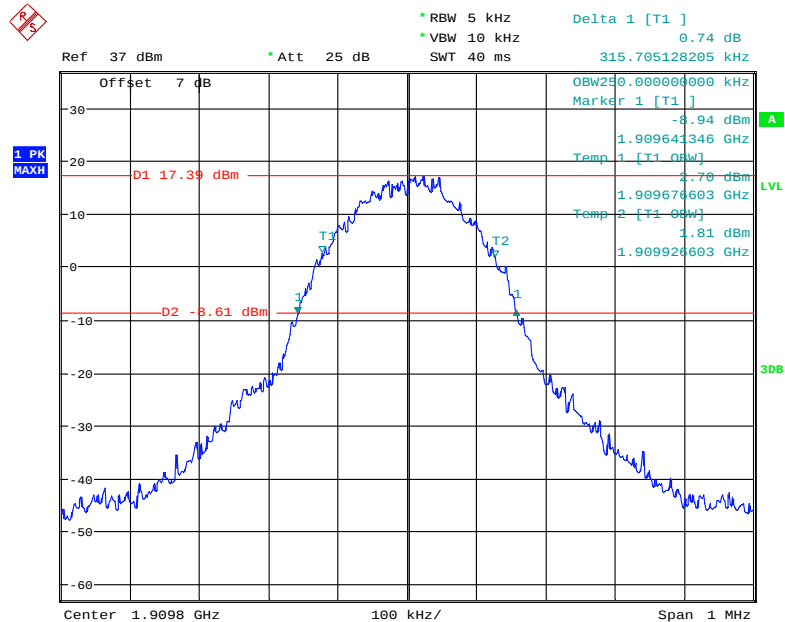
Date: 10.JUN.2021 10:53:39

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

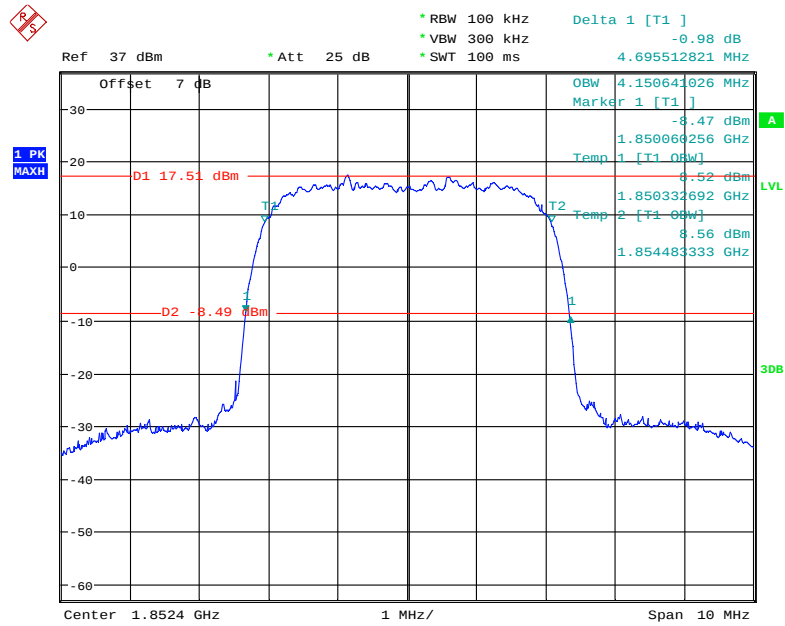


Date: 10.JUN.2021 10:55:04

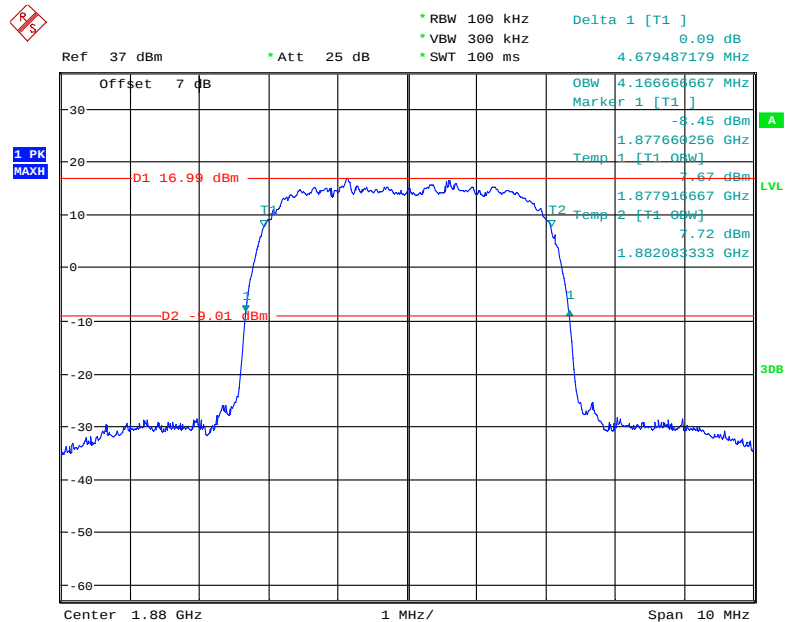
26 dB Emissions & 99% Occupied Bandwidth for EGPRS (8PSK) Mode, High channel



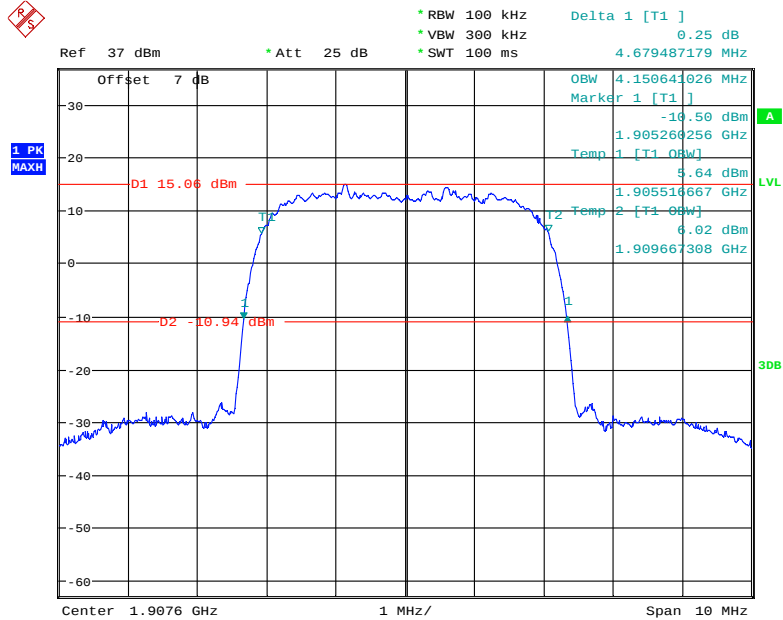
Date: 10.JUN.2021 10:56:09

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

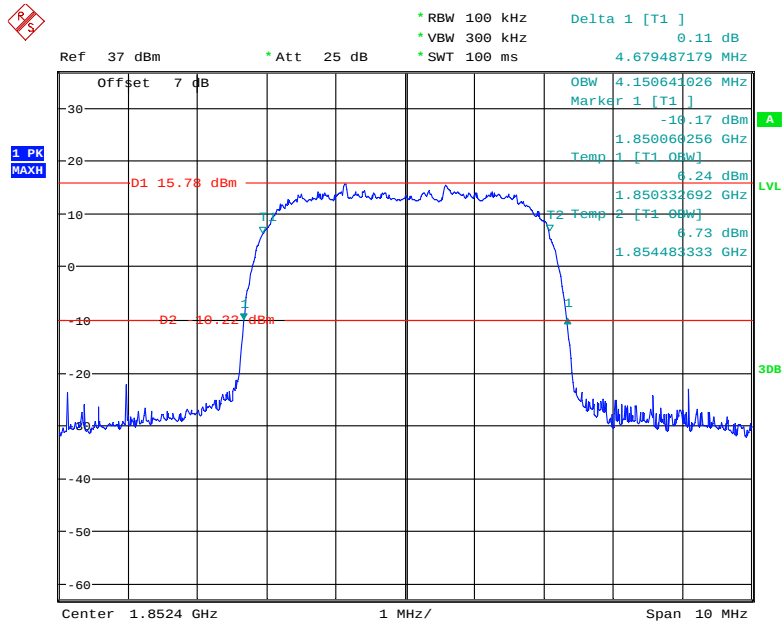
Date: 10.JUN.2021 13:15:30

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

Date: 10.JUN.2021 13:14:18

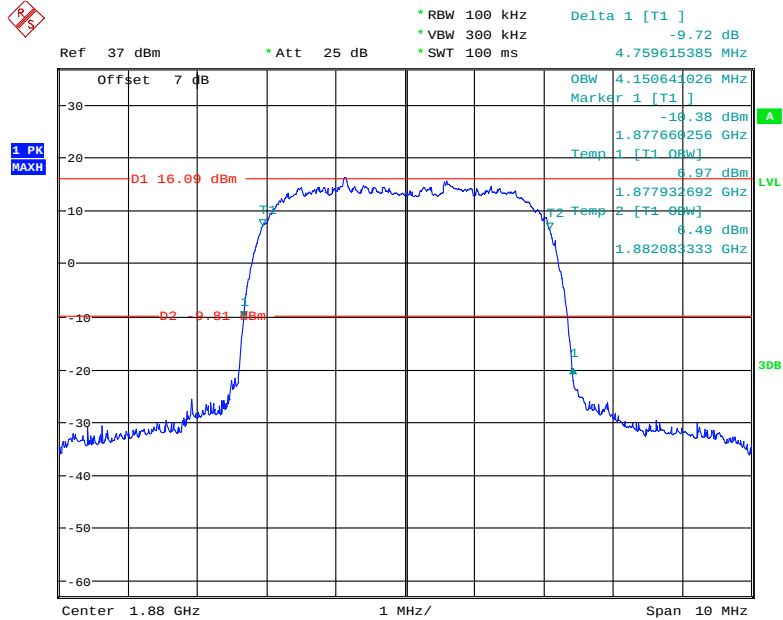
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 10.JUN.2021 13:13:08

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

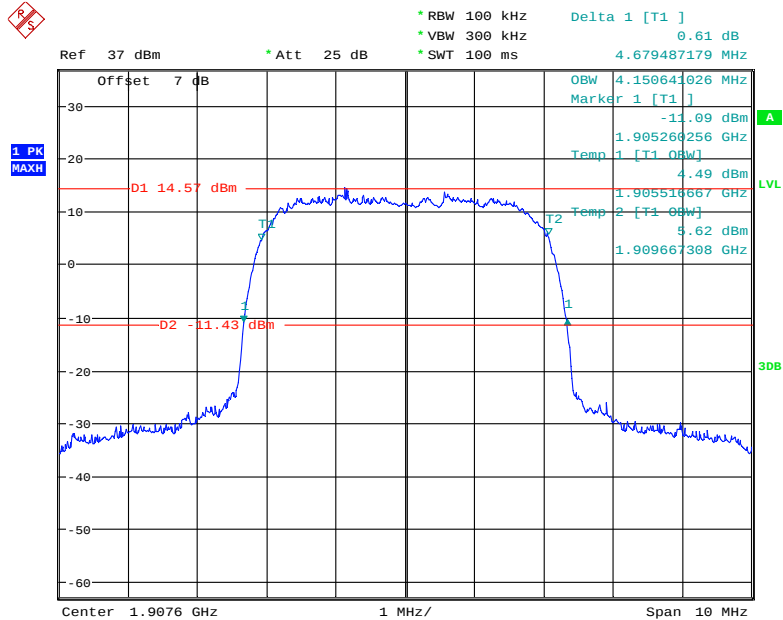
Date: 10.JUN.2021 13:26:07

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

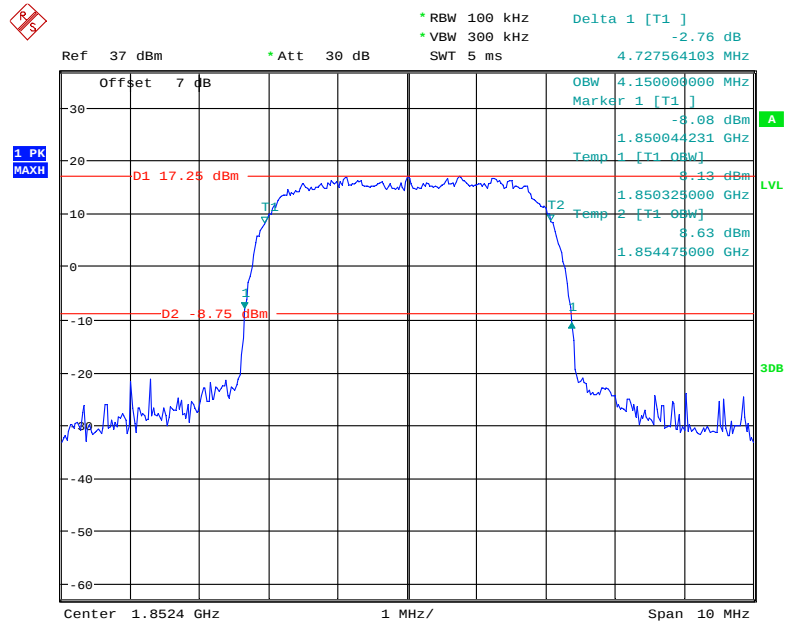


Date: 10.JUN.2021 13:24:41

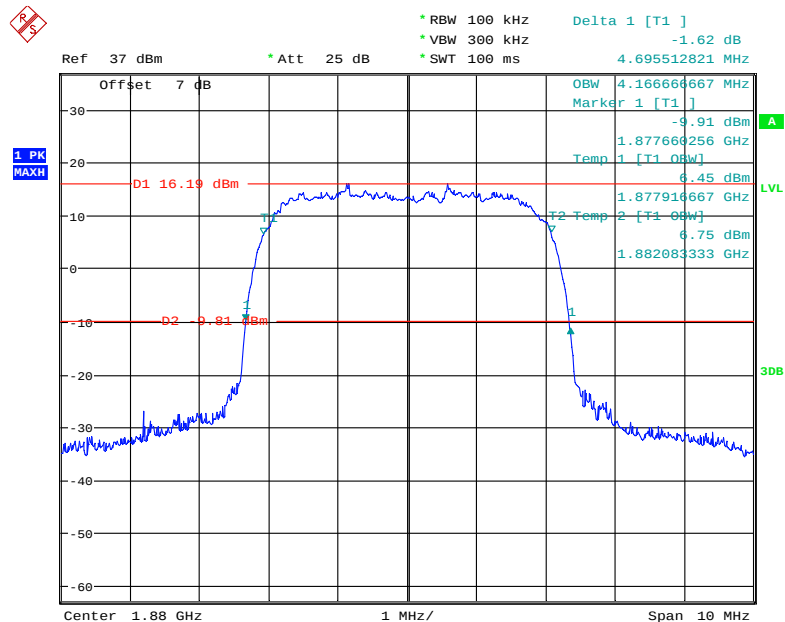
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel



Date: 10.JUN.2021 13:23:25

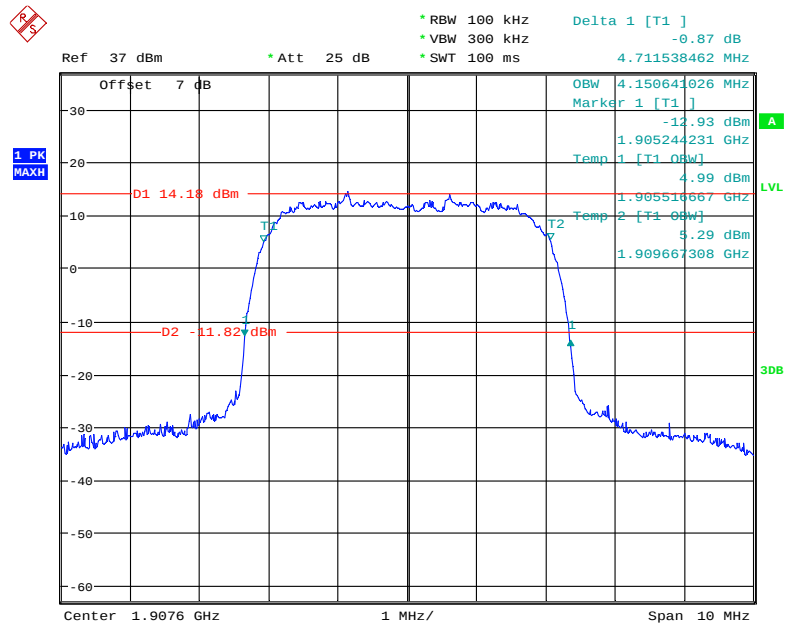
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel

Date: 16.JUL.2021 02:18:53

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

Date: 10.JUN.2021 13:20:12

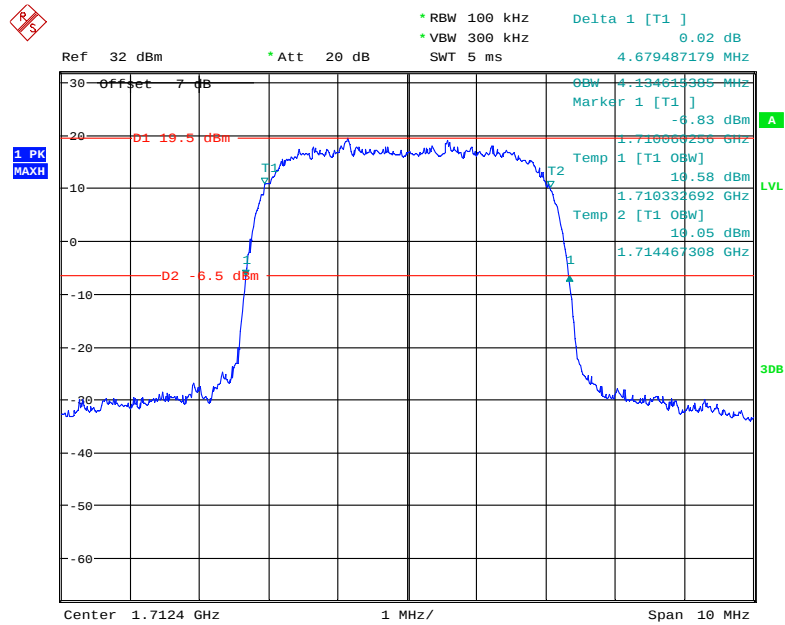
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel



Date: 10.JUN.2021 13:21:40

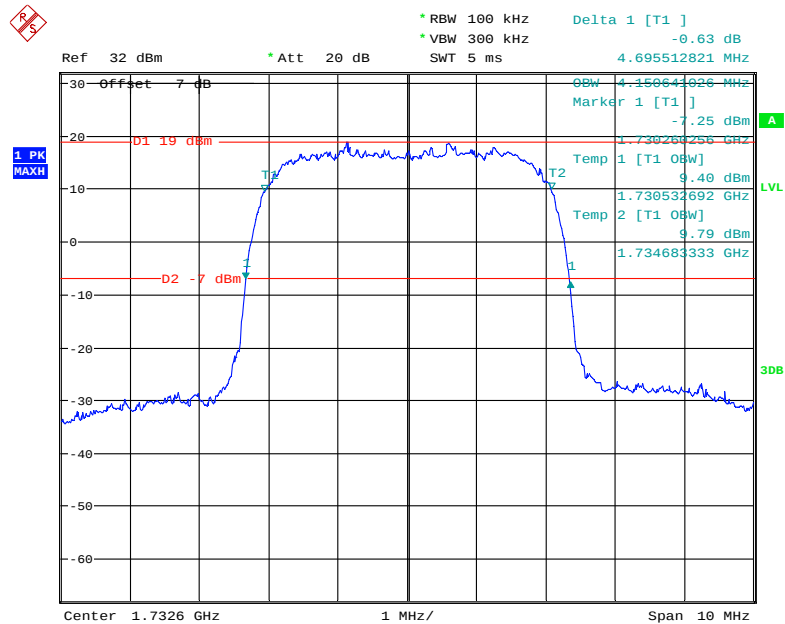
AWS Band (Part 27)

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

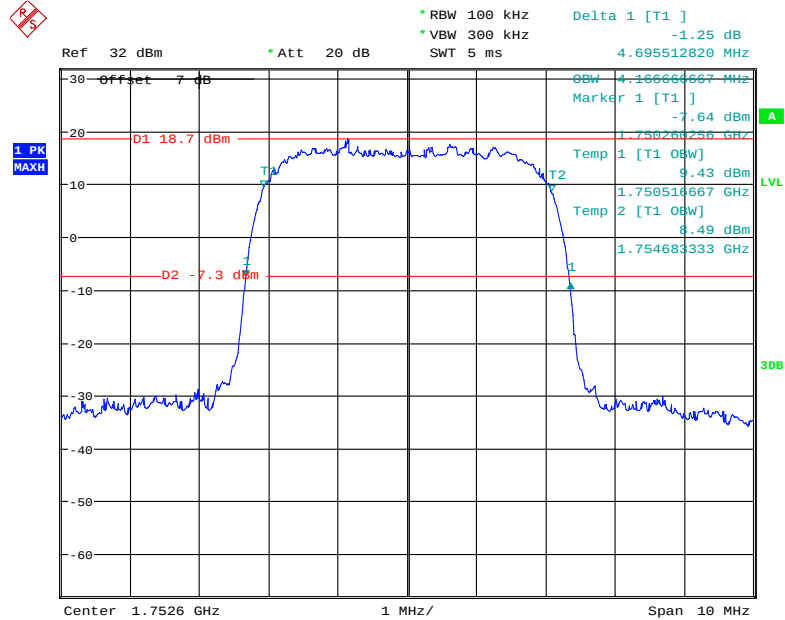


Date: 10.JUL.2021 16:42:33

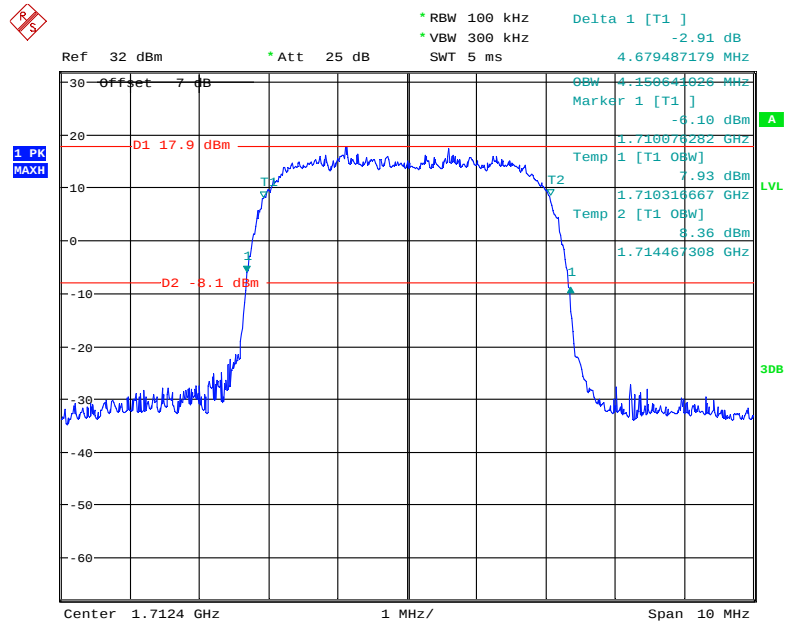
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



