



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

For

**SENWA MEXICO,S.A.DE C.V**

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

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Product	Mobile Phone
Tested Model	D55L
Frequency Range	EGSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 66: 1710-1780MHz(TX); 2110-2180MHz(RX)
Modulation Technique	2G: GMSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	EGSM850/WCDMA Band 5/LTE Band 5: -0.1dBi PCS1900/WCDMA Band 2/LTE Band 2: 1.0dBi WCDMA Band 4/LTE Band 4: 0.7dBi LTE Band 7: 0.8dBi LTE Band 66: 0.7dBi (provided by the applicant)
Voltage Range	DC 3.8 V from battery or DC5.0V from adapter
Date of Test	2021-05-11 to 2021-06-15
Sample serial number	SZ1210506-15438E-RF-S1(Assigned by BAACL, Shenzhen)
Received date	2021-05-06
Sample/EUT Status	Good condition
Adapter information	Model: SGITL1A Input: 100-240V <sub>AC</sub> , 50/60Hz, 0.2A Output: 5.0V <sub>DC</sub> , 1A

### Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and Subpart 27 of the Federal Communication Commissions rules.

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

## Test Methodology

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

Part 22 Subpart H - Public Mobile Services  
 Part 24 Subpart E - Personal Communication Services  
 Part 27 – Miscellaneous wireless communications services

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

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters. Each test item follows test standards and with no deviation.

## Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

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

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West), 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

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

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

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

### Equipment Modifications

No modification was made to the EUT.

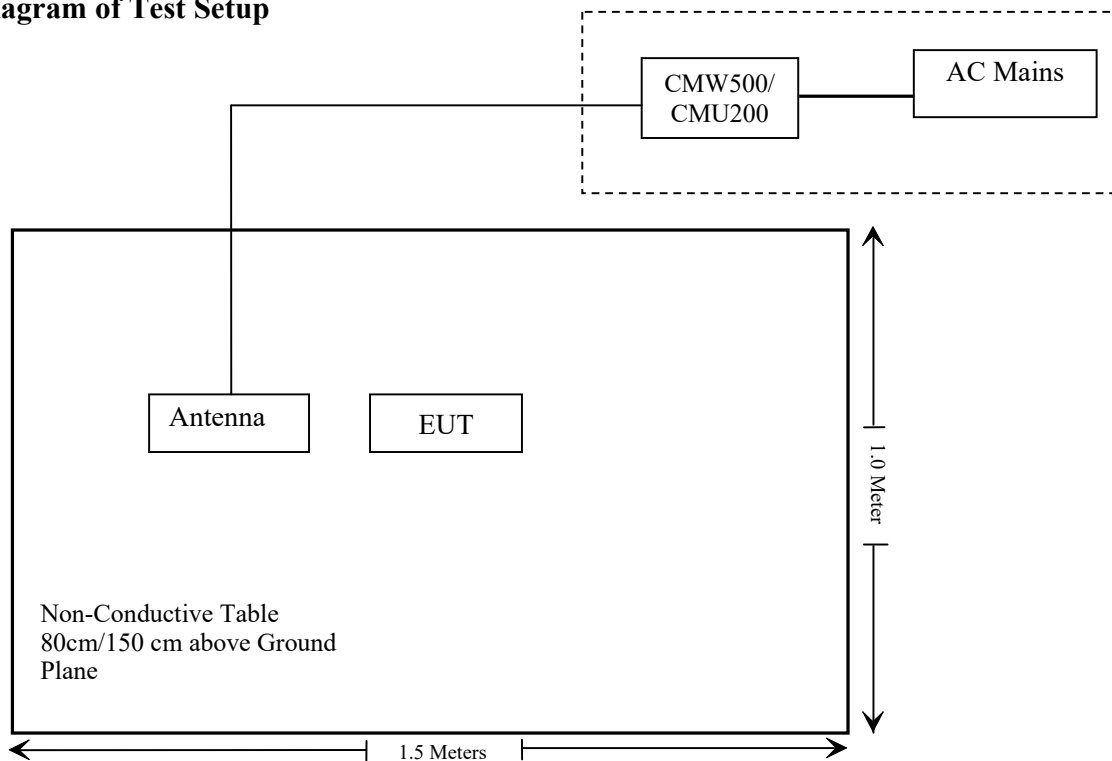
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-UY
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500

### Support Cable Description

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

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

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

**TEST EQUIPMENT LIST**

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

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

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).