Date: 10.JUL.2021 16:41:10

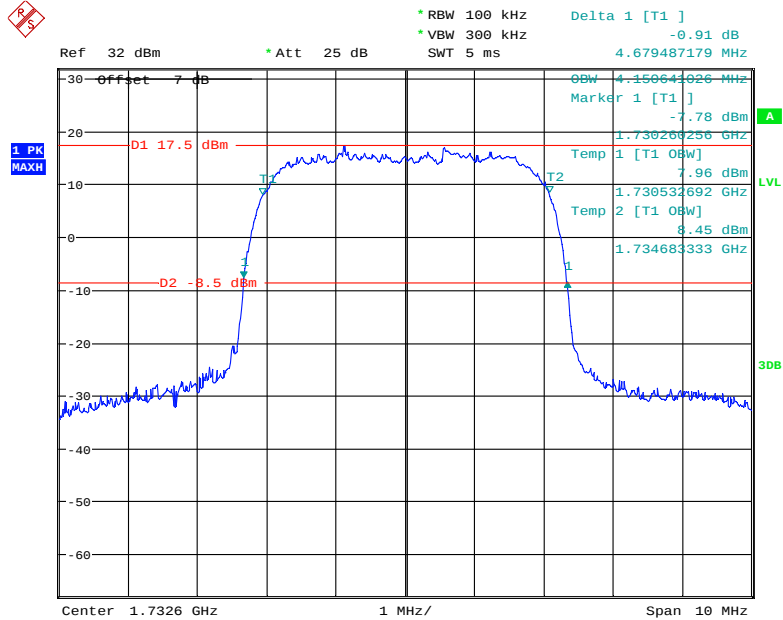
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel

Date: 10.JUL.2021 16:43:52

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

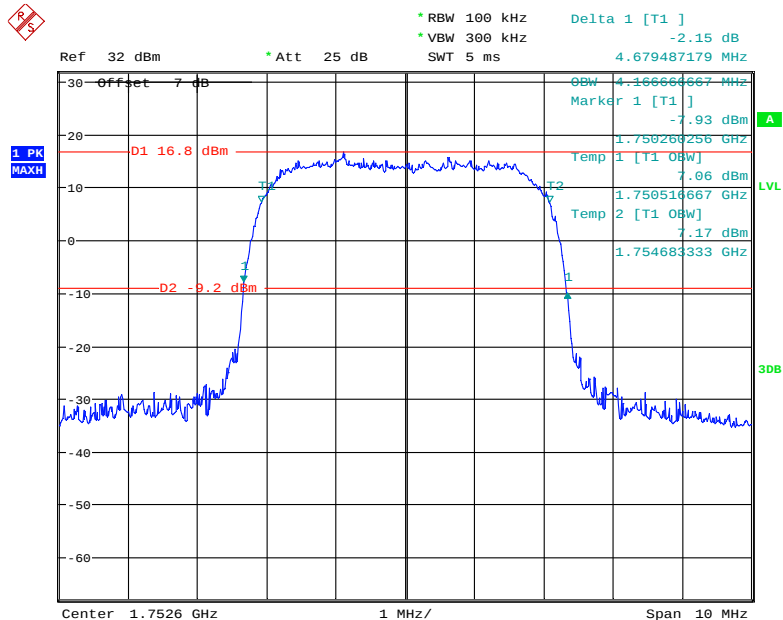
Date: 10.JUL.2021 16:57:22

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



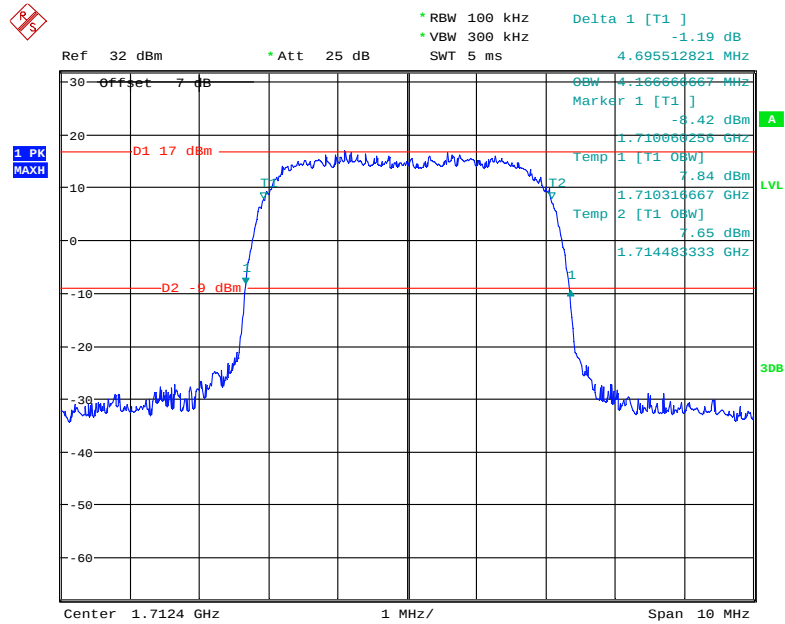
Date: 10.JUL.2021 16:59:34

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



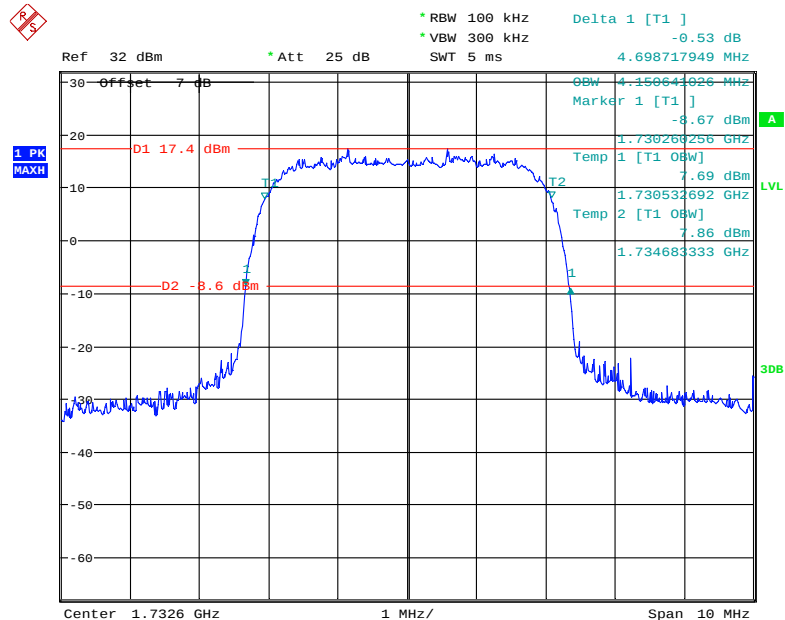
Date: 10.JUL.2021 17:00:51

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



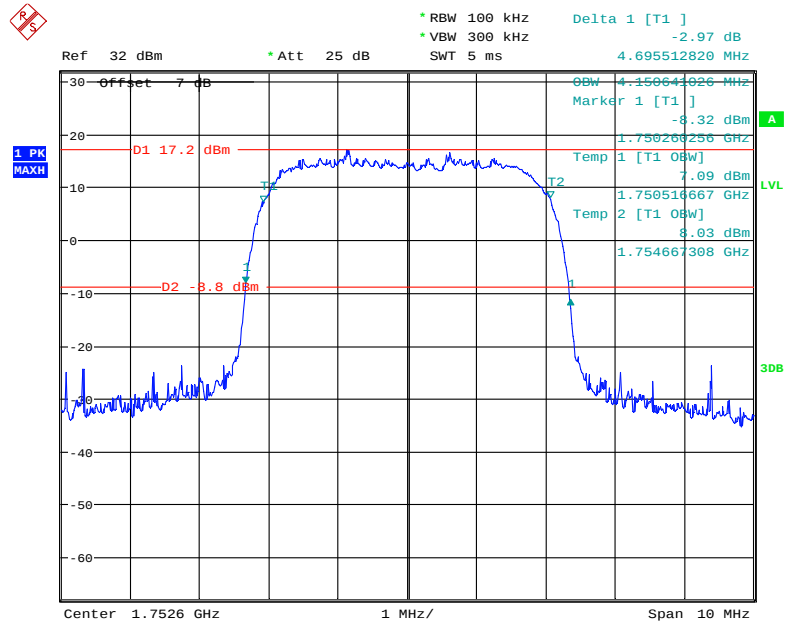
Date: 10.JUL.2021 16:56:02

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



Date: 10.JUL.2021 16:54:42

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



Date: 10.JUL.2021 16:53:24

LTE Band 2:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.260
		Middle	1.104	1.248
		High	1.104	1.254
	16QAM	Low	1.104	1.260
		Middle	1.110	1.266
		High	1.098	1.254
3	QPSK	Low	2.688	3.012
		Middle	2.700	3.012
		High	2.700	3.024
	16QAM	Low	2.700	3.024
		Middle	2.688	3.024
		High	2.688	3.012
5	QPSK	Low	4.500	4.980
		Middle	4.520	5.020
		High	4.520	5.000
	16QAM	Low	4.540	5.020
		Middle	4.520	4.980
		High	4.540	5.000
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.800
		High	8.960	9.760
	16QAM	Low	8.960	9.840
		Middle	8.960	9.720
		High	8.960	9.720
15	QPSK	Low	13.500	15.060
		Middle	13.560	15.000
		High	13.500	15.120
	16QAM	Low	13.500	15.060
		Middle	13.560	15.060
		High	13.620	15.060
20	QPSK	Low	18.000	19.600
		Middle	18.080	19.520
		High	18.080	19.840
	16QAM	Low	18.080	19.680
		Middle	18.080	19.920
		High	18.080	19.680

LTE Band 4:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.254
		Middle	1.104	1.254
		High	1.104	1.254
	16QAM	Low	1.110	1.260
		Middle	1.098	1.260
		High	1.098	1.248
3	QPSK	Low	2.712	2.988
		Middle	2.700	3.012
		High	2.688	3.012
	16QAM	Low	2.700	3.024
		Middle	2.688	3.000
		High	2.700	3.036
5	QPSK	Low	4.520	4.980
		Middle	4.520	5.000
		High	4.520	5.020
	16QAM	Low	4.520	4.980
		Middle	4.540	5.020
		High	4.520	5.020
10	QPSK	Low	9.000	9.720
		Middle	8.960	9.720
		High	8.960	9.760
	16QAM	Low	8.960	9.680
		Middle	9.000	9.800
		High	8.960	9.760
15	QPSK	Low	13.560	15.000
		Middle	13.560	15.000
		High	13.560	15.120
	16QAM	Low	13.560	15.060
		Middle	13.560	15.000
		High	13.500	15.060
20	QPSK	Low	18.000	19.600
		Middle	18.000	19.600
		High	18.000	19.680
	16QAM	Low	18.000	19.840
		Middle	17.920	19.680
		High	18.000	19.680

LTE Band 5:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.260
		Middle	1.104	1.260
		High	1.104	1.260
	16QAM	Low	1.110	1.260
		Middle	1.104	1.260
		High	1.098	1.254
3	QPSK	Low	2.700	3.000
		Middle	2.712	3.012
		High	2.688	3.024
	16QAM	Low	2.688	3.012
		Middle	2.688	3.000
		High	2.700	3.024
5	QPSK	Low	4.540	4.980
		Middle	4.520	4.960
		High	4.520	5.000
	16QAM	Low	4.520	4.940
		Middle	4.520	4.980
		High	4.520	4.980
10	QPSK	Low	8.960	9.760
		Middle	8.960	9.680
		High	8.960	9.760
	16QAM	Low	8.920	9.800
		Middle	8.960	9.760
		High	8.960	9.800

LTE Band 7:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.520	5.020
		Middle	4.520	4.980
		High	4.520	4.980
	16QAM	Low	4.520	4.960
		Middle	4.540	5.020
		High	4.520	5.020
10	QPSK	Low	9.000	9.800
		Middle	8.960	9.800
		High	8.960	9.760
	16QAM	Low	8.960	9.720
		Middle	8.960	9.840
		High	8.960	9.800
15	QPSK	Low	13.560	15.000
		Middle	13.500	14.880
		High	13.500	15.000
	16QAM	Low	13.560	15.000
		Middle	13.500	15.000
		High	13.500	15.060
20	QPSK	Low	18.000	19.680
		Middle	18.000	19.600
		High	18.000	19.760
	16QAM	Low	18.080	19.600
		Middle	18.000	19.840
		High	18.080	19.840

LTE Band 12:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.098	1.254
		Middle	1.104	1.260
		High	1.104	1.266
	16QAM	Low	1.110	1.266
		Middle	1.104	1.254
		High	1.098	1.260
3	QPSK	Low	2.700	3.000
		Middle	2.688	3.000
		High	2.700	3.036
	16QAM	Low	2.700	3.024
		Middle	2.700	2.988
		High	2.700	3.024
5	QPSK	Low	4.520	5.000
		Middle	4.520	5.000
		High	4.500	5.000
	16QAM	Low	4.540	5.000
		Middle	4.520	4.980
		High	4.540	5.020
10	QPSK	Low	8.960	9.720
		Middle	8.960	9.720
		High	9.000	9.760
	16QAM	Low	8.960	9.760
		Middle	9.000	9.760
		High	8.960	9.800

LTE Band 13:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.500	4.980
		Middle	4.520	5.000
		High	4.520	5.020
	16QAM	Low	4.520	4.960
		Middle	4.520	4.940
		High	4.540	5.000
10	QPSK	Middle	8.960	9.720
	16QAM	Middle	8.960	9.760

LTE Band 17:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.520	4.940
		Middle	4.520	5.000
		High	4.520	5.000
	16QAM	Low	4.520	4.980
		Middle	4.520	4.980
		High	4.520	5.020
10	QPSK	Low	9.000	9.760
		Middle	8.960	9.720
		High	8.960	9.760
	16QAM	Low	8.960	9.680
		Middle	8.960	9.760
		High	8.960	9.840

LTE Band 66:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.259
		Middle	1.110	1.260
		High	1.104	1.260
	16QAM	Low	1.098	1.254
		Middle	1.104	1.248
		High	1.110	1.260
3	QPSK	Low	2.700	2.988
		Middle	2.688	3.012
		High	2.688	3.000
	16QAM	Low	2.700	3.024
		Middle	2.700	3.012
		High	2.700	3.024
5	QPSK	Low	4.520	4.980
		Middle	4.520	5.020
		High	4.520	4.960
	16QAM	Low	4.520	5.000
		Middle	4.520	5.040
		High	4.540	5.000
10	QPSK	Low	9.000	9.720
		Middle	8.960	9.760
		High	8.960	9.800
	16QAM	Low	8.960	9.680
		Middle	8.960	9.760
		High	8.960	9.800
15	QPSK	Low	13.560	15.120
		Middle	13.560	15.060
		High	13.500	14.940
	16QAM	Low	13.560	15.180
		Middle	13.560	14.940
		High	13.500	15.120
20	QPSK	Low	18.000	19.520
		Middle	18.080	19.520
		High	18.000	19.840
	16QAM	Low	18.080	19.760
		Middle	18.080	19.680
		High	18.080	19.600

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

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

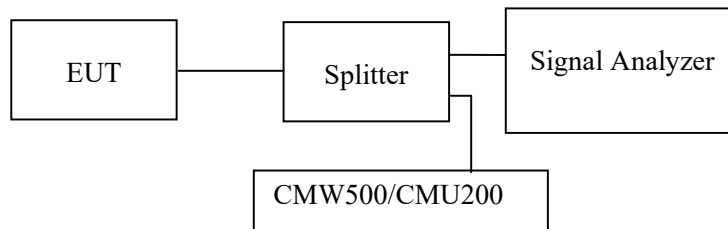
Applicable Standard

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:	26~28.1 °C
Relative Humidity:	53~65 %
ATM Pressure:	101.0 kPa

The testing was performed by Orlo Yang and Pedro Yun from 2021-06-10 to 2021-07-16.

EUT operation mode: Transmitting

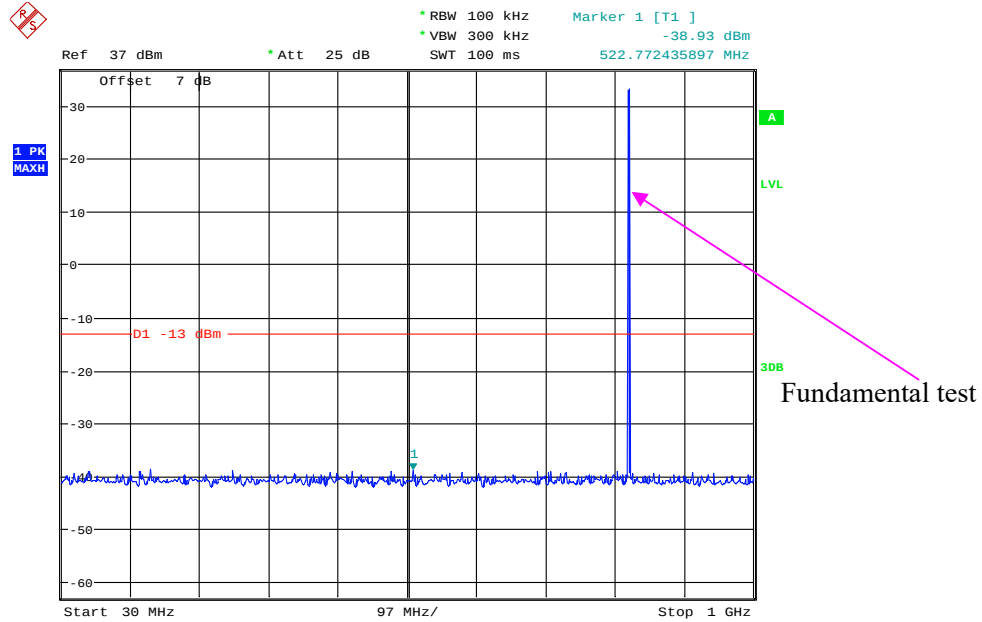
Test result: Pass

Please refer to the following plots.

Cellular Band (Part 22H)

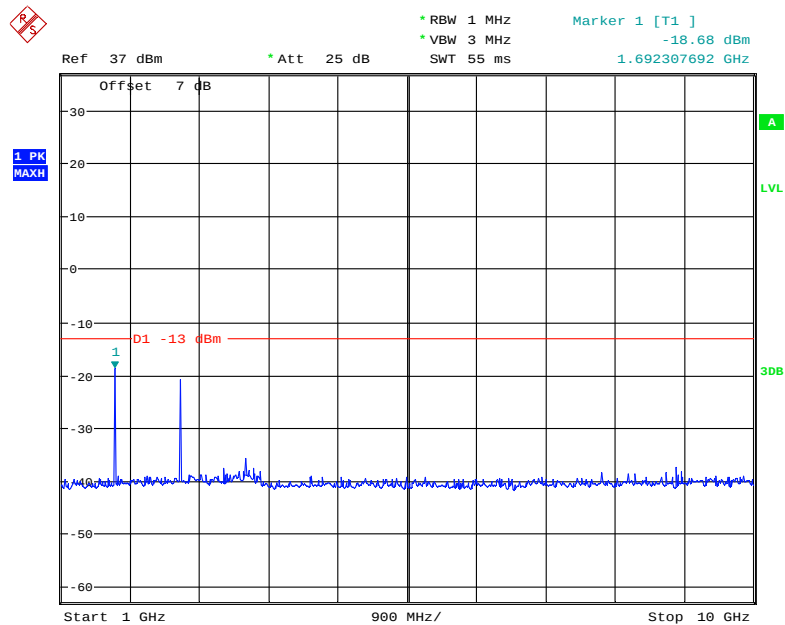
Low Channel:

30 MHz – 1 GHz (GSM Mode)



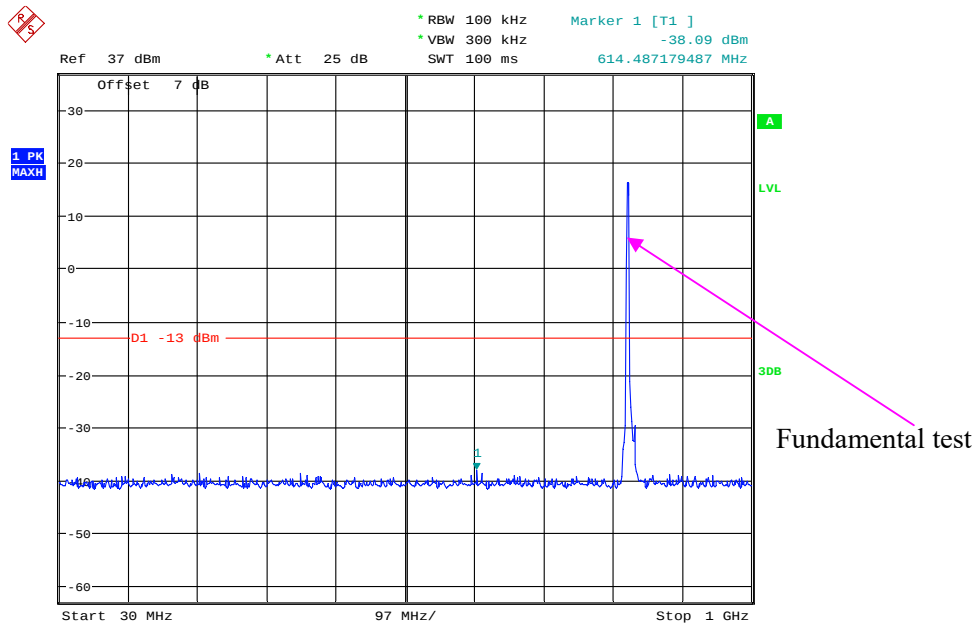
Date: 10.JUN.2021 11:14:20

1 GHz – 10 GHz (GSM Mode)



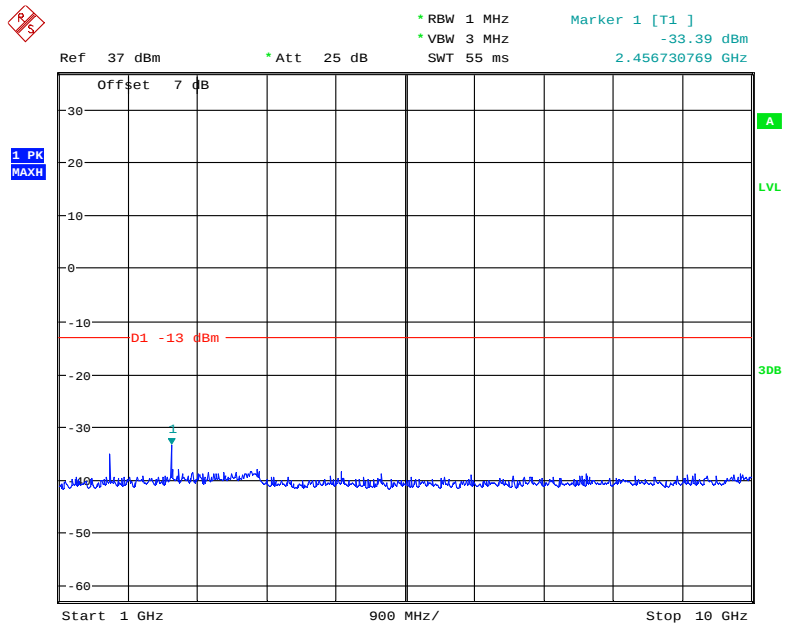
Date: 10.JUN.2021 11:16:26

30 MHz – 1 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:17:04

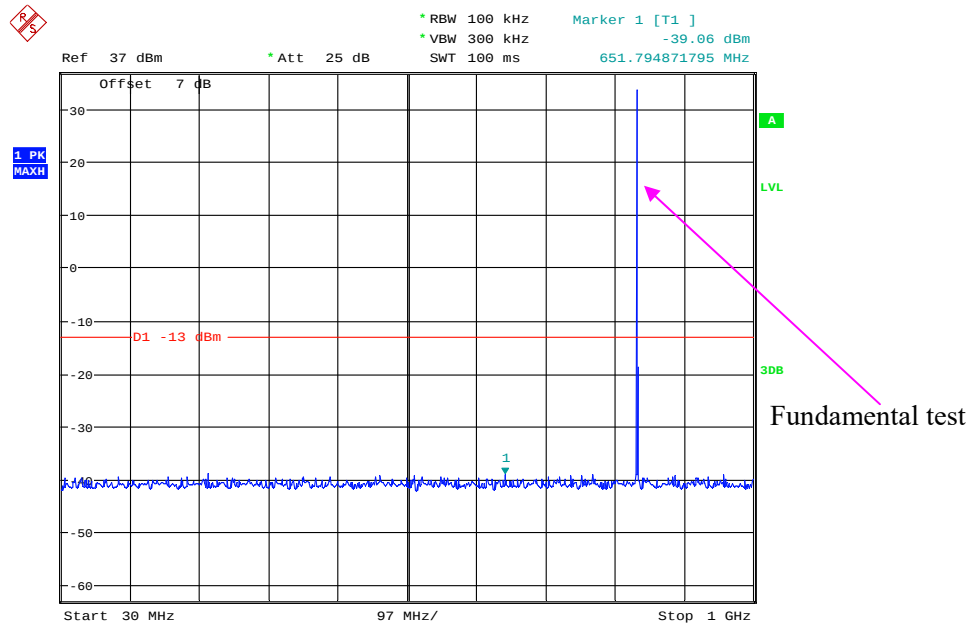
1 GHz – 10 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:16:22

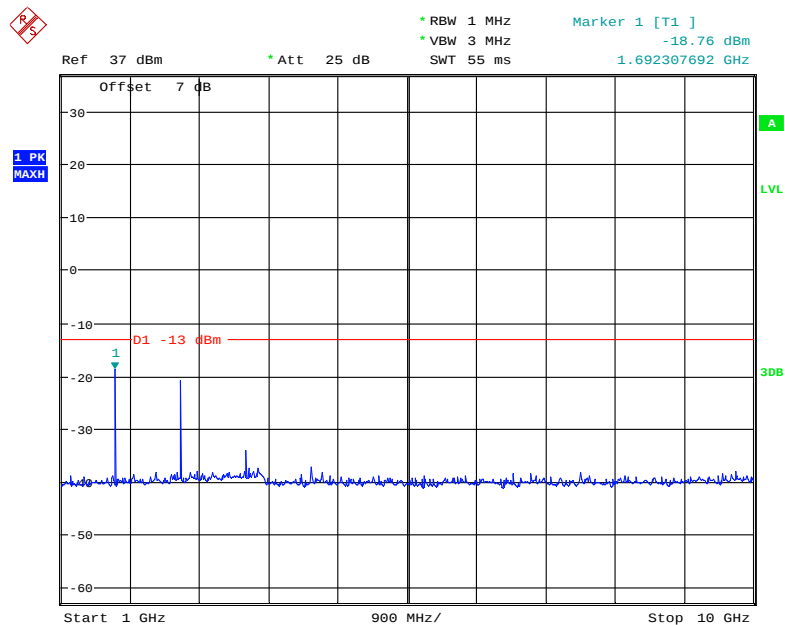
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



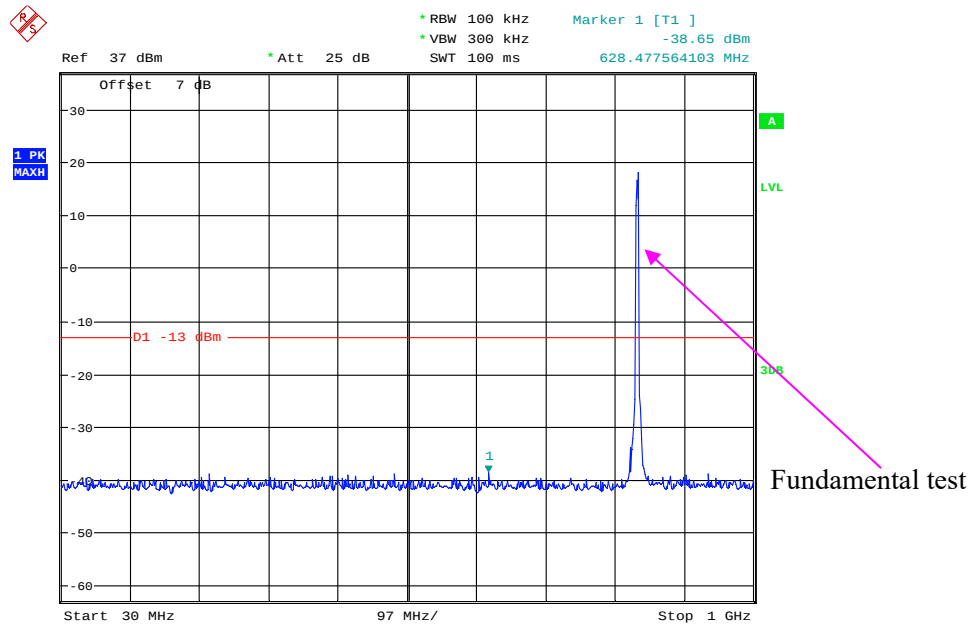
Date: 10.JUN.2021 11:15:02

1 GHz – 10 GHz (GSM Mode)



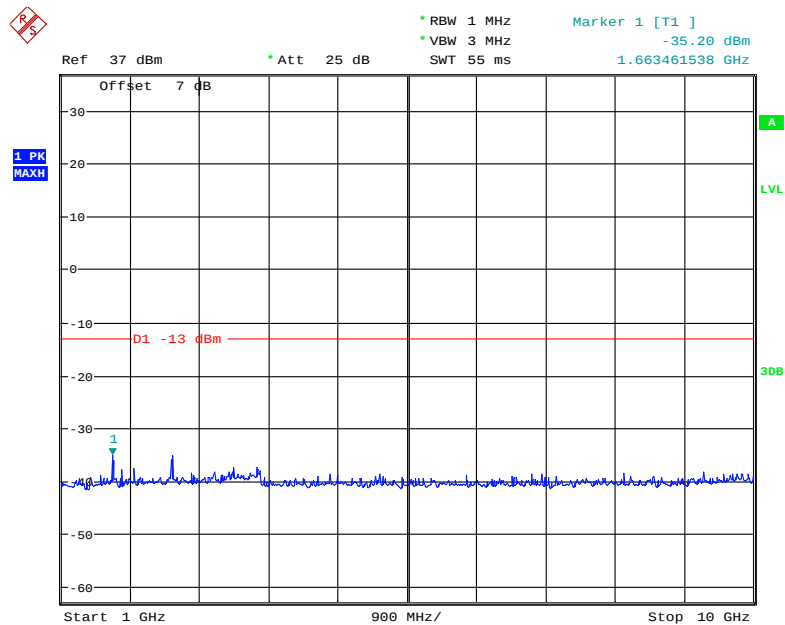
Date: 10.JUN.2021 11:16:08

30 MHz – 1 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:17:30

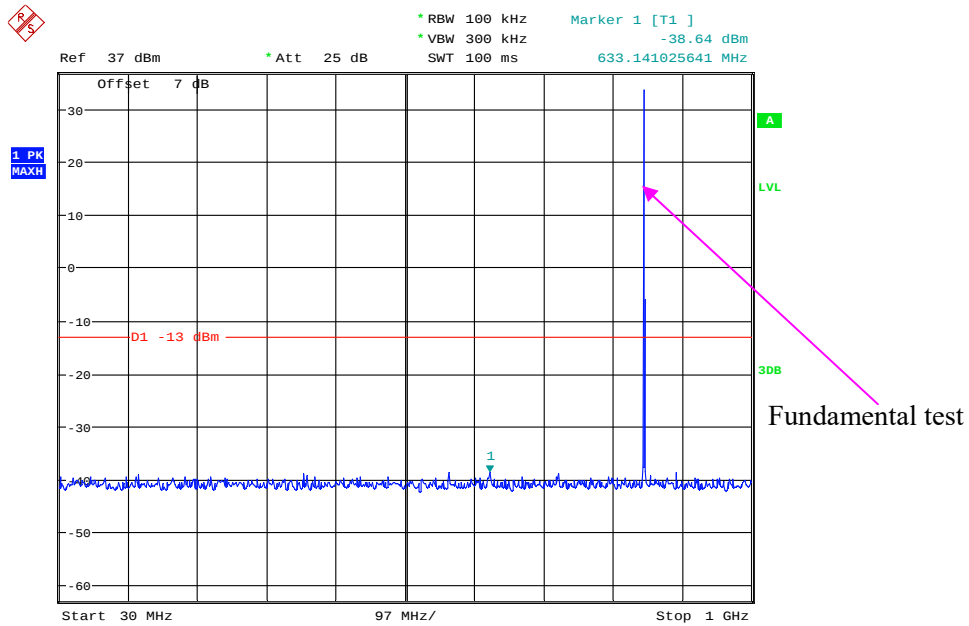
1 GHz – 10 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:16:07

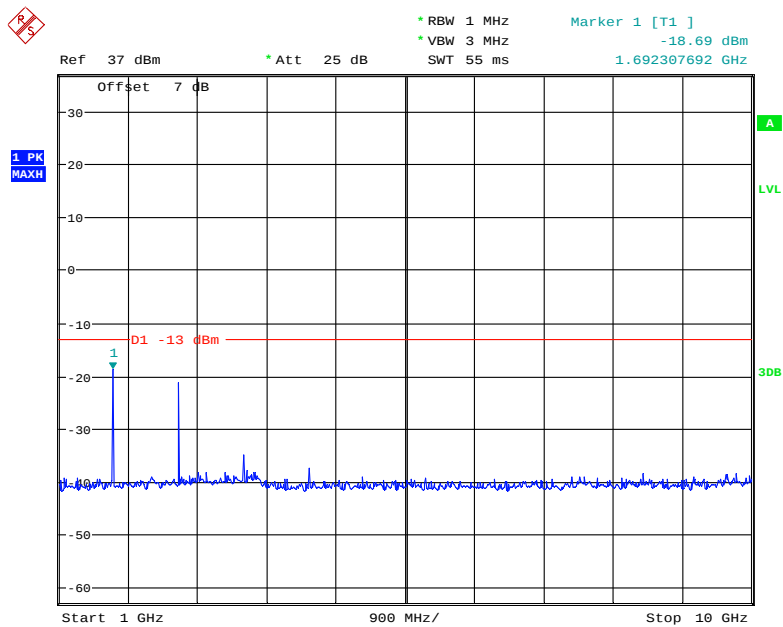
High Channel:

30 MHz – 1 GHz (GSM Mode)



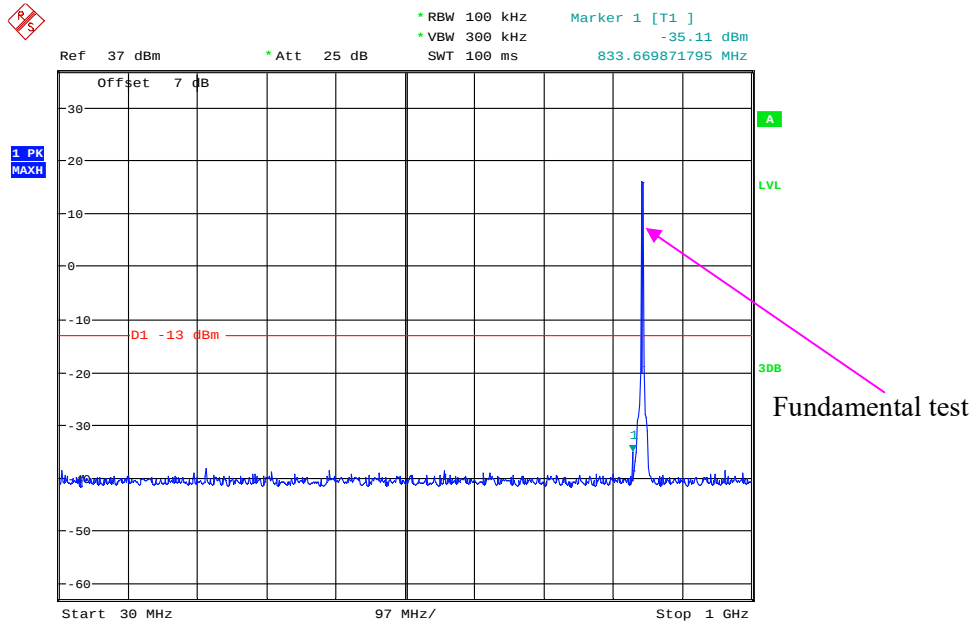
Date: 10.JUN.2021 11:15:24

1 GHz – 10 GHz (GSM Mode)



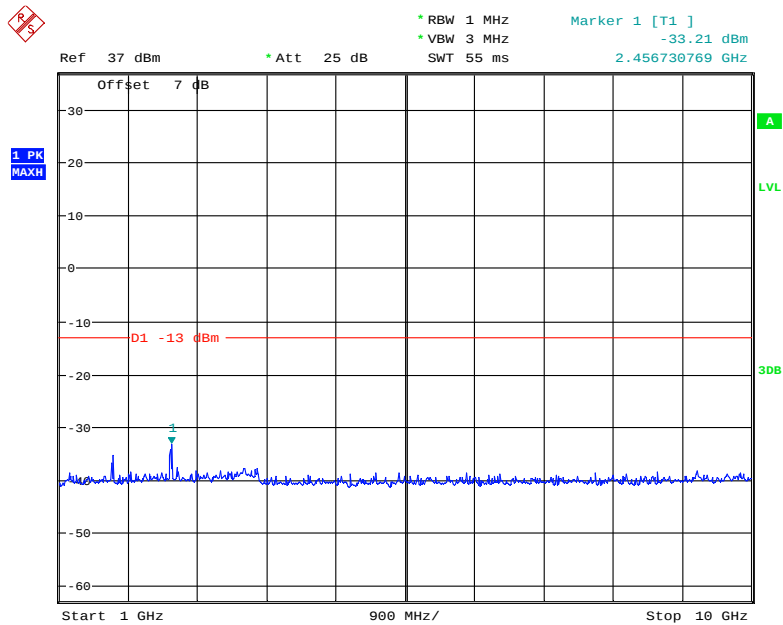
Date: 10.JUN.2021 11:16:41

30 MHz – 1 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:18:01

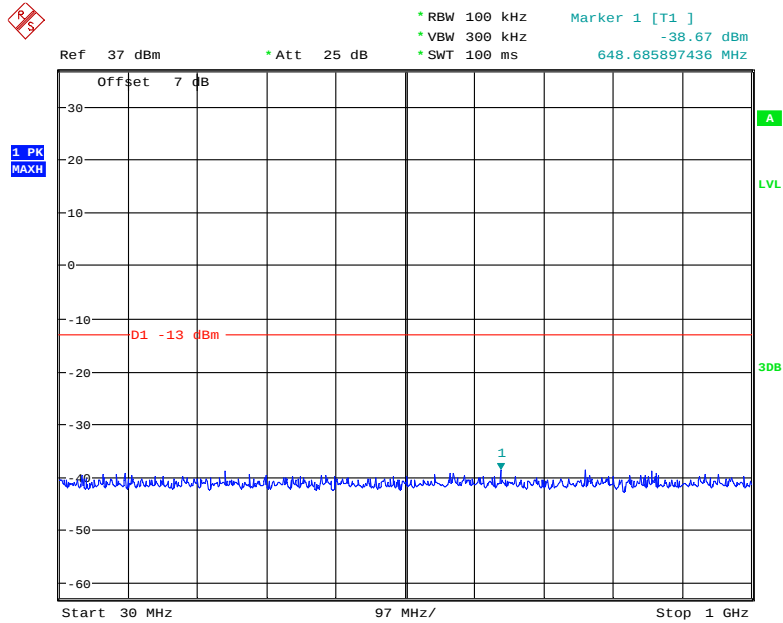
1 GHz – 10 GHz (WCDMA Mode)



Date: 15.JUN.2021 13:15:33

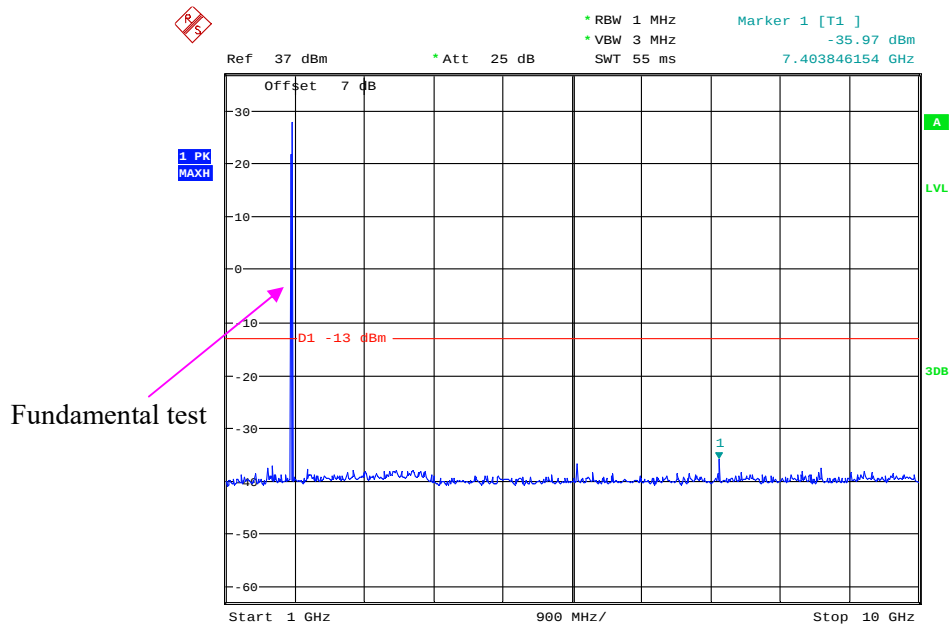
PCS Band (Part 24E) Low Channel:

30 MHz – 1 GHz (GSM Mode)



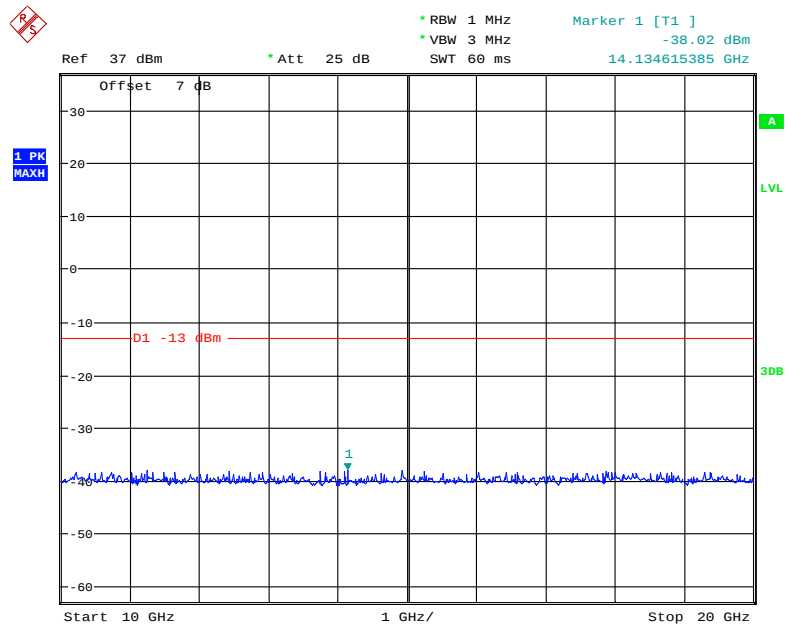
Date: 10.JUN.2021 11:20:16

1 GHz – 10 GHz (GSM Mode)



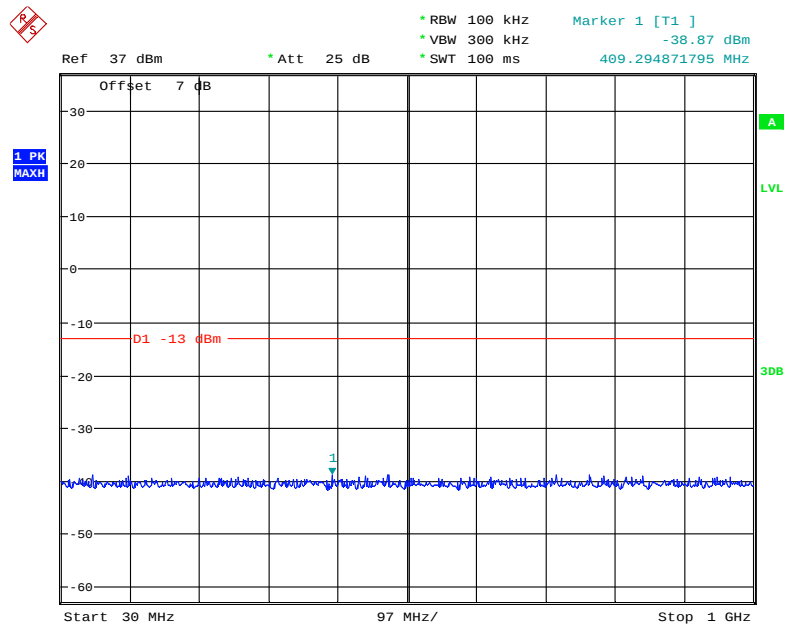
Date: 10.JUN.2021 11:18:09

10 GHz – 20 GHz (GSM Mode)



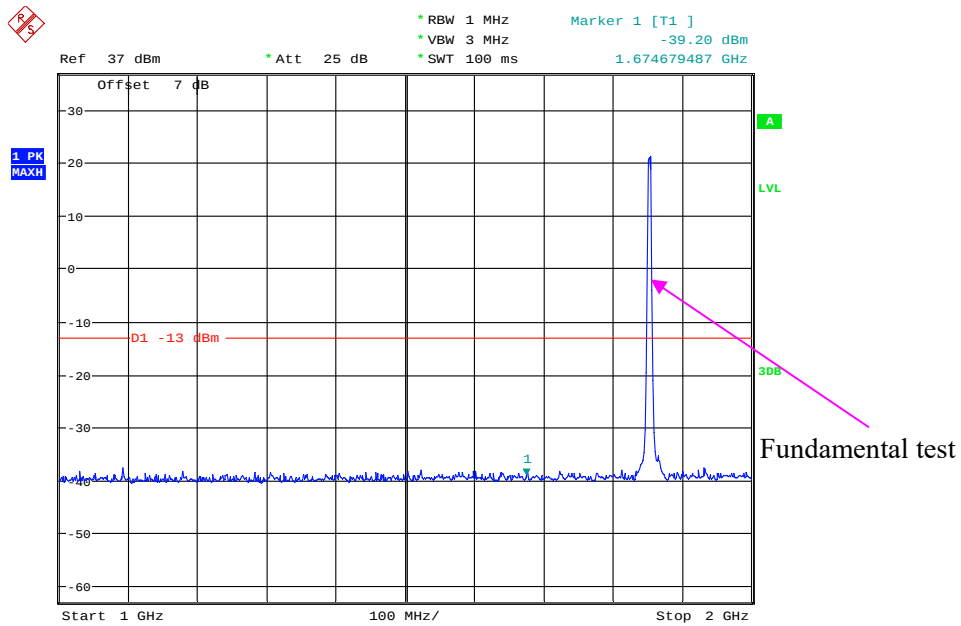
Date: 10.JUN.2021 11:19:11

30 MHz – 1 GHz (WCDMA Mode)



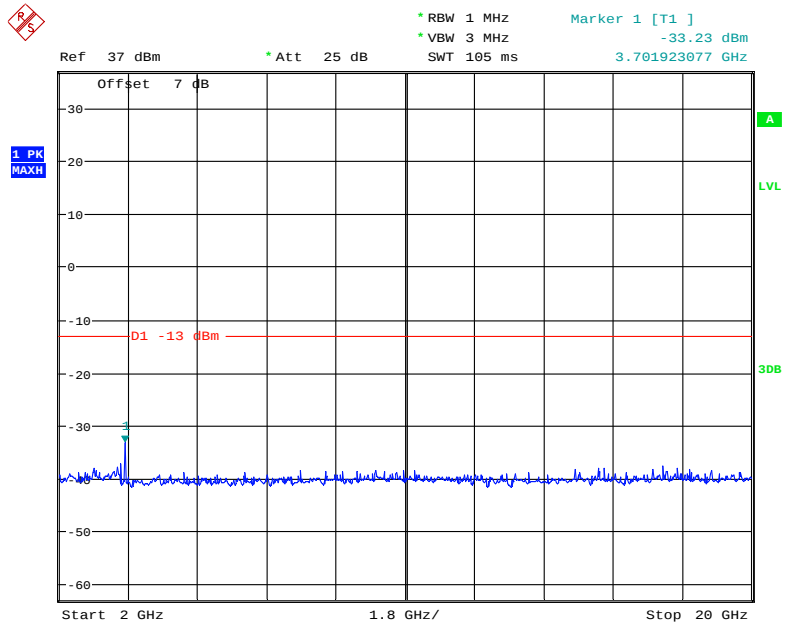
Date: 10.JUN.2021 13:27:18

1 GHz – 2 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:28:41

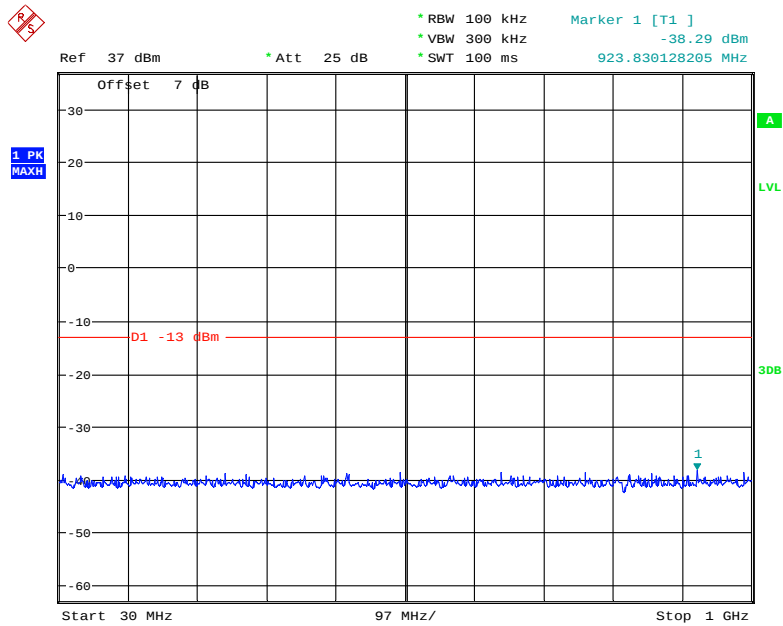
2 GHz – 20 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:33:03

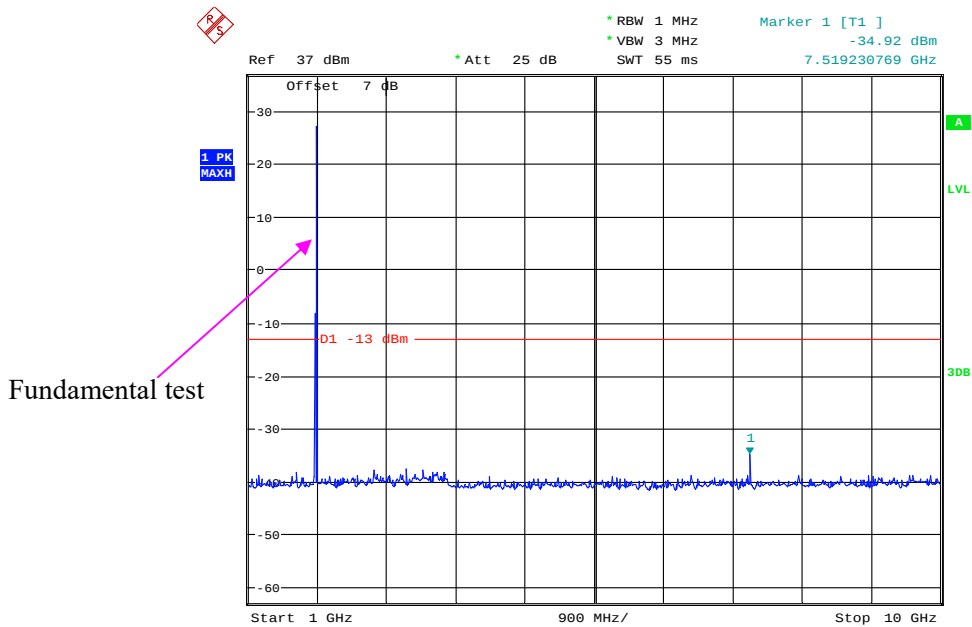
Middle Channel:

30 MHz – 1 GHz (GSM Mode)



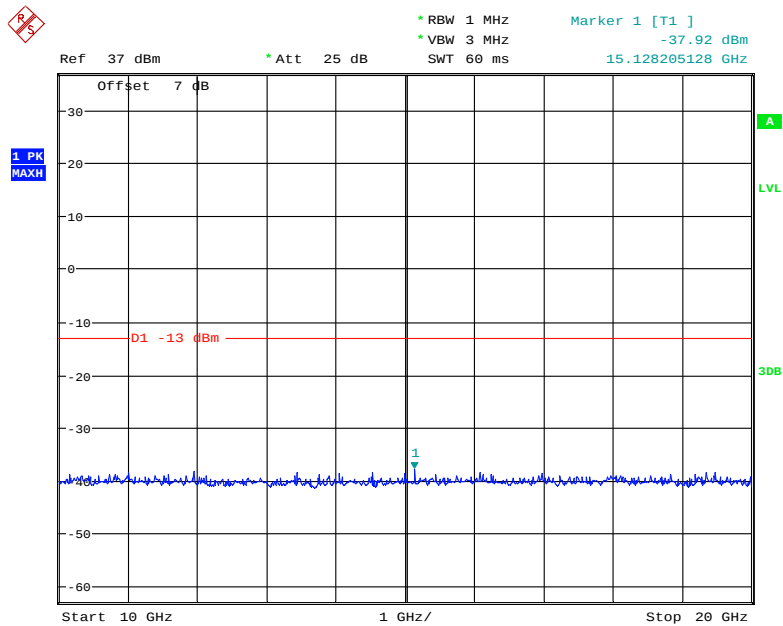
Date: 10.JUN.2021 11:20:30

1 GHz – 10 GHz (GSM Mode)



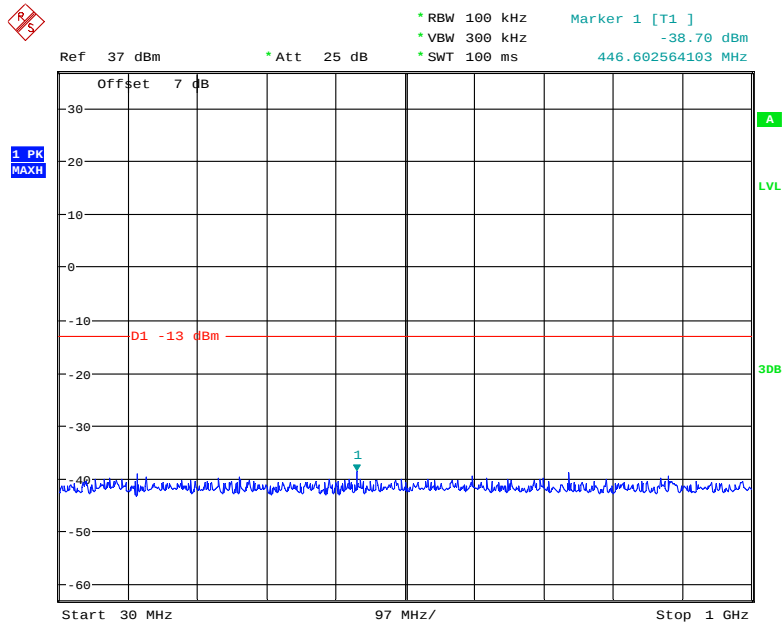
Date: 10.JUN.2021 11:18:34

10 GHz – 20 GHz (GSM Mode)



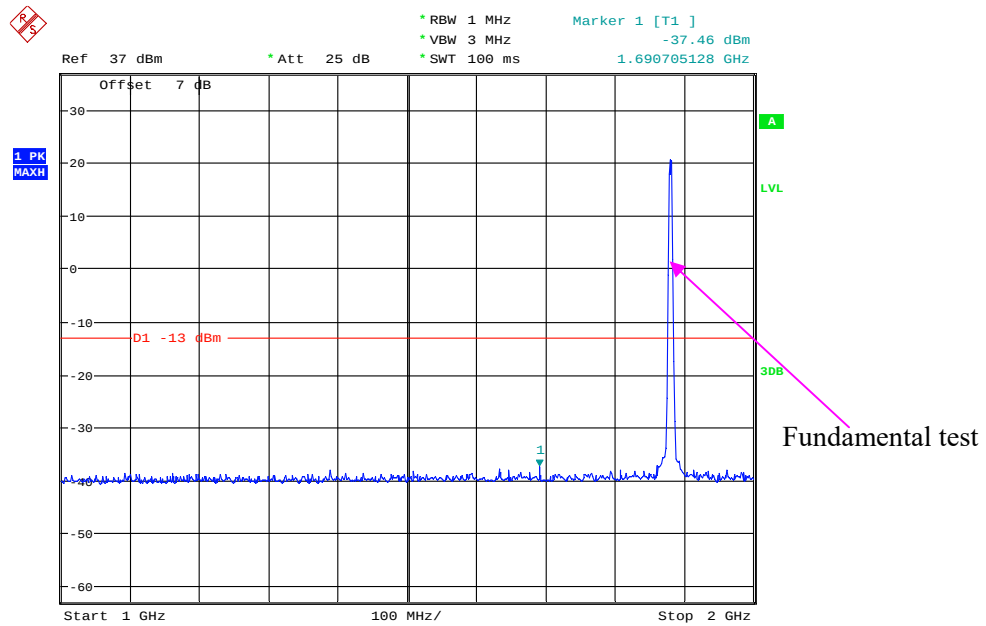
Date: 10.JUN.2021 11:19:29

30 MHz – 1 GHz (WCDMA Mode)



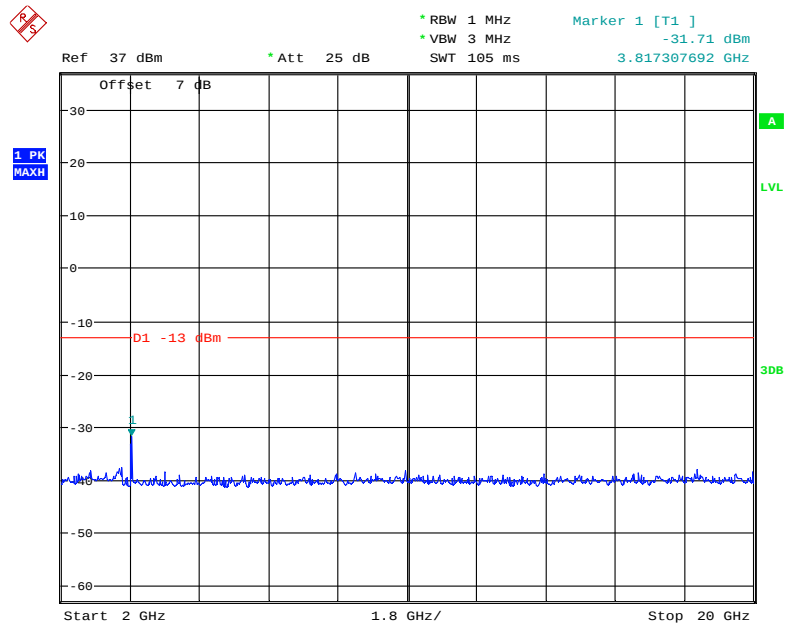
Date: 10.JUN.2021 13:27:41

1 GHz – 2 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:29:11

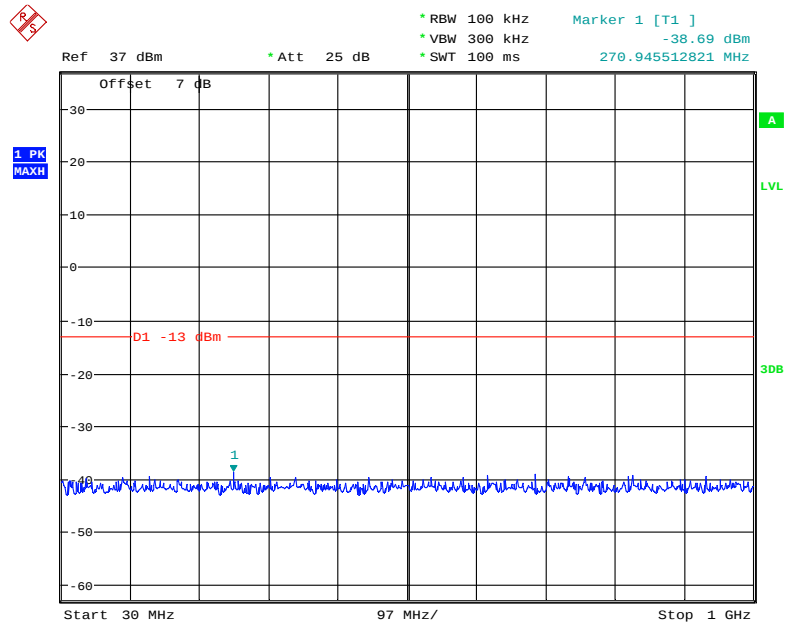
2 GHz – 20 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:32:43

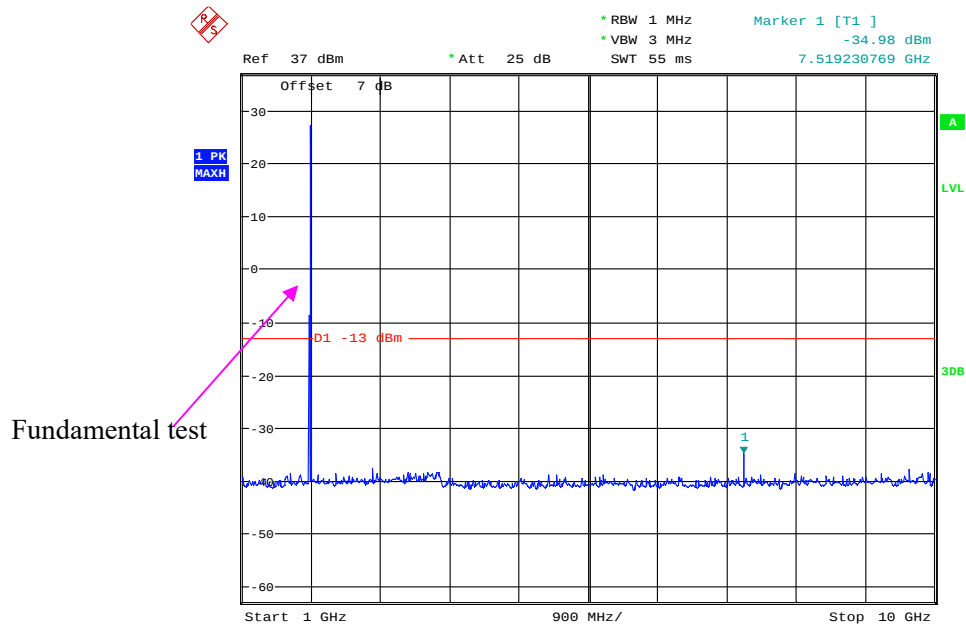
High Channel:

30 MHz – 1 GHz (GSM Mode)



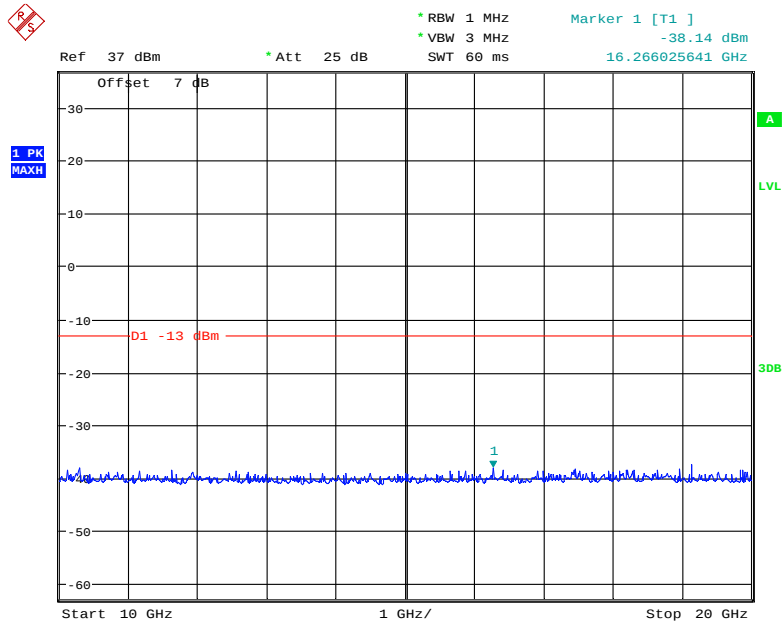
Date: 10.JUN.2021 11:20:43

1 GHz – 10 GHz (GSM Mode)



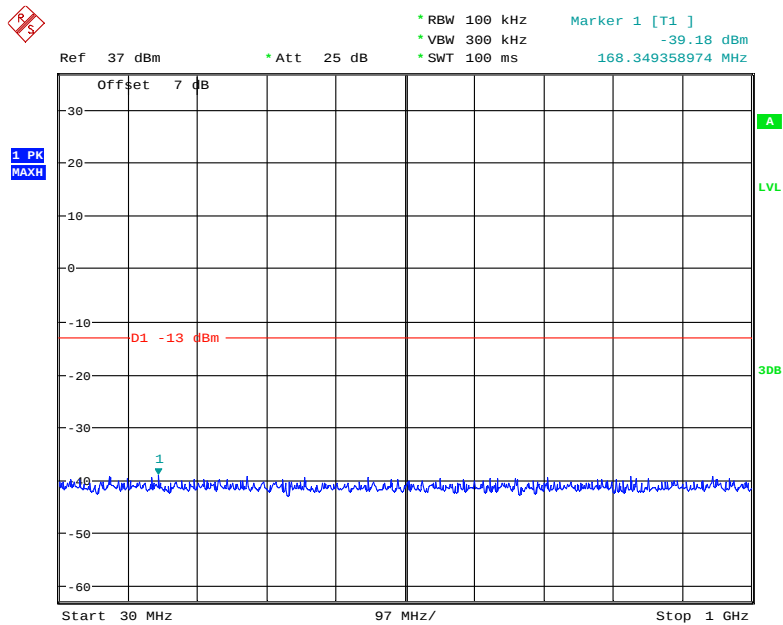
Date: 10.JUN.2021 11:18:47

10 GHz – 20 GHz (GSM Mode)



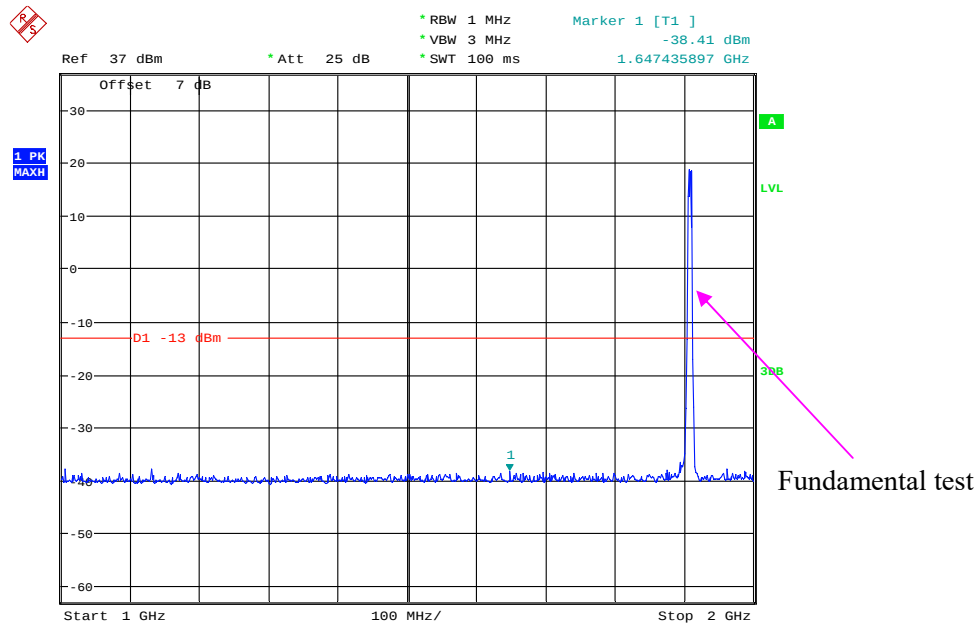
Date: 10.JUN.2021 11:19:41

30 MHz – 1 GHz (WCDMA Mode)



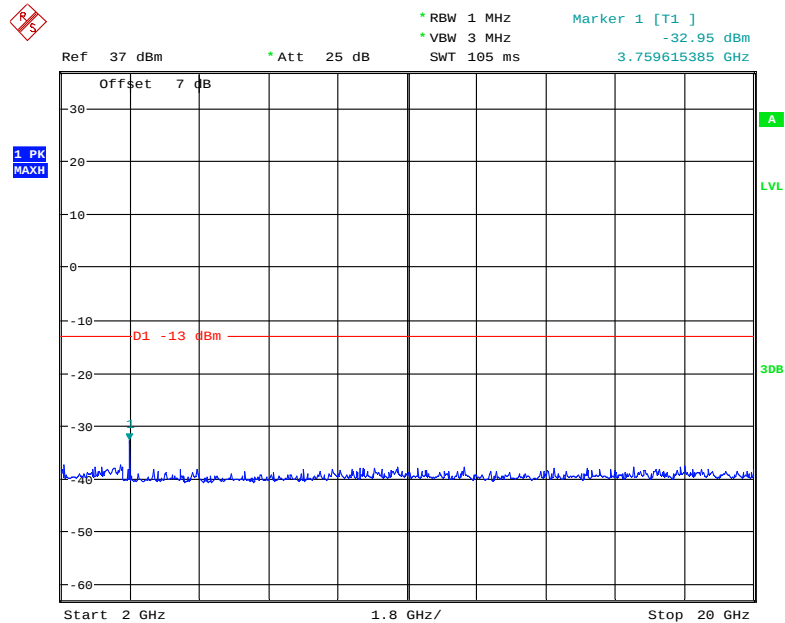
Date: 10.JUN.2021 13:27:54

1 GHz – 2 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:29:34

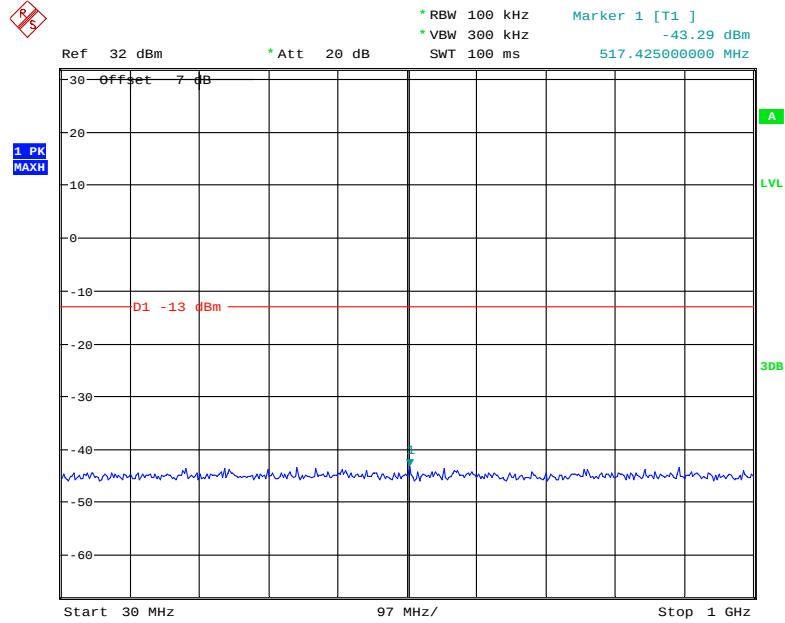
2 GHz – 20 GHz (WCDMA Mode)