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

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliance, please refer to the SAR report: SZ1210506-15438E-SA.

## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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

**FCC § 2.1046, § 22.913 (a) & § 24.232 (c); §27.50 (d) (h) - RF OUTPUT POWER**

**Applicable Standard**

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

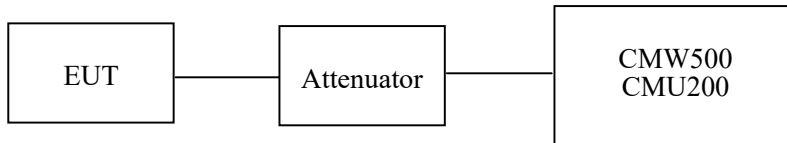
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

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

**Test Procedure**

*Conducted method:*

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



*Radiated method:*

ANSI C63.26-2015 section 5.5.3.

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	28~28.2 °C
<b>Relative Humidity:</b>	55~59 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Zero Yan and Pedro Yun from 2021-05-15 to 2021-05-18.*

**Conducted Power**

**Cellular 850**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP (dBm)	Limit (dBm)
GSM	128	824.2	34.59	31.84	38.45
	190	836.6	34.67	31.92	38.45
	251	848.8	34.52	31.77	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	34.42	32.68	30.87	29.23	31.67	29.93	28.12	26.48	38.45
	190	836.6	34.56	32.79	30.93	29.47	31.81	30.04	28.18	26.72	38.45
	251	848.8	34.37	32.54	30.75	29.18	31.62	29.79	28.00	26.43	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP (dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 5)	RMC12.2k		24.75	24.61	23.87	22.00	21.86	21.12	38.45
	HSDPA	1	24.58	24.22	23.55	21.83	21.47	20.80	38.45
		2	24.42	24.22	23.64	21.67	21.47	20.89	38.45
		3	24.66	24.43	23.76	21.91	21.68	21.01	38.45
		4	24.59	24.41	23.65	21.84	21.66	20.90	38.45
	HSUPA	1	23.93	23.40	22.64	21.18	20.65	19.89	38.45
		2	24.43	24.16	22.45	21.68	21.41	19.70	38.45
		3	24.37	24.14	22.41	21.62	21.39	19.66	38.45
		4	24.37	24.06	22.38	21.62	21.31	19.63	38.45
	HSPA+	5	24.05	23.31	22.75	21.30	20.56	20.00	38.45
		1	24.09	23.25	22.79	21.34	20.50	20.04	38.45

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable Loss(dB)  
 For GSM850/WCDMA Band 5: Antenna Gain = -0.1dBi = -2.25dBd (0dBd=2.15dBi)  
 Cable Loss=0.5dB\*(provided by the applicant)

**PCS 1900**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP (dBm)	Limit (dBm)
GSM	512	1850.2	30.84	31.04	33
	661	1880.0	30.73	30.93	33
	810	1909.8	30.81	31.01	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	30.30	28.01	26.47	24.85	30.50	28.21	26.67	25.05	33
	661	1880.0	30.60	28.34	26.72	25.02	30.80	28.54	26.92	25.22	33
	810	1909.8	30.85	28.46	26.78	25.19	31.05	28.66	26.98	25.39	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP (dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 2)	RMC12.2k		24.19	24.12	24.22	24.39	24.32	24.42	33
	HSDPA	1	24.06	24.07	24.16	24.26	24.27	24.36	33
		2	24.03	24.01	24.08	24.23	24.21	24.28	33
		3	24.10	23.94	24.08	24.30	24.14	24.28	33
		4	24.03	23.91	24.05	24.23	24.11	24.25	33
	HSUPA	1	23.96	23.84	24.01	24.16	24.04	24.21	33
		2	24.02	23.97	24.08	24.22	24.17	24.28	33
		3	24.00	23.95	24.01	24.20	24.15	24.21	33
		4	23.99	23.90	23.99	24.19	24.10	24.19	33
		5	23.97	23.88	24.02	24.17	24.08	24.22	33
	HSPA+	1	23.95	23.82	23.94	24.15	24.02	24.14	33