Date: 10.JUN.2021 13:32:23

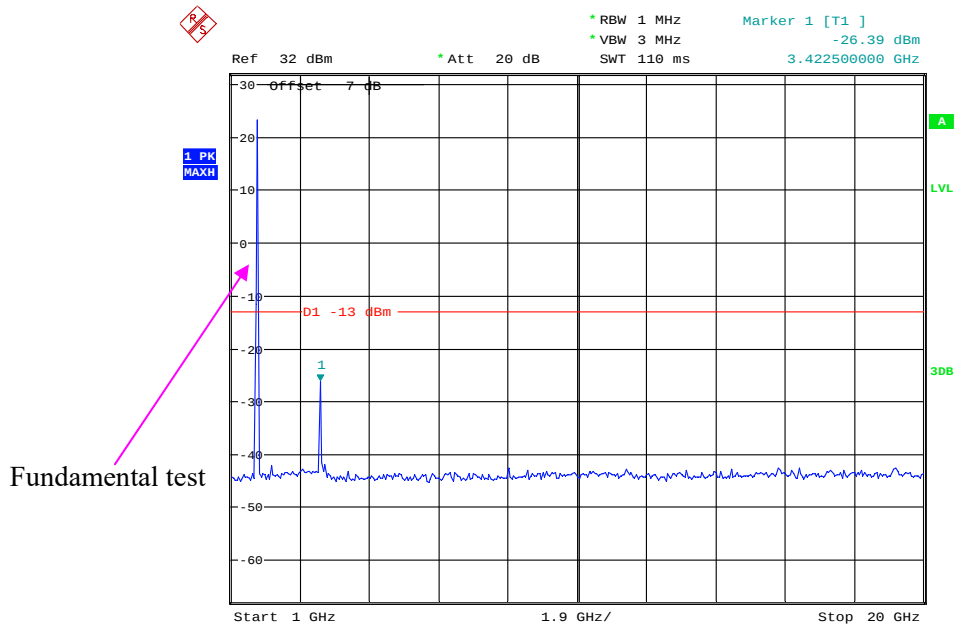
AWS Band (Part 27)
Low Channel:

30 MHz – 1 GHz (WCDMA Mode)

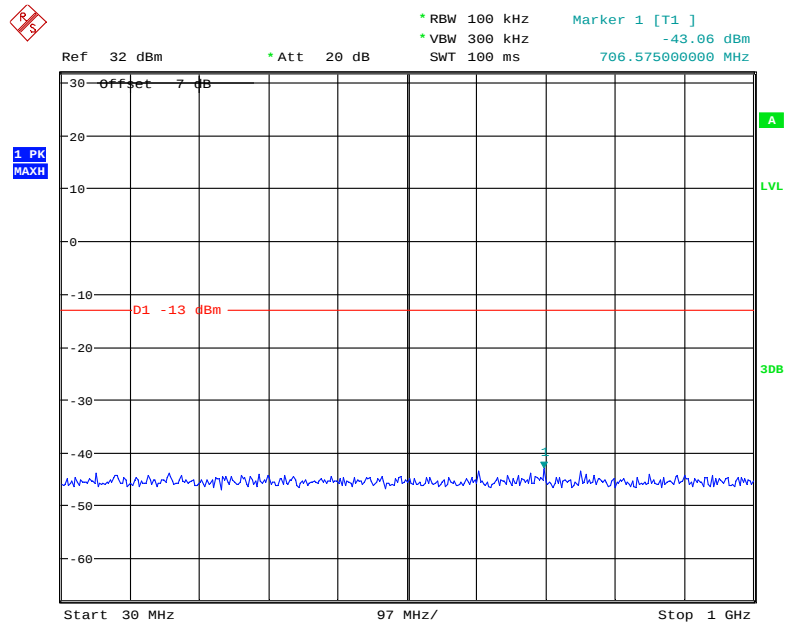


Date: 16.JUL.2021 02:08:13

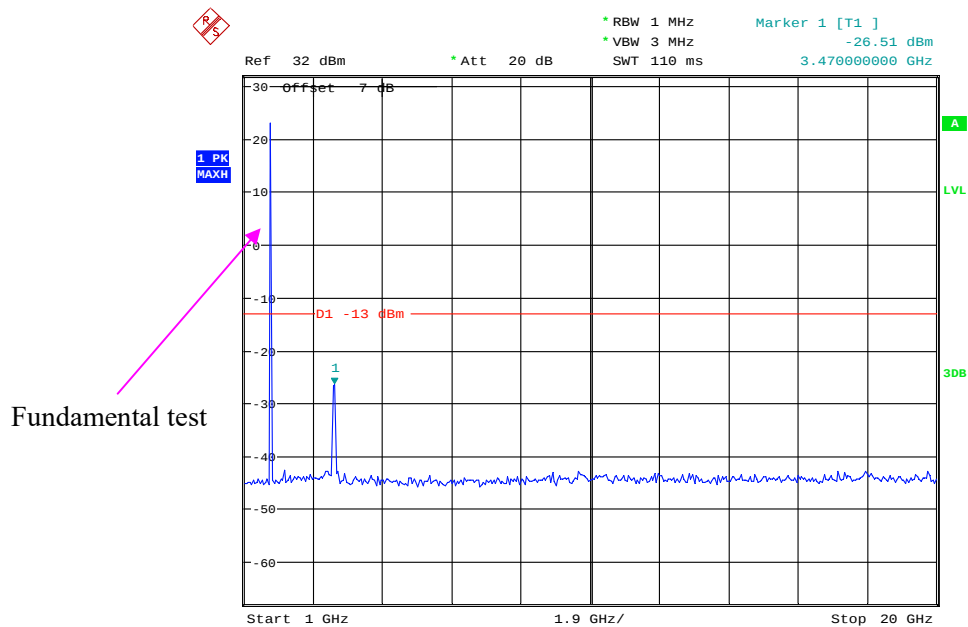
1 GHz – 20 GHz (WCDMA Mode)



Date: 16.JUL.2021 02:10:05

Middle Channel**30 MHz – 1 GHz (WCDMA Mode)**

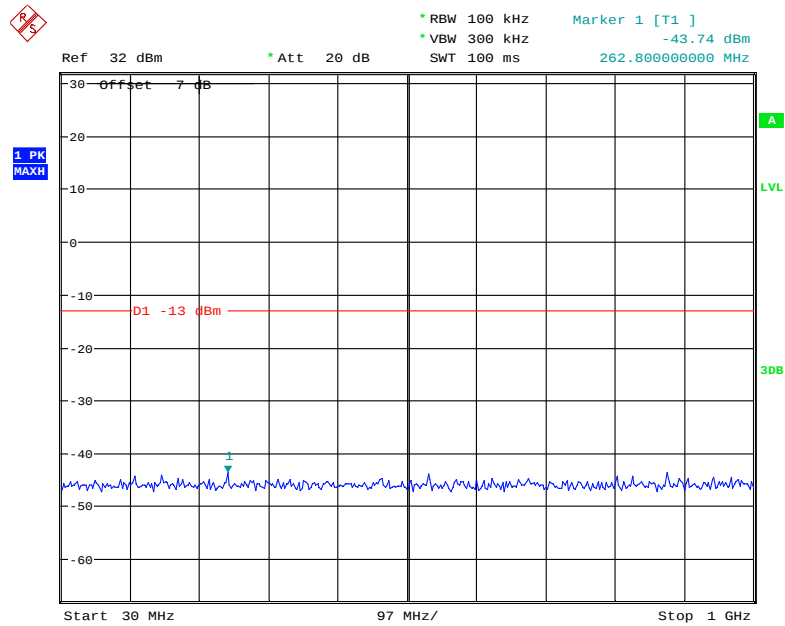
Date: 16.JUL.2021 02:09:06

1 GHz – 20 GHz (WCDMA Mode)

Date: 16.JUL.2021 02:11:57

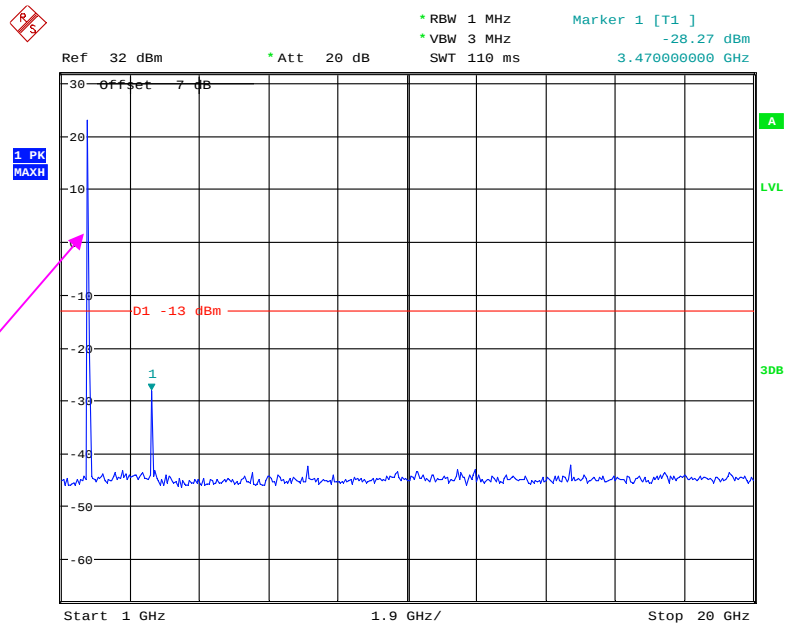
High Channel:

30 MHz – 1 GHz (WCDMA Mode)



Date: 16.JUL.2021 02:09:20

1 GHz – 20 GHz (WCDMA Mode)



Fundamental test

Date: 16.JUL.2021 02:12:27

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:	26.2~27 °C
Relative Humidity:	46~57 %
ATM Pressure:	101.0~101.2 kPa

The testing was performed by Cloud Qiu on 2021-06-17 for below 1GHz and Hanic Pan from 2021-06-11 to 2021-06-18 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										
962.3	31.29	302	2.5	H	-65.2	1.36	0.0	-66.56	-13	53.56
962.3	32.44	91	2.2	V	-61.6	1.36	0.0	-62.96	-13	49.96
1648.40	44.91	288	2.0	H	-63.2	1.40	8.70	-55.90	-13	42.90
1648.40	45.89	345	1.3	V	-62.0	1.40	8.70	-54.70	-13	41.70
2472.60	45.15	287	2.2	H	-58.2	2.60	10.20	-50.60	-13	37.60
2472.60	44.58	206	1.0	V	-58.2	2.60	10.20	-50.60	-13	37.60
3296.80	43.93	13	2.3	H	-57.0	1.50	11.70	-46.80	-13	33.80
3296.80	43.66	141	2.1	V	-57.3	1.50	11.70	-47.10	-13	34.10
Middle channel										
960.6	31.37	140	2.1	H	-65.1	1.36	0.0	-66.46	-13	53.46
960.6	32.32	2	1.7	V	-61.7	1.36	0.0	-63.06	-13	50.06
1673.20	51.15	100	2.0	H	-55.2	1.30	8.90	-47.60	-13	34.60
1673.20	47.51	36	1.4	V	-58.2	1.30	8.90	-50.60	-13	37.60
2509.80	48.67	149	1.5	H	-54.7	2.60	10.20	-47.10	-13	34.10
2509.80	47.48	338	2.3	V	-55.3	2.60	10.20	-47.70	-13	34.70
3346.40	43.58	247	1.6	H	-57.3	1.50	11.70	-47.10	-13	34.10
3346.40	43.76	260	1.4	V	-57.2	1.50	11.70	-47.00	-13	34.00
High channel										
961.8	31.19	289	1.2	H	-65.3	1.36	0.0	-66.66	-13	53.66
961.8	32.35	260	2.5	V	-61.7	1.36	0.0	-63.06	-13	50.06
1697.60	44.92	241	1.3	H	-61.4	1.30	8.90	-53.80	-13	40.80
1697.60	44.12	213	1.2	V	-61.6	1.30	8.90	-54.00	-13	41.00
2546.40	48.97	8	1.7	H	-54.4	2.60	10.20	-46.80	-13	33.80
2546.40	46.68	337	2.4	V	-56.1	2.60	10.20	-48.50	-13	35.50
3395.20	44.70	32	1.6	H	-56.5	1.40	11.80	-46.10	-13	33.10
3395.20	44.09	132	1.6	V	-57.0	1.40	11.80	-46.60	-13	33.60

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										
962.3	31.18	76	1.9	H	-65.3	1.36	0.0	-66.66	-13	53.66
962.3	32.37	13	2.2	V	-61.7	1.36	0.0	-63.06	-13	50.06
1652.80	51.66	43	2.3	H	-54.7	1.30	8.90	-47.10	-13	34.10
1652.80	52.30	84	1.6	V	-53.4	1.30	8.90	-45.80	-13	32.80
2479.20	50.30	171	1.4	H	-53.1	2.60	10.20	-45.50	-13	32.50
2479.20	48.09	189	2.2	V	-54.7	2.60	10.20	-47.10	-13	34.10
3305.60	44.15	109	2.3	H	-56.7	1.50	11.70	-46.50	-13	33.50
3305.60	44.21	94	2.4	V	-56.7	1.50	11.70	-46.50	-13	33.50
Middle channel										
961.6	31.34	37	2.0	H	-65.2	1.36	0.0	-66.56	-13	53.56
961.6	32.42	317	1.6	V	-61.6	1.36	0.0	-62.96	-13	49.96
1673.20	57.97	320	1.4	H	-48.4	1.30	8.90	-40.80	-13	27.80
1673.20	56.28	166	2.3	V	-49.5	1.30	8.90	-41.90	-13	28.90
2509.80	49.09	273	1.7	H	-54.3	2.60	10.20	-46.70	-13	33.70
2509.80	48.40	325	2.4	V	-54.3	2.60	10.20	-46.70	-13	33.70
3346.40	43.83	330	2.4	H	-57.1	1.50	11.70	-46.90	-13	33.90
3346.40	44.06	139	1.6	V	-56.9	1.50	11.70	-46.70	-13	33.70
High channel										
962.8	31.23	134	2.1	H	-65.3	1.36	0.0	-66.66	-13	53.66
962.8	32.39	351	1.3	V	-61.7	1.36	0.0	-63.06	-13	50.06
1693.20	58.76	323	1.7	H	-47.6	1.30	8.90	-40.00	-13	27.00
1693.20	57.62	163	1.5	V	-48.1	1.30	8.90	-40.50	-13	27.50
2539.80	48.89	55	2.3	H	-54.5	2.60	10.20	-46.90	-13	33.90
2539.80	48.23	206	2.3	V	-54.5	2.60	10.20	-46.90	-13	33.90
3386.40	43.93	270	2.1	H	-57.3	1.40	11.80	-46.90	-13	33.90
3386.40	43.99	172	1.1	V	-57.1	1.40	11.80	-46.70	-13	33.70

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										
962.1	31.24	92	1.3	H	-65.3	1.36	0.0	-66.66	-13	53.66
962.1	32.39	66	1.3	V	-61.7	1.36	0.0	-63.06	-13	50.06
3700.40	43.45	113	1.5	H	-58.4	1.60	11.90	-48.10	-13	35.10
3700.40	43.85	175	1.6	V	-57.4	1.60	11.90	-47.10	-13	34.10
Middle channel										
963.2	31.32	343	1.4	H	-65.2	1.36	0.0	-66.56	-13	53.56
963.2	32.45	278	2.0	V	-61.6	1.36	0.0	-62.96	-13	49.96
3760.00	43.31	23	1.2	H	-58.7	1.50	11.80	-48.40	-13	35.40
3760.00	43.69	291	2.4	V	-57.9	1.50	11.80	-47.60	-13	34.60
High channel										
962.5	31.43	336	1.5	H	-65.1	1.36	0.0	-66.46	-13	53.46
962.5	32.37	340	1.2	V	-61.7	1.36	0.0	-63.06	-13	50.06
3819.60	43.28	94	1.9	H	-58.8	1.50	11.80	-48.50	-13	35.50
3819.60	43.65	20	2.3	V	-57.9	1.50	11.80	-47.60	-13	34.60
WCDMA Mode										
Low channel										
957.8	31.28	214	2.2	H	-65.2	1.36	0.0	-66.56	-13	53.56
957.8	32.38	355	1.9	V	-61.7	1.36	0.0	-63.06	-13	50.06
3704.80	59.14	253	1.6	H	-42.7	1.60	11.90	-32.40	-13	19.40
3704.80	58.08	347	1.8	V	-43.1	1.60	11.90	-32.80	-13	19.80
Middle channel										
958.7	31.19	235	2.3	H	-65.3	1.36	0.0	-66.66	-13	53.66
958.7	32.43	296	1.4	V	-61.6	1.36	0.0	-62.96	-13	49.96
3760.00	54.07	252	1.9	H	-48.0	1.50	11.80	-37.70	-13	24.70
3760.00	51.35	244	2.3	V	-50.2	1.50	11.80	-39.90	-13	26.90
High channel										
961.2	31.24	141	2.1	H	-65.3	1.36	0.0	-66.66	-13	53.66
961.2	32.46	349	1.2	V	-61.6	1.36	0.0	-62.96	-13	49.96
3815.20	58.62	185	2.4	H	-43.4	1.50	11.80	-33.10	-13	20.10
3815.20	56.50	211	2.3	V	-45.1	1.50	11.80	-34.80	-13	21.80

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										
955.3	31.15	8	2.4	H	-65.4	1.36	0.0	-66.76	-13	53.76
955.3	32.49	175	1.1	V	-61.6	1.36	0.0	-62.96	-13	49.96
3424.80	65.66	295	1.2	H	-35.1	1.40	11.80	-24.70	-13	11.70
3424.80	60.68	228	2.0	V	-39.9	1.40	11.80	-29.50	-13	16.50
Middle channel										
958.6	31.33	327	1.8	H	-65.2	1.36	0.0	-66.56	-13	53.56
958.6	32.36	186	2.1	V	-61.7	1.36	0.0	-63.06	-13	50.06
3465.20	66.34	205	1.7	H	-34.4	1.50	12.00	-23.90	-13	10.90
3465.20	61.08	270	2.0	V	-40.4	1.50	12.00	-29.90	-13	16.90
High channel										
963.8	31.24	89	2.1	H	-65.3	1.36	0.0	-66.66	-13	53.66
963.8	32.42	297	2.2	V	-61.6	1.36	0.0	-62.96	-13	49.96
3505.20	64.89	192	1.5	H	-35.9	1.50	12.00	-25.40	-13	12.40
3505.20	60.31	186	1.1	V	-41.2	1.50	12.00	-30.70	-13	17.70

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										
1.4MHz, Low channel										
961.6	31.32	347	1.2	H	-65.2	1.36	0.0	-66.56	-13	53.56
961.6	32.48	199	1.3	V	-61.6	1.36	0.0	-62.96	-13	49.96
3701.40	50.23	56	1.5	H	-51.9	1.60	11.90	-41.60	-13	28.60
3701.40	51.43	233	1.8	V	-50.1	1.60	11.90	-39.80	-13	26.80
1.4MHz, Middle channel										
961.3	31.26	315	1.8	H	-65.2	1.36	0.0	-66.56	-13	53.56
961.3	32.43	259	1.6	V	-61.6	1.36	0.0	-62.96	-13	49.96
3760.00	51.46	224	2.5	H	-50.9	1.50	11.80	-40.60	-13	27.60
3760.00	52.10	336	1.0	V	-49.8	1.50	11.80	-39.50	-13	26.50
1.4MHz, High channel										
959.4	31.35	286	1.1	H	-65.2	1.36	0.0	-66.56	-13	53.56
959.4	32.38	262	2.3	V	-61.7	1.36	0.0	-63.06	-13	50.06
3818.60	52.11	89	1.8	H	-50.3	1.50	11.80	-40.00	-13	27.00
3818.60	52.46	238	1.1	V	-49.5	1.50	11.80	-39.20	-13	26.20
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
1.4MHz, Low channel										
963.9	31.28	127	1.2	H	-65.2	1.36	0.0	-66.56	-13	53.56
963.9	32.44	130	1.2	V	-61.6	1.36	0.0	-62.96	-13	49.96
3421.40	60.36	43	1.4	H	-40.9	1.40	11.80	-30.50	-13	17.50
3421.40	55.41	216	1.4	V	-45.6	1.40	11.80	-35.20	-13	22.20
1.4MHz, Middle channel										
958.6	31.31	251	1.4	H	-65.2	1.36	0.0	-66.56	-13	53.56
958.6	32.49	123	1.8	V	-61.6	1.36	0.0	-62.96	-13	49.96
3465.00	62.43	236	2.5	H	-38.4	1.50	12.00	-27.90	-13	14.90
3465.00	56.64	73	1.3	V	-45.0	1.50	12.00	-34.50	-13	21.50
1.4MHz, High channel										
959.7	31.29	26	2.4	H	-65.2	1.36	0.0	-66.56	-13	53.56
959.7	32.46	169	1.8	V	-61.6	1.36	0.0	-62.96	-13	49.96
3508.60	61.33	264	2.2	H	-39.5	1.50	12.00	-29.00	-13	16.00
3508.60	55.87	154	1.5	V	-45.8	1.50	12.00	-35.30	-13	22.30

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										
1.4MHz, Low channel										
956.8	31.24	191	2.2	H	-65.3	1.36	0.0	-66.66	-13	53.66
956.8	32.33	172	2.0	V	-61.7	1.36	0.0	-63.06	-13	50.06
1649.40	56.55	209	1.2	H	-51.5	1.40	8.70	-44.20	-13	31.20
1649.40	54.68	11	1.6	V	-53.2	1.40	8.70	-45.90	-13	32.90
2474.10	47.76	140	1.6	H	-55.6	2.60	10.20	-48.00	-13	35.00
2474.10	47.52	349	1.9	V	-55.2	2.60	10.20	-47.60	-13	34.60
3298.80	44.12	4	1.3	H	-56.8	1.50	11.70	-46.60	-13	33.60
3298.80	43.95	96	1.7	V	-57.0	1.50	11.70	-46.80	-13	33.80
1.4MHz, Middle channel										
964.7	31.28	113	2.1	H	-65.2	1.36	0.0	-66.56	-13	53.56
964.7	32.36	154	1.4	V	-61.7	1.36	0.0	-63.06	-13	50.06
1673.00	57.29	66	2.0	H	-49.0	1.30	8.90	-41.40	-13	28.40
1673.00	55.62	157	2.4	V	-50.1	1.30	8.90	-42.50	-13	29.50
2509.50	48.60	133	1.2	H	-54.8	2.60	10.20	-47.20	-13	34.20
2509.50	48.38	350	1.3	V	-54.4	2.60	10.20	-46.80	-13	33.80
3346.00	44.28	106	2.3	H	-56.6	1.50	11.70	-46.40	-13	33.40
3346.00	44.05	143	1.9	V	-56.9	1.50	11.70	-46.70	-13	33.70
1.4MHz, High channel										
961.2	31.15	247	1.4	H	-65.4	1.36	0.0	-66.76	-13	53.76
961.2	32.38	320	1.9	V	-61.7	1.36	0.0	-63.06	-13	50.06
1696.60	57.23	359	1.9	H	-49.1	1.30	8.90	-41.50	-13	28.50
1696.60	55.31	240	2.3	V	-50.4	1.30	8.90	-42.80	-13	29.80
2544.90	48.93	242	2.4	H	-54.4	2.60	10.20	-46.80	-13	33.80
2544.90	48.57	194	1.0	V	-54.2	2.60	10.20	-46.60	-13	33.60
3393.20	44.36	176	2.0	H	-56.9	1.40	11.80	-46.50	-13	33.50
3393.20	44.06	303	2.0	V	-57.0	1.40	11.80	-46.60	-13	33.60
Band 7										
Test frequency range: 30 MHz ~ 26.5 GHz										
10MHz, Low channel										
957.3	31.19	235	2.4	H	-65.3	1.36	0.0	-66.66	-25	41.66
957.3	32.43	81	2.0	V	-61.6	1.36	0.0	-62.96	-25	37.96
5010.00	45.23	9	1.7	H	-55.4	1.70	12.00	-45.10	-25	20.10
5010.00	46.38	28	2.2	V	-53.7	1.70	12.00	-43.40	-25	18.40
10MHz, Middle channel										
957.6	31.32	122	1.2	H	-65.2	1.36	0.0	-66.56	-25	41.56
951.6	32.37	337	1.3	V	-61.7	1.36	0.0	-63.06	-25	38.06
5070.00	44.95	161	1.6	H	-55.1	1.60	12.10	-44.60	-25	19.60
5070.00	45.39	357	2.3	V	-54.6	1.60	12.10	-44.10	-25	19.10
10MHz, High channel										
966.8	31.34	47	2.3	H	-65.2	1.36	0.0	-66.56	-25	41.56
966.8	32.45	141	1.1	V	-61.6	1.36	0.0	-62.96	-25	37.96
5130.00	44.85	0	1.5	H	-55.2	1.60	12.10	-44.70	-25	19.70
5130.00	45.79	166	1.1	V	-54.2	1.60	12.10	-43.70	-25	18.70

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 12										
Test frequency range: 30 MHz ~ 10 GHz										
1.4MHz, Low channel										
962.5	31.23	223	2.4	H	-65.3	1.36	0.0	-66.66	-13	53.66
962.5	32.41	158	1.4	V	-61.6	1.36	0.0	-62.96	-13	49.96
1399.40	46.52	240	2.2	H	-61.7	1.60	7.90	-55.40	-13	42.40
1399.40	47.85	327	1.8	V	-60.6	1.60	7.90	-54.30	-13	41.30
2099.10	43.68	175	2.3	H	-57.4	1.30	9.70	-49.00	-13	36.00
2099.10	44.23	260	1.9	V	-57.7	1.30	9.70	-49.30	-13	36.30
2798.80	50.12	40	2.0	H	-53.8	1.80	10.50	-45.10	-13	32.10
2798.80	51.32	153	1.3	V	-52.3	1.80	10.50	-43.60	-13	30.60
1.4MHz, Middle channel										
961.7	31.29	114	1.1	H	-65.2	1.36	0.0	-66.56	-13	53.56
961.7	32.31	227	1.6	V	-61.7	1.36	0.0	-63.06	-13	50.06
1415.00	46.82	82	1.5	H	-61.4	1.60	7.90	-55.10	-13	42.10
1415.00	47.97	147	1.0	V	-60.5	1.60	7.90	-54.20	-13	41.20
2122.50	43.61	279	1.3	H	-57.5	1.30	9.70	-49.10	-13	36.10
2122.50	44.12	220	2.1	V	-57.8	1.30	9.70	-49.40	-13	36.40
2830.00	49.84	35	1.2	H	-54.1	1.80	10.50	-45.40	-13	32.40
2830.00	50.95	127	1.5	V	-52.7	1.80	10.50	-44.00	-13	31.00
1.4MHz, High channel										
963.6	31.24	349	1.9	H	-65.3	1.36	0.0	-66.66	-13	53.66
963.6	32.34	94	2.2	V	-61.7	1.36	0.0	-63.06	-13	50.06
1430.60	45.36	348	1.9	H	-62.8	1.60	7.90	-56.50	-13	43.50
1430.60	46.92	316	1.6	V	-61.5	1.60	7.90	-55.20	-13	42.20
2145.90	44.02	200	2.5	H	-57.1	1.30	9.70	-48.70	-13	35.70
2145.90	44.74	336	1.3	V	-57.2	1.30	9.70	-48.80	-13	35.80
2861.20	49.55	72	2.4	H	-55.1	1.70	10.70	-46.10	-13	33.10
2861.20	50.62	292	1.1	V	-54.1	1.70	10.70	-45.10	-13	32.10

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level	Limit	Margin
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)	(dBm)	(dBm)	(dB)
Band 13										
Test frequency range: 30 MHz ~ 10GHz										
5MHz, Low channel										
962.3	31.38	31	1.5	H	-65.1	1.36	0.0	-66.46	-13	53.46
962.3	32.46	340	2.1	V	-61.6	1.36	0.0	-62.96	-13	49.96
1559.00	47.37	175	2.2	H	-60.7	1.40	8.70	-53.40	-40	13.40
1559.00	44.48	17	2.1	V	-63.4	1.40	8.70	-56.10	-40	16.10
2338.50	43.37	253	1.3	H	-61.9	1.30	10.00	-53.20	-13	40.20
2338.50	43.98	154	1.4	V	-61.2	1.30	10.00	-52.50	-13	39.50
3118.00	44.00	154	1.9	H	-57.6	1.70	11.30	-48.00	-13	35.00
3118.00	43.67	87	2.3	V	-57.8	1.70	11.30	-48.20	-13	35.20
5MHz, Middle channel										
959.3	31.33	128	1.1	H	-65.2	1.36	0.0	-66.56	-13	53.56
959.3	32.42	257	1.9	V	-61.6	1.36	0.0	-62.96	-13	49.96
1564.00	47.69	346	2.0	H	-60.4	1.40	8.70	-53.10	-40	13.10
1564.00	44.30	213	2.0	V	-63.6	1.40	8.70	-56.30	-40	16.30
2346.00	43.32	205	1.5	H	-62.0	1.30	10.00	-53.30	-13	40.30
2346.00	43.36	359	2.2	V	-61.8	1.30	10.00	-53.10	-13	40.10
3128.00	43.66	194	1.3	H	-57.9	1.70	11.30	-48.30	-13	35.30
3128.00	44.08	169	1.4	V	-57.4	1.70	11.30	-47.80	-13	34.80
5MHz, High channel										
960.1	31.25	41	1.0	H	-65.3	1.36	0.0	-66.66	-13	53.66
960.1	32.41	207	1.5	V	-61.6	1.36	0.0	-62.96	-13	49.96
1569.00	44.10	273	1.8	H	-64.0	1.40	8.70	-56.70	-40	16.70
1569.00	44.81	9	1.7	V	-63.0	1.40	8.70	-55.70	-40	15.70
2353.50	52.01	165	2.2	H	-52.3	2.30	10.10	-44.50	-13	31.50
2353.50	54.22	164	2.1	V	-49.2	2.30	10.10	-41.40	-13	28.40
3138.00	44.03	353	1.2	H	-57.6	1.70	11.30	-48.00	-13	35.00
3138.00	44.39	112	1.7	V	-57.1	1.70	11.30	-47.50	-13	34.50

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 17										
Test frequency range: 30 MHz ~ 10 GHz										
10MHz, Low channel										
965.3	31.18	329	2.2	H	-65.3	1.36	0.0	-66.66	-13	53.66
965.3	32.43	205	1.8	V	-61.6	1.36	0.0	-62.96	-13	49.96
1418.00	47.24	8	1.3	H	-60.9	1.60	7.90	-54.60	-13	41.60
1418.00	44.82	182	1.3	V	-63.6	1.60	7.90	-57.30	-13	44.30
2127.00	43.60	216	1.2	H	-57.5	1.30	9.70	-49.10	-13	36.10
2127.00	43.94	288	2.5	V	-58.0	1.30	9.70	-49.60	-13	36.60
2836.00	49.95	149	1.4	H	-54.0	1.80	10.50	-45.30	-13	32.30
2836.00	45.86	184	1.9	V	-57.8	1.80	10.50	-49.10	-13	36.10
10MHz, Middle channel										
960.6	31.26	175	1.1	H	-65.2	1.36	0.0	-66.56	-13	53.56
960.6	32.39	92	1.4	V	-61.7	1.36	0.0	-63.06	-13	50.06
1420.00	48.41	41	2.1	H	-59.8	1.60	7.90	-53.50	-13	40.50
1420.00	45.33	65	1.5	V	-63.1	1.60	7.90	-56.80	-13	43.80
2130.00	44.72	104	1.1	H	-56.4	1.30	9.70	-48.00	-13	35.00
2130.00	43.65	23	1.7	V	-58.3	1.30	9.70	-49.90	-13	36.90
2840.00	48.97	55	2.4	H	-55.0	1.80	10.50	-46.30	-13	33.30
2840.00	45.07	255	1.6	V	-58.5	1.80	10.50	-49.80	-13	36.80
10MHz, High channel										
965.8	31.21	267	2.0	H	-65.3	1.36	0.0	-66.66	-13	53.66
965.8	32.29	134	2.0	V	-61.8	1.36	0.0	-63.16	-13	50.16
1422.00	47.56	265	2.0	H	-60.6	1.60	7.90	-54.30	-13	41.30
1422.00	45.12	22	1.0	V	-63.3	1.60	7.90	-57.00	-13	44.00
2133.00	43.78	256	1.8	H	-57.3	1.30	9.70	-48.90	-13	35.90
2133.00	44.15	276	1.9	V	-57.8	1.30	9.70	-49.40	-13	36.40
2844.00	48.86	140	1.8	H	-55.1	1.80	10.50	-46.40	-13	33.40
2844.00	44.96	2	2.0	V	-58.7	1.80	10.50	-50.00	-13	37.00

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 66										
Test frequency range: 30 MHz ~ 20GHz										
1.4MHz, Low channel										
963.2	31.34	195	2.4	H	-65.2	1.36	0.0	-66.56	-13	53.56
963.2	32.32	234	2.2	V	-61.7	1.36	0.0	-63.06	-13	50.06
3421.40	57.32	138	1.0	H	-43.5	1.40	11.80	-33.10	-13	20.10
3421.40	55.41	147	2.1	V	-45.2	1.40	11.80	-34.80	-13	21.80
1.4MHz, Middle channel										
962.1	31.37	173	1.8	H	-65.1	1.36	0.0	-66.46	-13	53.46
962.1	32.47	244	2.3	V	-61.6	1.36	0.0	-62.96	-13	49.96
3510.00	57.50	288	1.4	H	-43.2	1.50	12.00	-32.70	-13	19.70
3510.00	55.70	58	2.3	V	-45.8	1.50	12.00	-35.30	-13	22.30
1.4MHz, High channel										
963.0	31.23	61	2.4	H	-65.3	1.36	0.0	-66.66	-13	53.66
963.0	32.33	162	2.5	V	-61.7	1.36	0.0	-63.06	-13	50.06
3558.60	56.98	138	1.2	H	-44.6	1.50	12.10	-34.00	-13	21.00
3558.60	54.77	190	1.7	V	-46.3	1.50	12.10	-35.70	-13	22.70

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

dBd is for the ERP, dBi is for EIRP.

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

Applicable Standard

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

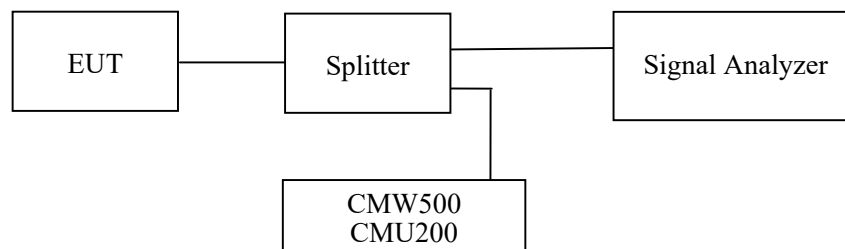
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §27.53 (c)(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:	26~28.1 °C
Relative Humidity:	53~65 %
ATM Pressure:	101.0 kPa

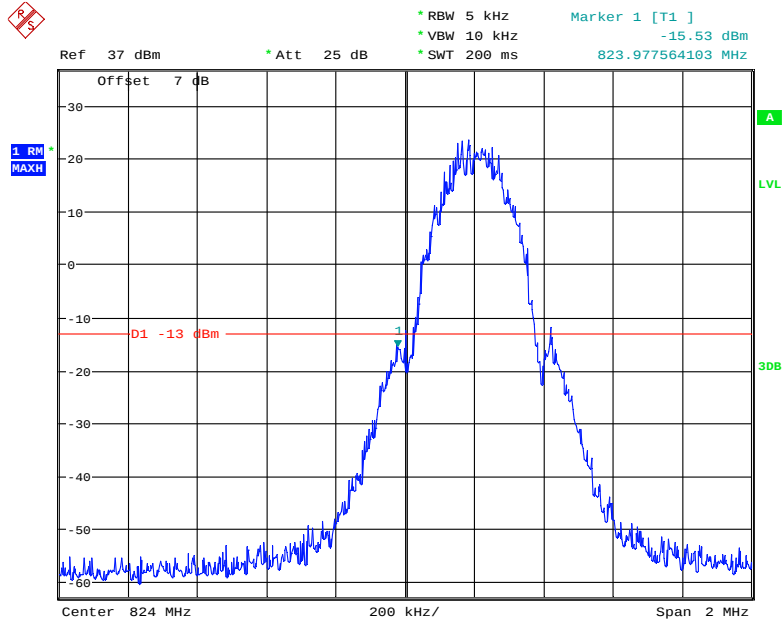
The testing was performed by Orlo Yang and Pedro Yun from 2021-06-10 to 2021-07-16.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

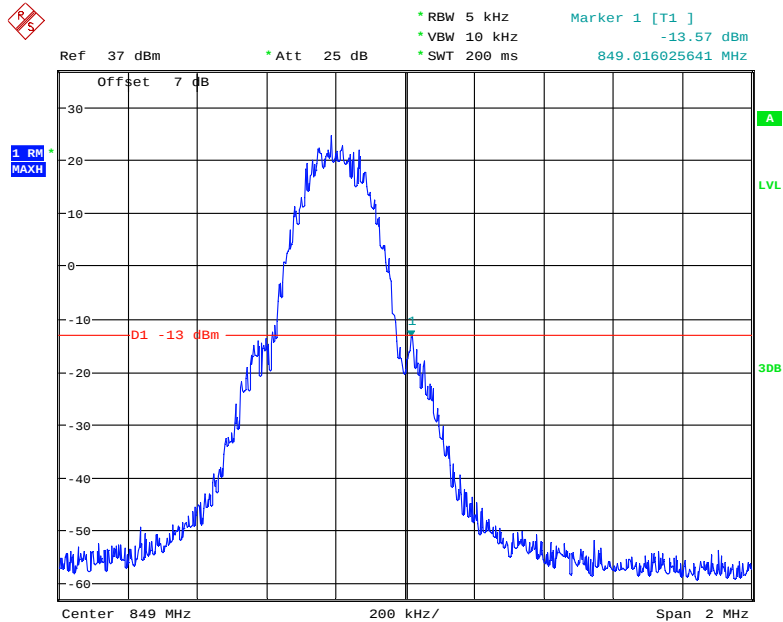
Please refer to the following plots.