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable Loss(dB)  
 For PCS1900/WCDMA Band 2: Antenna Gain = 1.0dBi  
 Cable Loss=0.8dB\*(provided by the applicant)

**AWS Band 4**

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)			Limit (dBm)
			Low	Mid	High	Low	Mid	High	
WCDMA (Band 4)	RMC12.2k		24.39	24.31	24.23	24.29	24.21	24.13	30
	HSDPA	1	24.36	24.19	24.17	24.26	24.09	24.07	30
		2	24.28	24.19	24.16	24.18	24.09	24.06	30
		3	24.25	24.14	24.13	24.15	24.04	24.03	30
		4	24.21	24.16	24.13	24.11	24.06	24.03	30
	HSUPA	1	24.19	24.12	24.06	24.09	24.02	23.96	30
		2	24.31	24.17	24.14	24.21	24.07	24.04	30
		3	24.30	24.14	24.09	24.20	24.04	23.99	30
		4	24.30	24.13	24.06	24.20	24.03	23.96	30
		5	24.22	24.13	24.04	24.12	24.03	23.94	30
	HSPA+	1	24.20	24.08	24.03	24.10	23.98	23.93	30

Note:  $EIRP(dBm) = \text{Conducted Power}(dBm) + \text{Antenna Gain}(dBi) - \text{Cable Loss}(dB)$

For Band 4: Antenna Gain = 0.7dBi

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

**Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.26	13
	Middle	3.41	13
	High	3.37	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.33	13
	Middle	3.42	13
	High	3.15	13
HSDPA (16QAM)	Low	3.46	13
	Middle	3.52	13
	High	3.49	13
HSUPA (BPSK)	Low	3.35	13
	Middle	3.42	13
	High	3.21	13
HSPA+	Low	3.24	13
	Middle	3.36	13
	High	3.51	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.56	13
	Middle	3.45	13
	High	3.12	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.15	13
	Middle	3.46	13
	High	3.12	13
HSDPA (16QAM)	Low	3.27	13
	Middle	3.12	13
	High	3.46	13
HSUPA (BPSK)	Low	3.19	13
	Middle	3.23	13
	High	3.13	13
HSPA+	Low	3.16	13
	Middle	3.21	13
	High	3.18	13