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



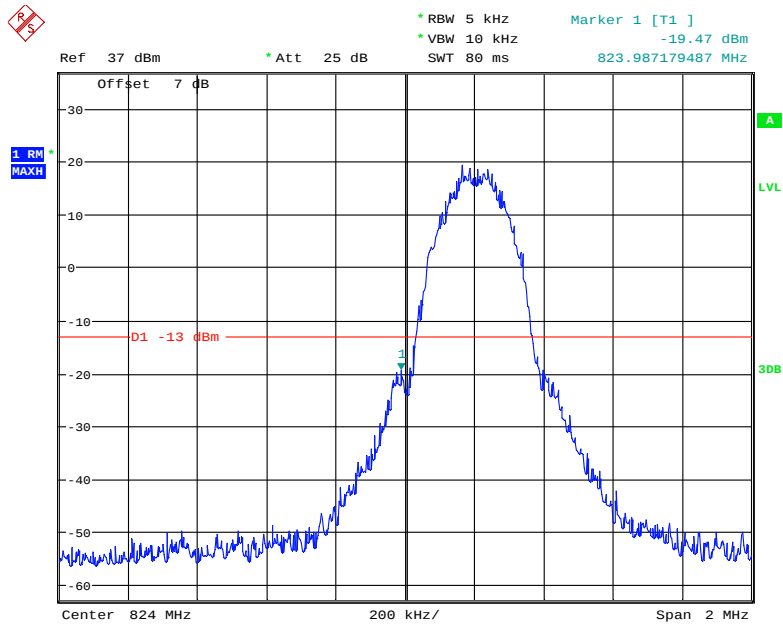
Date: 10.JUN.2021 10:39:08

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



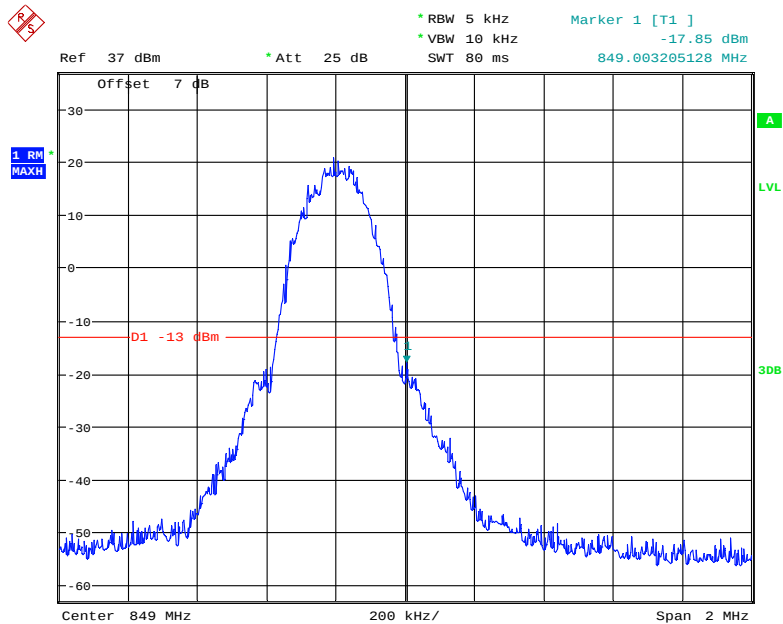
Date: 10.JUN.2021 10:42:08

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



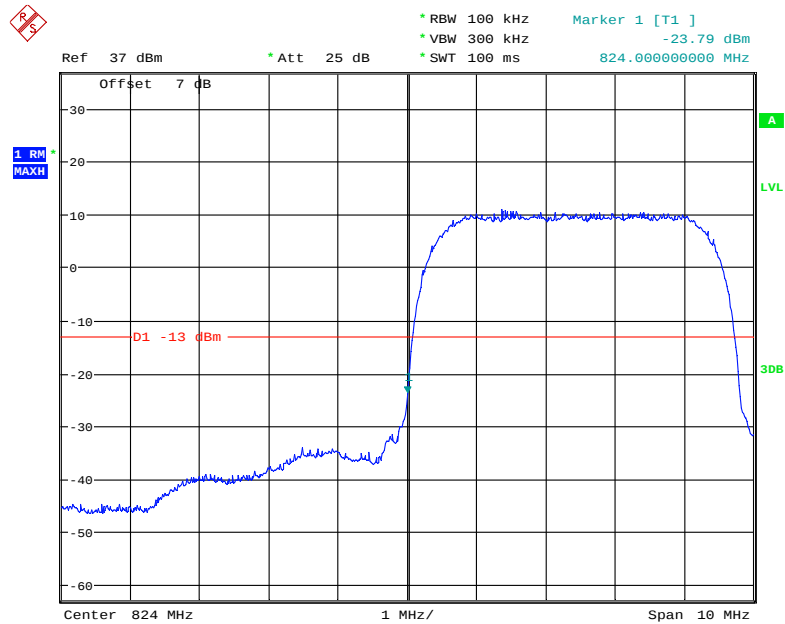
Date: 10.JUN.2021 10:44:45

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



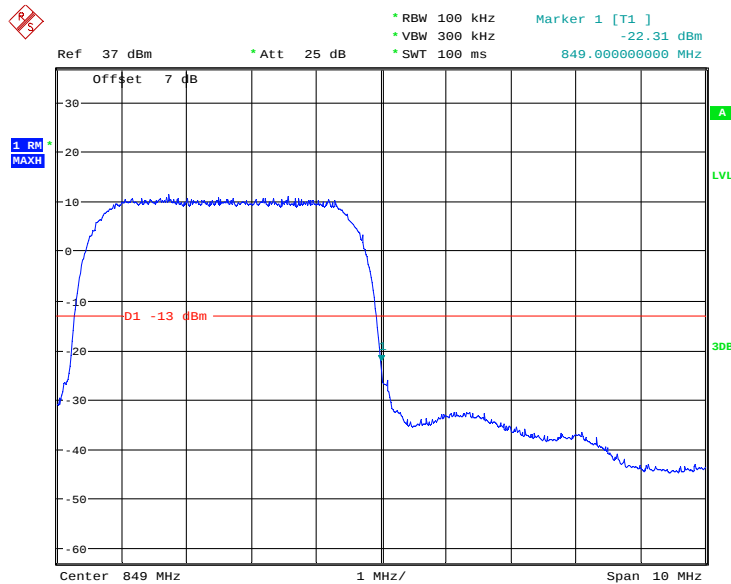
Date: 10.JUN.2021 10:44:05

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



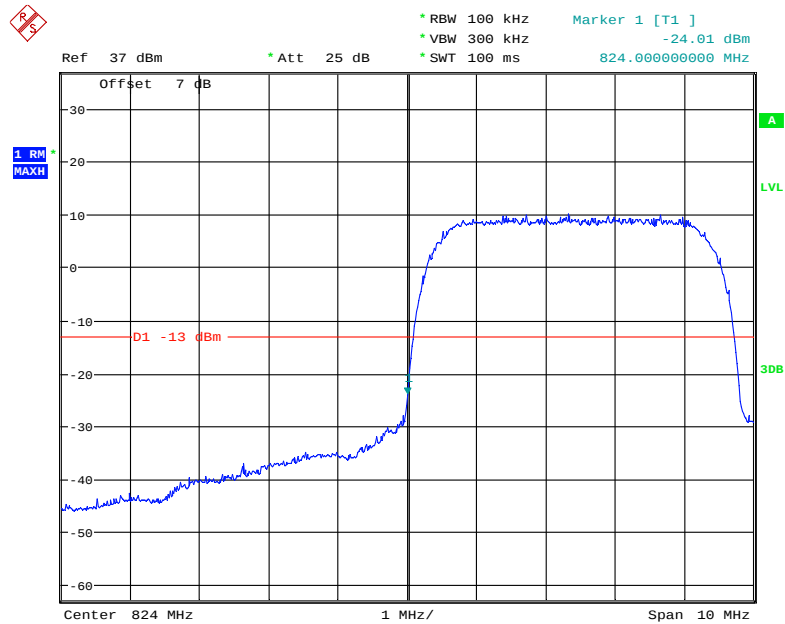
Date: 10.JUN.2021 11:39:44

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



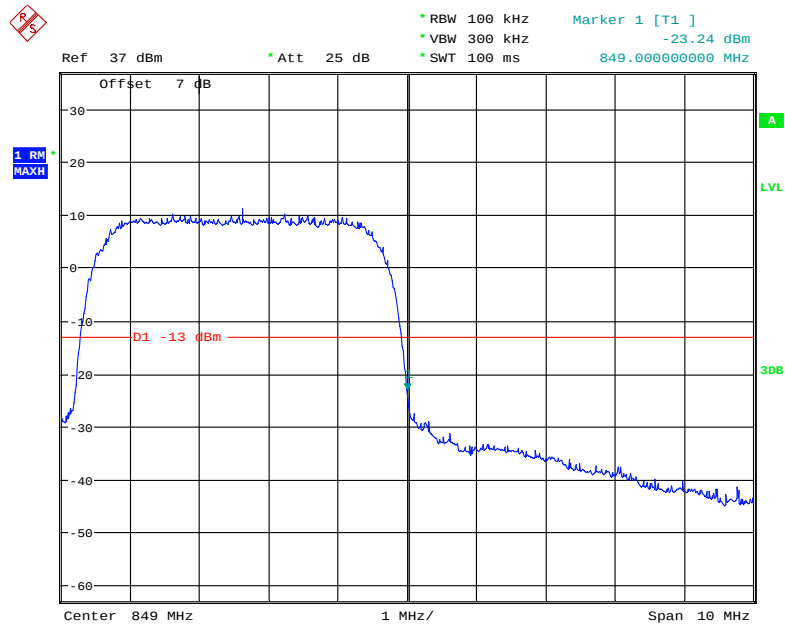
Date: 10.JUN.2021 11:38:49

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



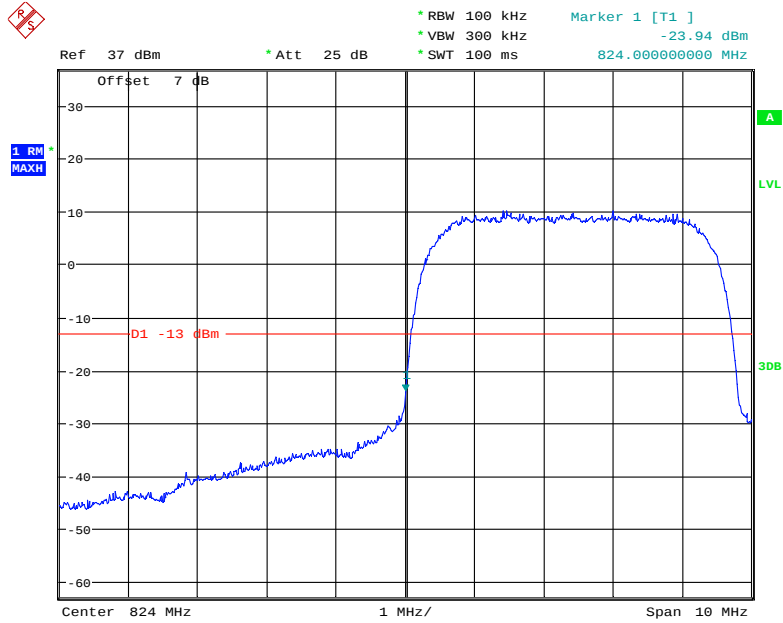
Date: 10.JUN.2021 11:34:48

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



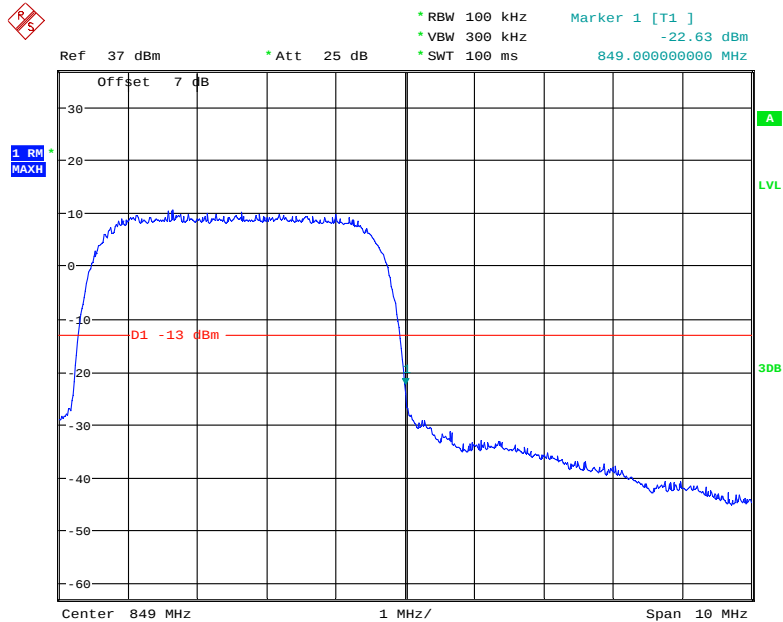
Date: 10.JUN.2021 11:35:21

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



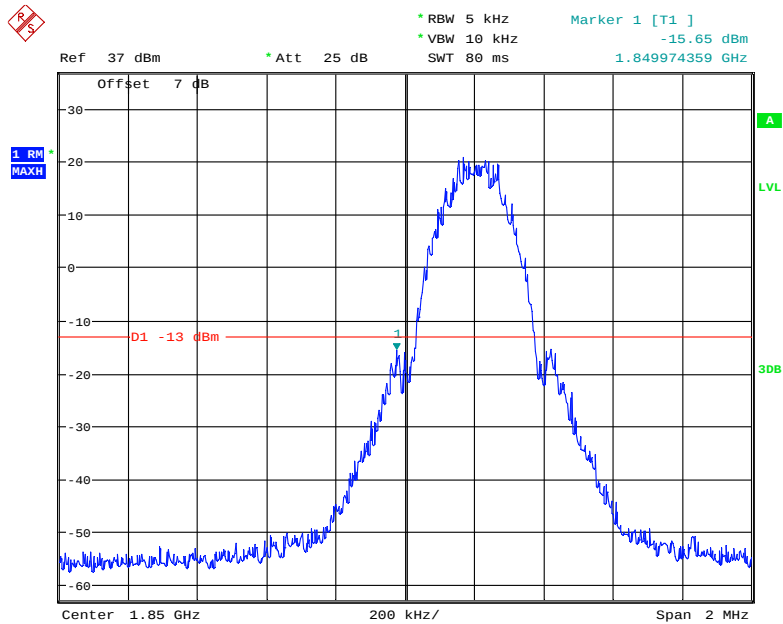
Date: 10.JUN.2021 11:40:15

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



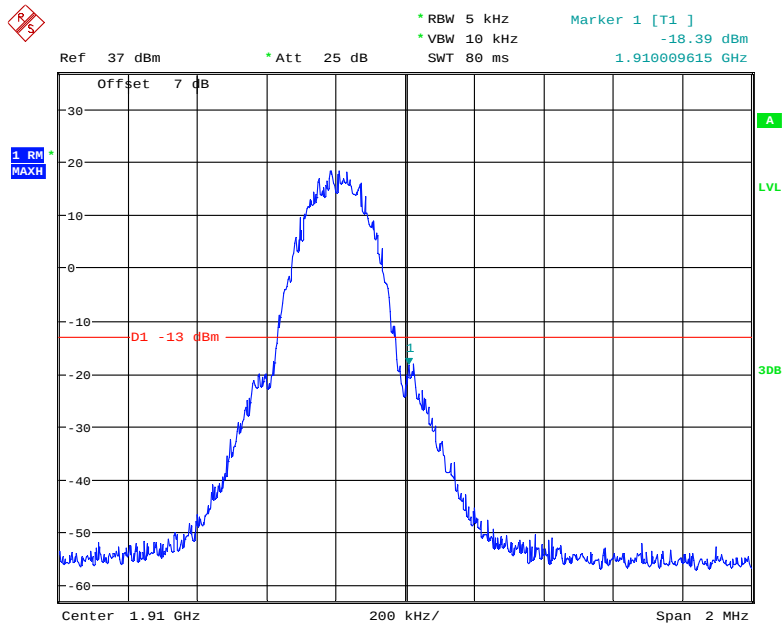
Date: 10.JUN.2021 11:40:42

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



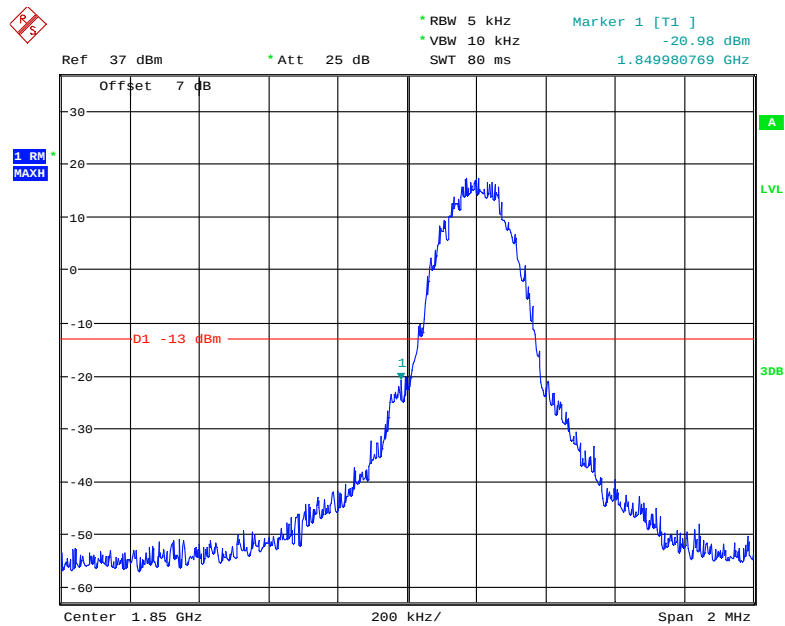
Date: 10.JUN.2021 10:47:04

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



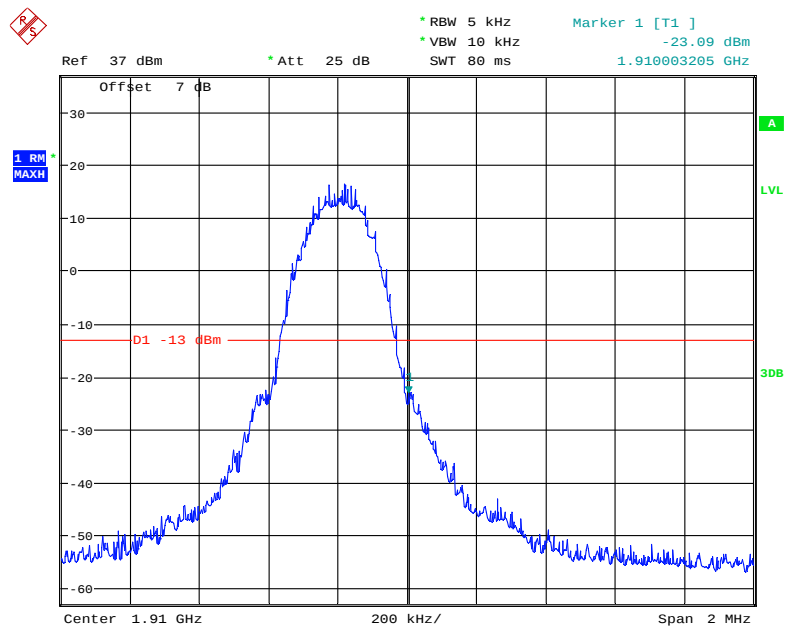
Date: 10.JUN.2021 10:48:52

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



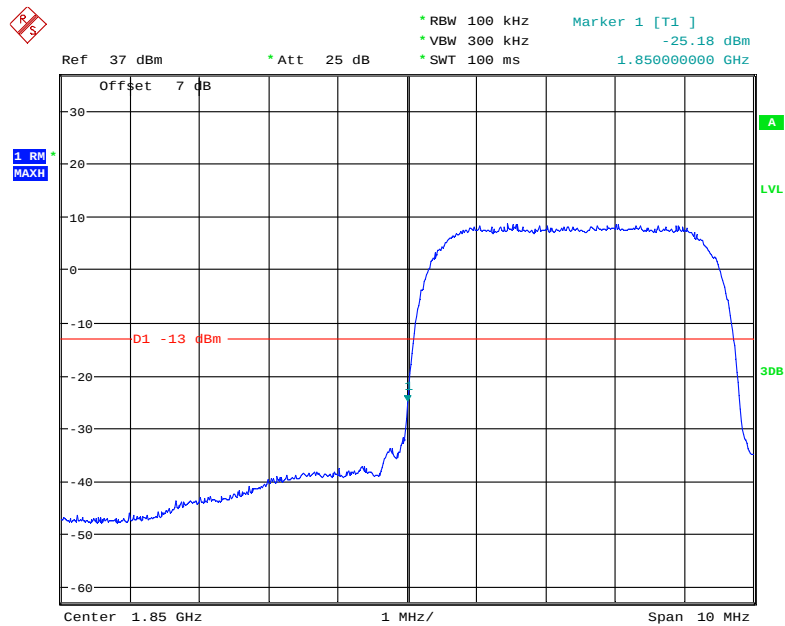
Date: 10.JUN.2021 10:50:21

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



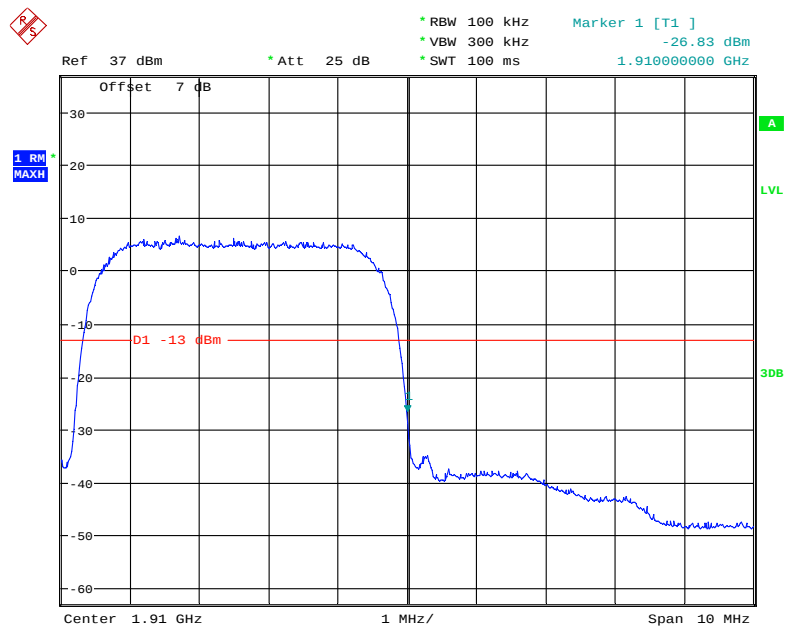
Date: 10.JUN.2021 10:51:28

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



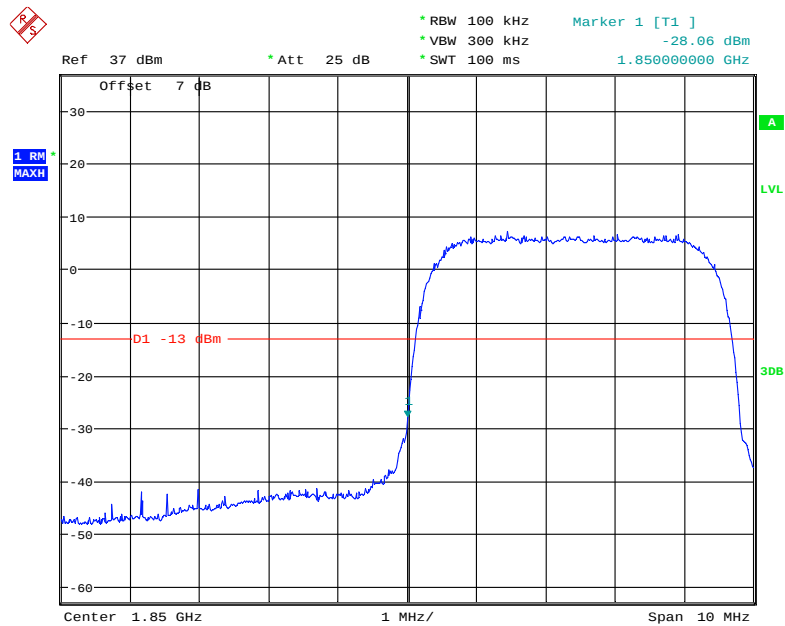
Date: 10.JUN.2021 11:29:36

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



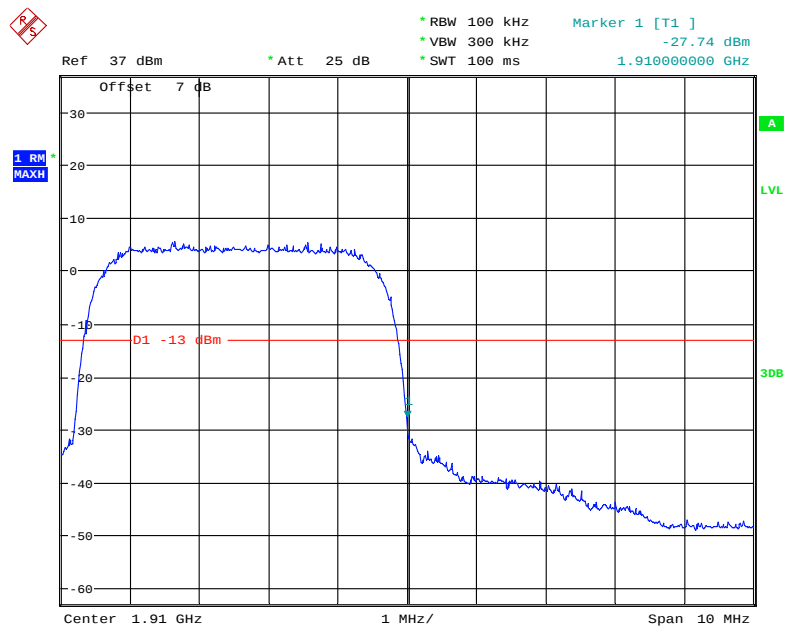
Date: 10.JUN.2021 11:30:46

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



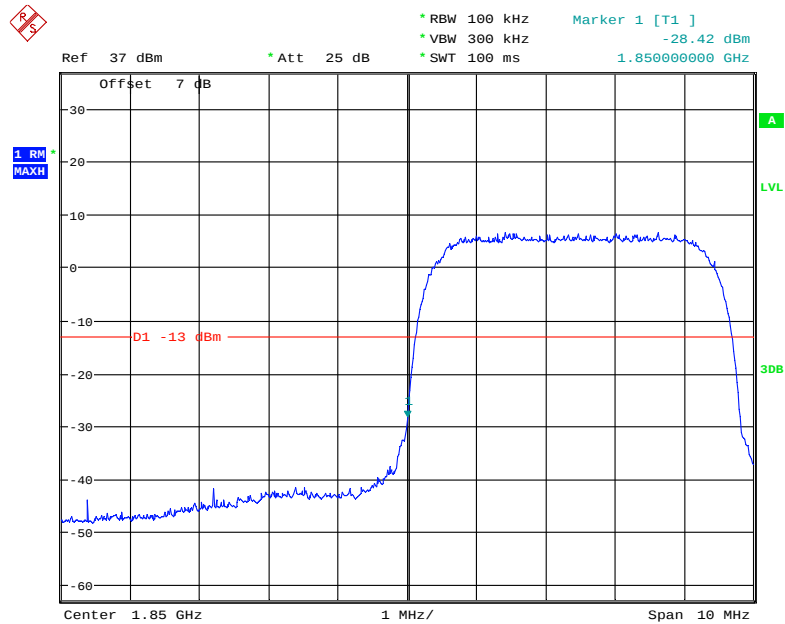
Date: 10.JUN.2021 11:33:07

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



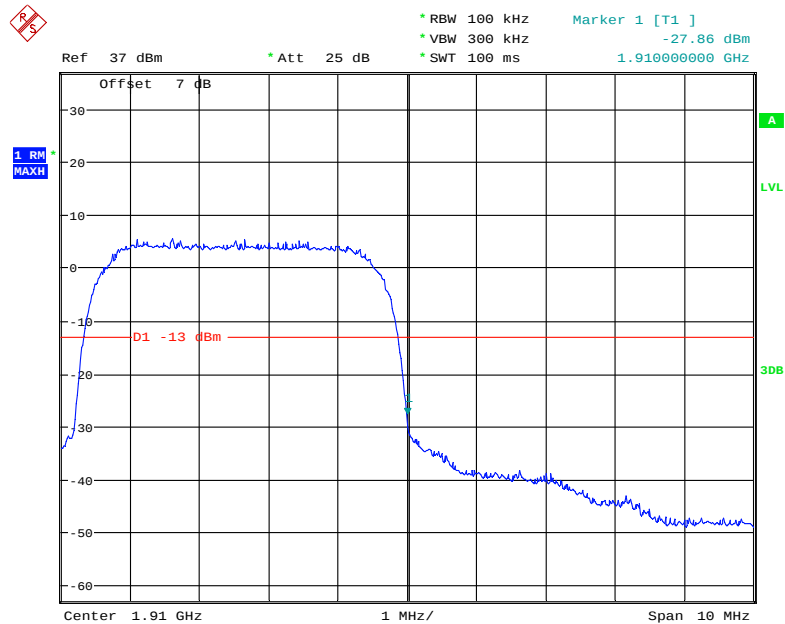
Date: 10.JUN.2021 11:33:49

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



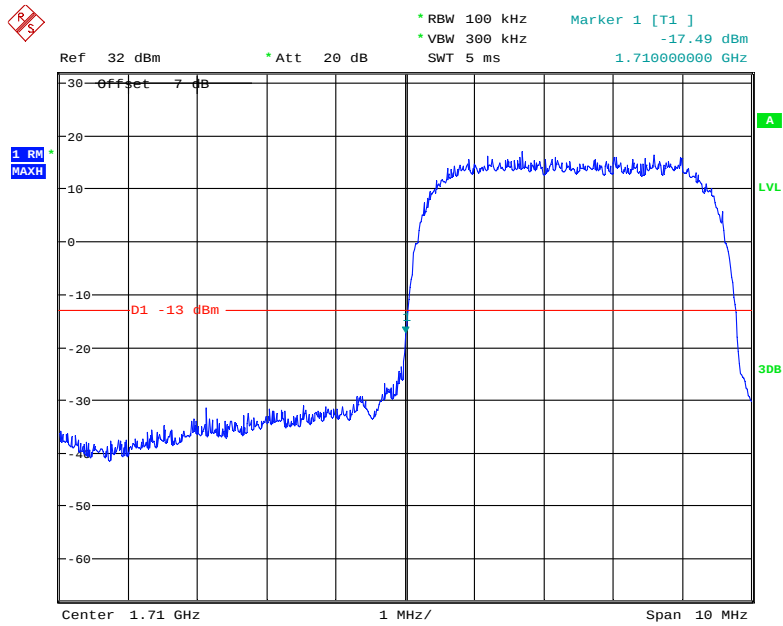
Date: 10.JUN.2021 11:32:07

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



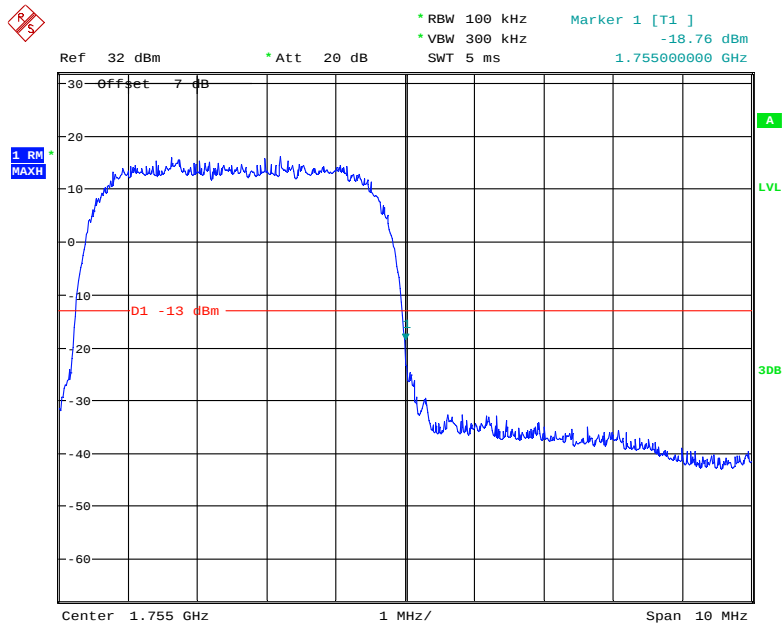
Date: 10.JUN.2021 11:31:33

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



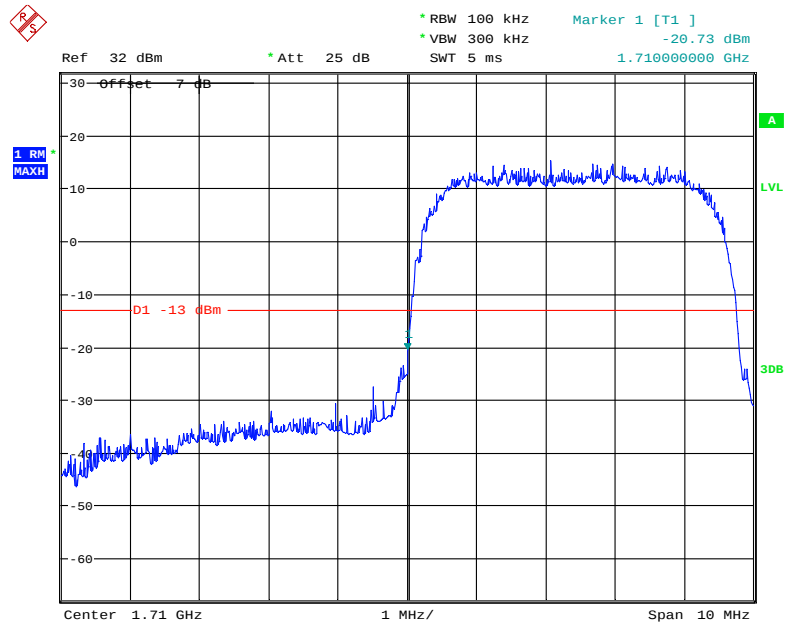
Date: 10.JUL.2021 16:45:46

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



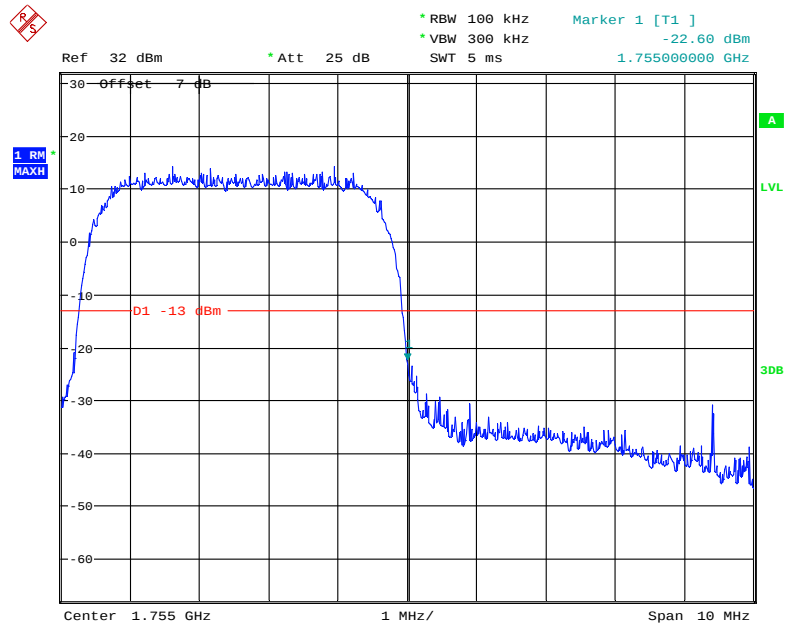
Date: 10.JUL.2021 16:44:57

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



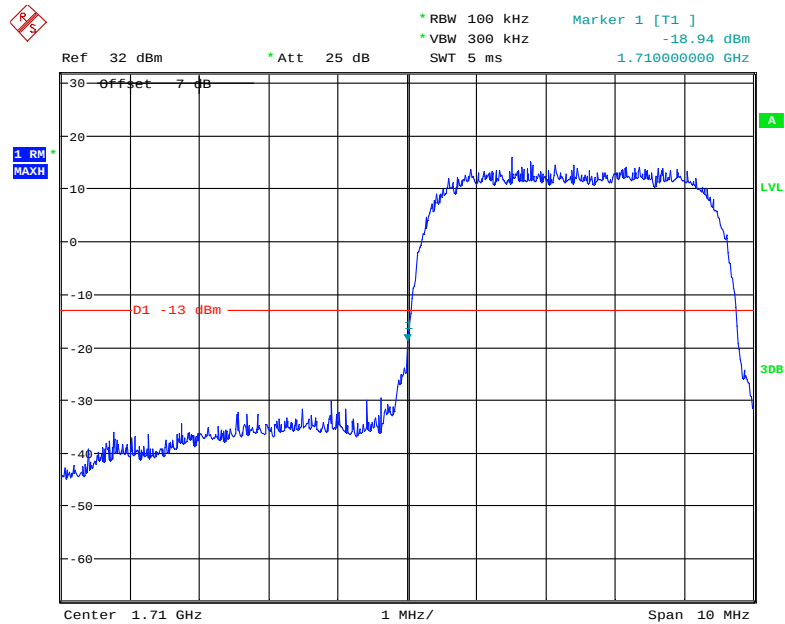
Date: 10.JUL.2021 16:49:37

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



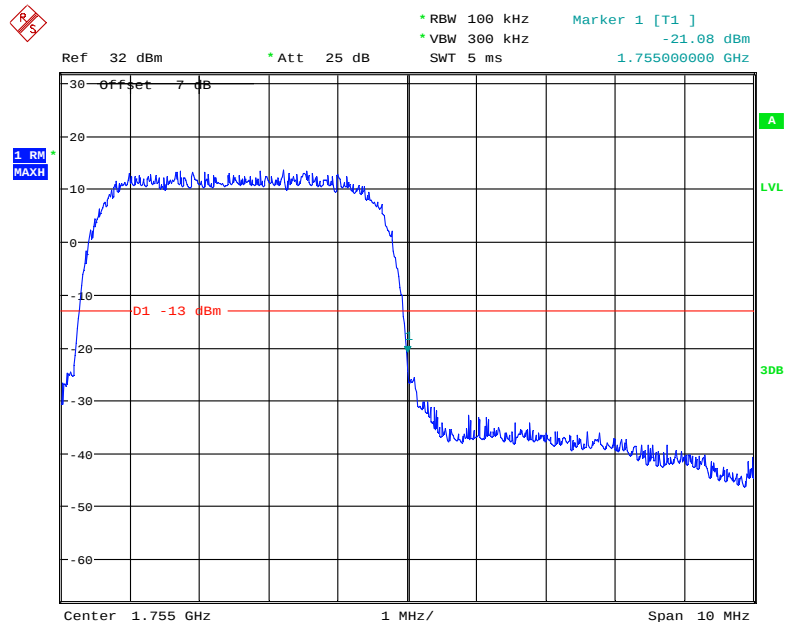
Date: 10.JUL.2021 16:50:29

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



Date: 10.JUL.2021 17:02:16

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



Date: 10.JUL.2021 17:01:38

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 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

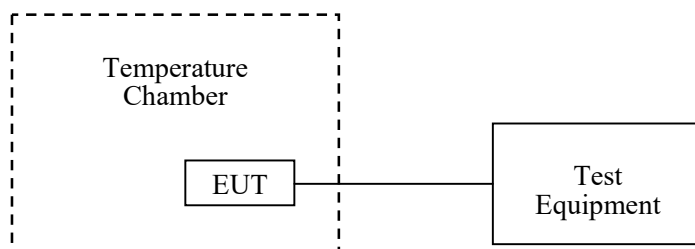
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.

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:	26~28.1 °C
Relative Humidity:	53~65 %
ATM Pressure:	101.0 kPa

The testing was performed by Orlo Yang and Pedro Yun from 2021-06-09 to 2021-06-11.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

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

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	NV	3	0.0036	2.5
-20		2	0.0024	2.5
-10		0	0.0000	2.5
0		2	0.0024	2.5
10		3	0.0036	2.5
20		5	0.0060	2.5
30		6	0.0072	2.5
40		7	0.0084	2.5
50		3	0.0036	2.5
20	LV	2	0.0024	2.5
	HV	2	0.0024	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	NV	4	0.0048	2.5
-20		5	0.0060	2.5
-10		7	0.0084	2.5
0		4	0.0048	2.5
10		6	0.0072	2.5
20		5	0.0060	2.5
30		7	0.0084	2.5
40		6	0.0072	2.5
50		8	0.0096	2.5
20	LV	4	0.0048	2.5
	HV	6	0.0072	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	1	0.0012	2.5
-20		2	0.0024	2.5
-10		-2	-0.0024	2.5
0		1	0.0012	2.5
10		3	0.0036	2.5
20		5	0.0060	2.5
30		7	0.0084	2.5
40		1	0.0012	2.5
50		2	0.0024	2.5
20	LV	3	0.0036	2.5
	HV	2	0.0024	2.5

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

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	-1	-0.0005	Pass
-20		4	0.0021	Pass
-10		2	0.0011	Pass
0		1	0.0005	Pass
10		-2	-0.0011	Pass
20		-1	-0.0005	Pass
30		-4	-0.0021	Pass
40		-6	-0.0032	Pass
50		-3	-0.0016	Pass
20	LV	-4	-0.0021	Pass
	HV	-6	-0.0032	Pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	-3	-0.0016	Pass
-20		-7	-0.0037	Pass
-10		-5	-0.0027	Pass
0		-6	-0.0032	Pass
10		-4	-0.0021	Pass
20		2	0.0011	Pass
30		-3	-0.0016	Pass
40		-5	-0.0027	Pass
50		-3	-0.0016	Pass
20	LV	-2	-0.0011	Pass
	HV	-4	-0.0021	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	-2	-0.0011	Pass
-20		5	0.0027	Pass
-10		-3	-0.0016	Pass
0		8	0.0043	Pass
10		-6	-0.0032	Pass
20		-2	-0.0011	Pass
30		1	0.0005	Pass
40		4	0.0021	Pass
50		2	0.0011	Pass
20	LV	-5	-0.0027	Pass
	HV	-1	-0.0005	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	NV	1710.0448	1754.9311	1710	1755
-20		1710.0291	1754.9847	1710	1755
-10		1710.0356	1754.9867	1710	1755
0		1710.0460	1754.9544	1710	1755
10		1710.0351	1754.9357	1710	1755
20		1710.0318	1754.9164	1710	1755
30		1710.0622	1754.9338	1710	1755
40		1710.0233	1754.9703	1710	1755
50		1710.0058	1754.9281	1710	1755
20	LV	1710.0586	1754.9397	1710	1755
	HV	1710.0467	1754.9398	1710	1755

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	-5.58	-0.0030	Pass
-20		-9.78	-0.0052	Pass
-10		-6.02	-0.0032	Pass
0		6.13	0.0033	Pass
10		7.85	0.0042	Pass