**AWS Band**

<b>Mode</b>	<b>Channel</b>	<b>PAR (dB)</b>	<b>Limit (dB)</b>
RMC (BPSK)	Low	3.54	13
	Middle	3.12	13
	High	3.53	13
HSDPA (16QAM)	Low	3.21	13
	Middle	3.14	13
	High	3.54	13
HSUPA (BPSK)	Low	3.20	13
	Middle	3.13	13
	High	3.16	13
HSPA+	Low	3.24	13
	Middle	3.16	13
	High	3.13	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	25.01	23.83	24.05	25.21	24.03	24.25
		RB1#3	24.38	23.74	24.18	24.58	23.94	24.38
		RB1#5	23.52	23.89	24.19	23.72	24.09	24.39
		RB3#0	24.00	24.04	24.29	24.20	24.24	24.49
		RB3#3	24.09	24.02	24.35	24.29	24.22	24.55
		RB6#0	23.02	23.04	23.29	23.22	23.24	23.49
	16QAM	RB1#0	23.82	23.55	23.05	24.02	23.75	23.25
		RB1#3	23.84	23.56	23.08	24.04	23.76	23.28
		RB1#5	23.93	23.57	23.07	24.13	23.77	23.27
		RB3#0	23.27	22.93	23.47	23.47	23.13	23.67
		RB3#3	23.32	23.04	23.44	23.52	23.24	23.64
		RB6#0	22.42	22.16	22.57	22.62	22.36	22.77
3.0	QPSK	RB1#0	24.16	23.94	24.18	24.36	24.14	24.38
		RB1#8	24.15	23.89	24.18	24.35	24.09	24.38
		RB1#14	24.07	23.93	24.24	24.27	24.13	24.44
		RB6#0	23.15	23.09	23.38	23.35	23.29	23.58
		RB6#9	23.25	23.06	23.37	23.45	23.26	23.57
		RB15#0	23.24	23.00	23.38	23.44	23.20	23.58
	16QAM	RB1#0	23.42	23.58	23.08	23.62	23.78	23.28
		RB1#8	23.48	23.63	23.11	23.68	23.83	23.31
		RB1#14	23.39	23.63	23.12	23.59	23.83	23.32
		RB6#0	22.45	22.21	22.60	22.65	22.41	22.80
		RB6#9	22.42	22.24	22.63	22.62	22.44	22.83
		RB15#0	22.41	22.14	22.48	22.61	22.34	22.68

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	24.10	24.04	24.28	24.10	24.04	24.28
		RB1#13	24.17	24.09	24.32	24.17	24.09	24.32
		RB1#24	24.14	24.19	24.30	24.14	24.19	24.30
		RB15#0	23.30	23.06	23.30	23.30	23.06	23.30
		RB15#10	23.25	23.04	23.39	23.25	23.04	23.39
		RB25#0	23.17	23.02	23.35	23.17	23.02	23.35
	16QAM	RB1#0	22.47	23.23	23.00	22.47	23.23	23.00
		RB1#13	22.49	23.25	23.06	22.49	23.25	23.06
		RB1#24	22.46	23.21	23.14	22.46	23.21	23.14
		RB15#0	22.44	22.02	22.53	22.44	22.02	22.53
		RB15#10	22.38	22.01	22.46	22.38	22.01	22.46
		RB25#0	22.43	22.09	22.40	22.43	22.09	22.40
10.0	QPSK	RB1#0	24.27	24.16	24.18	24.47	24.36	24.38
		RB1#25	24.14	24.12	24.32	24.34	24.32	24.52
		RB1#49	24.16	24.16	24.36	24.36	24.36	24.56
		RB25#0	23.20	23.07	23.22	23.40	23.27	23.42
		RB25#25	23.17	23.07	23.33	23.37	23.27	23.53
		RB50#0	23.33	23.11	23.29	23.53	23.31	23.49
	16QAM	RB1#0	23.77	23.31	22.71	23.97	23.51	22.91
		RB1#25	23.67	23.26	22.77	23.87	23.46	22.97
		RB1#49	23.60	23.22	22.87	23.80	23.42	23.07
		RB25#0	22.36	22.29	22.49	22.56	22.49	22.69
		RB25#25	22.32	22.28	22.62	22.52	22.48	22.82
		RB50#0	22.32	22.24	22.47	22.52	22.44	22.67

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	24.24	24.19	24.10	24.44	24.39	24.30
		RB1#38	24.14	24.13	24.20	24.34	24.33	24.40
		RB1#74	24.06	24.24	24.32	24.26	24.44	24.52
		RB36#0	23.33	23.18	23.23	23.53	23.38	23.43
		RB36#39	23.17	23.12	23.43	23.37	23.32	23.63
		RB75#0	23.28	23.15	23.29	23.48	23.35	23.49
	16QAM	RB1#0	23.77	23.26	23.59	23.97	23.46	23.79
		RB1#38	23.70	23.28	23.70	23.90	23.48	23.90
		RB1#74	23.59	23.33	23.81	23.79	23.53	24.01
		RB36#0	22.33	22.31	22.30	22.53	22.51	22.50
		RB36#39	22.25	22.35	22.52	22.45	22.55	22.72
		RB75#0	22.32	22.27	22.43	22.52	22.47	22.63
20.0	QPSK	RB1#0	24.40	24.18	24.29	24.60	24.38	24.49
		RB1#50	24.31	24.21	24.38	24.51	24.41	24.58
		RB1#99	24.21	24.27	24.55	24.41	24.47	24.75
		RB50#0	23.25	23.24	23.31	23.45	23.44	23.51
		RB50#50	23.25	23.26	23.44	23.45	23.46	23.64
		RB100#0	23.18	23.11	23.25	23.38	23.31	23.45
	16QAM	RB1#0	23.40	23.13	23.97	23.60	23.33	24.17
		RB1#50	23.38	23.17	24.07	23.58	23.37	24.27
		RB1#99	23.17	23.17	24.22	23.37	23.37	24.42
		RB50#0	22.50	22.33	22.36	22.70	22.53	22.56
		RB50#50	22.32	22.23	22.42	22.52	22.43	22.62
		RB100#0	22.39	22.21	22.40	22.59	22.41	22.60

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

For Band 2: Antenna Gain = 1.0dBi

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

Limit: EIRP ≤ 33dBm

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

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	5.06	5.32	5.16	13	Pass
QPSK (100RB Size)	5.71	5.64	5.48	13	Pass
16QAM (1RB Size)	6.35	6.76	5.87	13	Pass
16QAM (100RB Size)	6.44	6.47	6.38	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	24.32	24.37	24.93	24.22	24.27	24.83
		RB1#3	24.31	24.42	24.88	24.21	24.32	24.78
		RB1#5	24.28	24.41	24.99	24.18	24.31	24.89
		RB3#0	24.43	24.49	24.82	24.33	24.39	24.72
		RB3#3	24.41	24.51	24.81	24.31	24.41	24.71
		RB6#0	23.27	23.54	23.70	23.17	23.44	23.60
	16QAM	RB1#0	24.14	24.14	23.80	24.04	24.04	23.70
		RB1#3	24.09	24.16	23.78	23.99	24.06	23.68
		RB1#5	24.13	24.19	23.77	24.03	24.09	23.67
		RB3#0	23.42	23.35	23.80	23.32	23.25	23.70
		RB3#3	23.42	23.35	23.76	23.32	23.25	23.66
		RB6#0	22.68	22.65	23.15	22.58	22.55	23.05
3.0	QPSK	RB1#0	24.32	24.35	24.97	24.22	24.25	24.87
		RB1#8	24.25	24.40	25.02	24.15	24.30	24.92
		RB1#14	24.16	24.48	25.02	24.06	24.38	24.92
		RB6#0	23.27	23.50	23.80	23.17	23.40	23.70
		RB6#9	23.23	23.47	23.74	23.13	23.37	23.64
		RB15#0	23.29	23.39	23.80	23.19	23.29	23.70
	16QAM	RB1#0	23.80	24.19	23.77	23.70	24.09	23.67
		RB1#8	23.77	24.27	23.80	23.67	24.17	23.70
		RB1#14	23.72	24.22	23.83	23.62	24.12	23.73
		RB6#0	22.34	22.59	23.15	22.24	22.49	23.05
		RB6#9	22.30	22.59	23.13	22.20	22.49	23.03
		RB15#0	22.52	22.52	22.97	22.42	22.42	22.87