20		6.54	0.0035	Pass
30		-6.32	-0.0034	Pass
40		7.11	0.0038	Pass
50		-9.52	-0.0051	Pass
20	LV	-8.25	-0.0044	Pass
	HV	-7.14	-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	1710.6283	1754.5117	1710	1755
-20		1710.2865	1754.4580	1710	1755
-10		1710.3975	1754.5281	1710	1755
0		1710.0927	1754.8039	1710	1755
10		1710.5102	1754.5732	1710	1755
20		1710.6195	1754.4990	1710	1755
30		1710.0876	1754.7584	1710	1755
40		1710.5751	1754.3416	1710	1755
50		1710.3492	1754.9208	1710	1755
20	LV	1710.4589	1754.7379	1710	1755
	HV	1710.0205	1754.6614	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	NV	-8.96	-0.0107	2.5
-20		9.05	0.0108	2.5
-10		8.22	0.0098	2.5
0		-7.02	-0.0084	2.5
10		-5.18	-0.0062	2.5
20		7.48	0.0089	2.5
30		-5.69	-0.0068	2.5
40		5.24	0.0063	2.5
50		6.78	0.0081	2.5
20	LV	9.76	0.0117	2.5
	HV	9.96	0.0119	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	NV	2500.4967	2569.2843	2500	2570
-20		2500.4246	2569.4141	2500	2570
-10		2500.4729	2569.5763	2500	2570
0		2500.6696	2569.5681	2500	2570
10		2500.4001	2569.6617	2500	2570
20		2500.5860	2569.7342	2500	2570
30		2500.2783	2569.4567	2500	2570
40		2500.4116	2569.7932	2500	2570
50		2500.6440	2569.4607	2500	2570
20	LV	2500.6264	2569.4011	2500	2570
	HV	2500.4686	2569.5612	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	699.4069	715.2629	699	716
-20		699.5427	715.4291	699	716
-10		699.4721	715.5749	699	716
0		699.6537	715.4177	699	716
10		699.2474	715.4979	699	716
20		699.6959	715.5741	699	716
30		699.2990	715.3669	699	716
40		699.6995	715.6838	699	716
50		699.5133	715.4171	699	716
20	LV	699.3050	715.7794	699	716
	HV	699.4147	715.5768	699	716

Band 13

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	777.4791	786.7859	777	787
-20		777.2067	786.5550	777	787
-10		777.3385	786.6096	777	787
0		777.5677	786.4211	777	787
10		777.0232	786.8429	777	787
20		777.3656	786.6352	777	787
30		777.6943	786.6614	777	787
40		777.2006	786.5713	777	787
50		777.4090	786.2970	777	787
20	LV	777.3083	786.4011	777	787
	HV	777.2347	786.9872	777	787

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	704.4424	715.6945	704	716
-20		704.3437	715.4498	704	716
-10		704.3385	715.6096	704	716
0		704.4426	715.5033	704	716
10		704.1749	715.6702	704	716
20		704.3788	715.5699	704	716
30		704.3447	715.6690	704	716
40		704.4019	715.6635	704	716
50		704.2769	715.5651	704	716
20	LV	704.2361	715.5615	704	716
	HV	704.3326	715.7547	704	716

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	NV	1710.4513	1779.6179	1710	1780
-20		1710.3441	1779.9233	1710	1780
-10		1710.3385	1779.6096	1710	1780
0		1710.2763	1779.7573	1710	1780
10		1710.2719	1779.8253	1710	1780
20		1710.2899	1779.3616	1710	1780
30		1710.5960	1779.7398	1710	1780
40		1710.3374	1779.5720	1710	1780
50		1710.3919	1779.6338	1710	1780
20	LV	1710.6017	1779.4716	1710	1780
	HV	1710.2831	1779.5867	1710	1780

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	NV	-8	-0.0043	Pass
-20		-7	-0.0037	Pass
-10		12	0.0064	Pass
0		-5	-0.0027	Pass
10		7	0.0037	Pass
20		-9	-0.0048	Pass
30		-7	-0.0037	Pass
40		-5	-0.0027	Pass
50		11	0.0059	Pass
20	LV	10	0.0053	Pass
	HV	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	NV	1710.0441	1754.3002	1710	1755
-20		1710.2756	1754.4726	1710	1755
-10		1710.5072	1754.5642	1710	1755
0		1710.1378	1754.6906	1710	1755
10		1710.6104	1754.7914	1710	1755
20		1710.0708	1754.2685	1710	1755
30		1710.3292	1754.5444	1710	1755
40		1710.4951	1754.7236	1710	1755
50		1710.4050	1754.4344	1710	1755
20	LV	1710.3727	1754.7659	1710	1755
	HV	1710.4135	1754.2062	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	NV	-3.54	-0.0042	2.5
-20		6.78	0.0081	2.5
-10		-9.42	-0.0113	2.5
0		-8.35	-0.0100	2.5
10		-8.78	-0.0105	2.5
20		-9.65	-0.0115	2.5
30		8.21	0.0098	2.5
40		6.69	0.0080	2.5
50		-5.74	-0.0069	2.5
20	LV	8.93	0.0107	2.5
	HV	-7.86	-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	NV	2500.4548	2569.3212	2500	2570
-20		2500.4156	2569.5264	2500	2570
-10		2500.5102	2569.5386	2500	2570
0		2500.5782	2569.7457	2500	2570
10		2500.8104	2569.5888	2500	2570
20		2500.4781	2569.5565	2500	2570
30		2500.5076	2569.7882	2500	2570
40		2500.1249	2569.6498	2500	2570
50		2500.6801	2569.4418	2500	2570
20	LV	2500.7441	2569.5537	2500	2570
	HV	2500.3528	2569.6549	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	699.5539	715.4203	699	716
-20		699.7720	715.4618	699	716
-10		699.4721	715.5749	699	716
0		699.5316	715.4992	699	716
10		699.3658	715.4645	699	716
20		699.7136	715.8501	699	716
30		699.5687	715.4540	699	716
40		699.7019	715.6313	699	716
50		699.3275	715.2975	699	716
20	LV	699.1145	715.3171	699	716
	HV	699.3905	715.6675	699	716

Band 13

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	777.6291	786.7022	777	787
-20		777.2760	786.5967	777	787
-10		777.3385	786.6096	777	787
0		777.1595	786.4161	777	787
10		777.1188	786.7047	777	787
20		777.4657	786.6796	777	787
30		777.2153	786.6060	777	787
40		777.0707	786.7660	777	787
50		777.1857	786.5644	777	787
20	LV	777.5850	786.7953	777	787
	HV	777.4490	786.9409	777	787

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	704.4578	715.7266	704	716
-20		704.3794	715.4848	704	716
-10		704.3385	715.6096	704	716
0		704.1980	715.5517	704	716
10		704.5622	715.7521	704	716
20		704.3058	715.4945	704	716
30		704.2345	715.4879	704	716
40		704.4350	715.7611	704	716
50		704.4708	715.6319	704	716
20	LV	704.3954	715.8849	704	716
	HV	704.3600	715.5751	704	716

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	NV	1710.1851	1779.8043	1710	1780
-20		1710.5476	1779.7387	1710	1780
-10		1710.3385	1779.6096	1710	1780
0		1710.1878	1779.6426	1710	1780
10		1710.0771	1779.6329	1710	1780
20		1710.5233	1779.7318	1710	1780
30		1710.4108	1779.5454	1710	1780
40		1710.3964	1779.7836	1710	1780
50		1710.4996	1779.7352	1710	1780
20	LV	1710.4950	1779.4139	1710	1780
	HV	1710.1891	1779.8692	1710	1780

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