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	24.33	24.48	24.71	24.23	24.38	24.61
		RB1#13	24.28	24.43	24.70	24.18	24.33	24.60
		RB1#24	24.26	24.44	24.79	24.16	24.34	24.69
		RB15#0	23.39	23.42	23.78	23.29	23.32	23.68
		RB15#10	23.32	23.34	23.73	23.22	23.24	23.63
		RB25#0	23.31	23.44	23.91	23.21	23.34	23.81
	16QAM	RB1#0	22.47	23.58	23.42	22.37	23.48	23.32
		RB1#13	22.45	23.67	23.43	22.35	23.57	23.33
		RB1#24	22.46	23.68	23.39	22.36	23.58	23.29
		RB15#0	22.52	22.46	22.95	22.42	22.36	22.85
		RB15#10	22.49	22.43	22.95	22.39	22.33	22.85
		RB25#0	22.51	22.62	22.87	22.41	22.52	22.77
10.0	QPSK	RB1#0	24.25	24.45	24.81	24.15	24.35	24.71
		RB1#25	24.18	24.57	24.93	24.08	24.47	24.83
		RB1#49	24.22	24.63	24.97	24.12	24.53	24.87
		RB25#0	23.22	23.44	23.72	23.12	23.34	23.62
		RB25#25	23.30	23.41	23.88	23.20	23.31	23.78
		RB50#0	23.30	23.51	23.81	23.20	23.41	23.71
	16QAM	RB1#0	23.59	23.59	23.34	23.49	23.49	23.24
		RB1#25	23.56	23.69	23.40	23.46	23.59	23.30
		RB1#49	23.58	23.76	23.41	23.48	23.66	23.31
		RB25#0	22.38	22.62	22.94	22.28	22.52	22.84
		RB25#25	22.41	22.72	23.06	22.31	22.62	22.96
		RB50#0	22.46	22.62	22.92	22.36	22.52	22.82

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	24.27	24.46	24.70	24.17	24.36	24.60
		RB1#38	24.19	24.57	24.89	24.09	24.47	24.79
		RB1#74	24.28	24.66	25.02	24.18	24.56	24.92
		RB36#0	23.39	23.44	23.83	23.29	23.34	23.73
		RB36#39	23.32	23.62	23.79	23.22	23.52	23.69
		RB75#0	23.35	23.44	23.81	23.25	23.34	23.71
	16QAM	RB1#0	23.61	23.44	24.06	23.51	23.34	23.96
		RB1#38	23.58	23.72	24.22	23.48	23.62	24.12
		RB1#74	23.72	23.75	24.38	23.62	23.65	24.28
		RB36#0	22.44	22.57	22.89	22.34	22.47	22.79
		RB36#39	22.40	22.74	22.99	22.30	22.64	22.89
		RB75#0	22.43	22.57	22.89	22.33	22.47	22.79
20.0	QPSK	RB1#0	24.49	24.29	24.48	24.39	24.19	24.38
		RB1#50	24.41	24.41	24.73	24.31	24.31	24.63
		RB1#99	24.47	24.61	24.96	24.37	24.51	24.86
		RB50#0	23.36	23.44	23.52	23.26	23.34	23.42
		RB50#50	23.35	23.49	23.80	23.25	23.39	23.70
		RB100#0	23.24	23.53	23.72	23.14	23.43	23.62
	16QAM	RB1#0	23.38	23.70	24.08	23.28	23.60	23.98
		RB1#50	23.34	23.84	24.26	23.24	23.74	24.16
		RB1#99	23.41	23.97	24.39	23.31	23.87	24.29
		RB50#0	22.52	22.60	22.65	22.42	22.50	22.55
		RB50#50	22.54	22.74	22.78	22.44	22.64	22.68
		RB100#0	22.47	22.62	23.00	22.37	22.52	22.90

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

For Band 4: Antenna Gain = 0.7dBi

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

Limit: EIRP ≤ 30dBm

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

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	5.19	5.51	5.10	13	Pass
QPSK (100RB Size)	5.71	5.67	5.61	13	Pass
16QAM (1RB Size)	6.09	7.02	6.06	13	Pass
16QAM (100RB Size)	6.57	6.57	6.47	13	Pass



**LTE Band 5**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	24.65	24.26	23.66	21.90	21.51	20.91
		RB1#3	24.72	24.12	23.53	21.97	21.37	20.78
		RB1#5	24.72	24.15	23.58	21.97	21.40	20.83
		RB3#0	24.87	24.33	23.65	22.12	21.58	20.90
		RB3#3	24.93	24.40	23.63	22.18	21.65	20.88
		RB6#0	23.86	23.38	22.61	21.11	20.63	19.86
	16QAM	RB1#0	24.33	24.14	22.42	21.58	21.39	19.67
		RB1#3	24.29	24.03	22.39	21.54	21.28	19.64
		RB1#5	24.31	24.03	22.35	21.56	21.28	19.60
		RB3#0	23.94	23.21	22.68	21.19	20.46	19.93
		RB3#3	23.98	23.25	22.70	21.23	20.50	19.95
		RB6#0	23.01	22.44	21.82	20.26	19.69	19.07
3.0	QPSK	RB1#0	24.95	24.33	23.73	22.20	21.58	20.98
		RB1#8	24.87	24.34	23.71	22.12	21.59	20.96
		RB1#14	24.83	24.35	23.64	22.08	21.60	20.89
		RB6#0	23.97	23.44	22.76	21.22	20.69	20.01
		RB6#9	23.91	23.45	22.51	21.16	20.70	19.76
		RB15#0	23.98	23.38	22.68	21.23	20.63	19.93
	16QAM	RB1#0	24.31	24.18	22.47	21.56	21.43	19.72
		RB1#8	24.31	24.08	22.30	21.56	21.33	19.55
		RB1#14	24.15	24.12	22.24	21.40	21.37	19.49
		RB6#0	22.93	22.55	21.87	20.18	19.80	19.12
		RB6#9	22.85	22.48	21.81	20.10	19.73	19.06
		RB15#0	23.06	22.38	21.76	20.31	19.63	19.01

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	25.05	24.50	23.87	22.30	21.75	21.12
		RB1#13	24.87	24.39	23.67	22.12	21.64	20.92
		RB1#24	24.74	24.29	23.59	21.99	21.54	20.84
		RB15#0	24.04	23.54	22.95	21.29	20.79	20.20
		RB15#10	24.00	23.34	22.71	21.25	20.59	19.96
		RB25#0	23.93	23.44	22.75	21.18	20.69	20.00
	16QAM	RB1#0	23.36	23.57	22.70	20.61	20.82	19.95
		RB1#13	23.13	23.50	22.48	20.38	20.75	19.73
		RB1#24	23.03	23.36	22.43	20.28	20.61	19.68
		RB15#0	23.10	22.46	21.87	20.35	19.71	19.12
		RB15#10	23.06	22.29	21.83	20.31	19.54	19.08
		RB25#0	23.17	22.44	21.66	20.42	19.69	18.91
10.0	QPSK	RB1#0	25.04	24.84	24.36	22.29	22.09	21.61
		RB1#25	24.69	24.55	23.97	21.94	21.80	21.22
		RB1#49	24.54	24.39	23.71	21.79	21.64	20.96
		RB25#0	23.96	23.60	23.24	21.21	20.85	20.49
		RB25#25	23.81	23.34	22.90	21.06	20.59	20.15
		RB50#0	23.88	23.39	22.96	21.13	20.64	20.21
	16QAM	RB1#0	24.30	23.93	22.86	21.55	21.18	20.11
		RB1#25	24.04	23.56	22.49	21.29	20.81	19.74
		RB1#49	23.81	23.47	22.20	21.06	20.72	19.45
		RB25#0	23.00	22.68	22.34	20.25	19.93	19.59
		RB25#25	22.80	22.51	22.00	20.05	19.76	19.25
		RB50#0	22.91	22.52	22.06	20.16	19.77	19.31

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
 For Band 5: Antenna Gain = -0.1dBi = -2.25dBd (0dBd=2.15dBi)  
 Cable Loss= 0.5dB\*(provided by the applicant)  
 Limit: ERP ≤ 38.45dBm

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

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	3.65	4.52	4.58	13	Pass
QPSK (50RB Size)	5.29	5.32	5.38	13	Pass
16QAM (1RB Size)	4.71	5.32	5.74	13	Pass
16QAM (50RB Size)	6.12	6.09	6.06	13	Pass

**LTE Band 7:**

**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.51	23.36	22.74	23.31	23.16	22.54
		RB1#13	23.59	23.35	22.75	23.39	23.15	22.55
		RB1#24	23.46	23.29	22.81	23.26	23.09	22.61
		RB15#0	22.45	22.24	21.84	22.25	22.04	21.64
		RB15#10	22.55	22.24	21.86	22.35	22.04	21.66
		RB25#0	22.56	22.31	21.81	22.36	22.11	21.61
	16QAM	RB1#0	22.32	22.79	22.00	22.12	22.59	21.80
		RB1#13	22.20	22.82	21.96	22.00	22.62	21.76
		RB1#24	22.19	22.87	22.00	21.99	22.67	21.80
		RB15#0	22.15	21.84	21.56	21.95	21.64	21.36
		RB15#10	22.17	21.79	21.56	21.97	21.59	21.36
		RB25#0	22.16	21.98	21.38	21.96	21.78	21.18
10.0	QPSK	RB1#0	23.38	23.49	23.07	23.18	23.29	22.87
		RB1#25	23.40	23.37	22.96	23.20	23.17	22.76
		RB1#49	23.48	23.31	22.94	23.28	23.11	22.74
		RB25#0	22.59	22.41	21.79	22.39	22.21	21.59
		RB25#25	22.57	22.31	21.88	22.37	22.11	21.68
		RB50#0	22.44	22.31	21.85	22.24	22.11	21.65
	16QAM	RB1#0	23.15	23.05	21.97	22.95	22.85	21.77
		RB1#25	23.20	23.18	21.92	23.00	22.98	21.72
		RB1#49	23.20	22.95	21.83	23.00	22.75	21.63
		RB25#0	22.07	22.11	21.65	21.87	21.91	21.45
		RB25#25	22.11	22.04	21.60	21.91	21.84	21.40
		RB50#0	22.14	22.09	21.47	21.94	21.89	21.27

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	23.31	22.70	22.48	23.11	22.50	22.28
		RB1#38	23.31	22.76	22.46	23.11	22.56	22.26
		RB1#74	23.44	22.72	22.31	23.24	22.52	22.11
		RB36#0	22.48	21.83	21.39	22.28	21.63	21.19
		RB36#39	22.51	21.75	21.39	22.31	21.55	21.19
		RB75#0	22.47	21.96	21.50	22.27	21.76	21.30
	16QAM	RB1#0	23.15	23.21	22.57	22.95	23.01	22.37
		RB1#38	23.20	23.29	22.48	23.00	23.09	22.28
		RB1#74	23.23	23.21	22.39	23.03	23.01	22.19
		RB36#0	22.20	21.49	21.15	22.00	21.29	20.95
		RB36#39	21.53	21.34	21.07	21.33	21.14	20.87
		RB75#0	21.59	21.41	21.14	21.39	21.21	20.94
20.0	QPSK	RB1#0	23.16	23.20	22.78	22.96	23.00	22.58
		RB1#50	23.06	23.22	22.59	22.86	23.02	22.39
		RB1#99	23.03	23.13	22.56	22.83	22.93	22.36
		RB50#0	21.99	21.94	21.61	21.79	21.74	21.41
		RB50#50	21.96	21.93	21.52	21.76	21.73	21.32
		RB100#0	21.98	21.90	21.66	21.78	21.70	21.46
	16QAM	RB1#0	22.45	22.73	23.15	22.25	22.53	22.95
		RB1#50	22.33	22.71	22.95	22.13	22.51	22.75
		RB1#99	22.28	22.64	22.85	22.08	22.44	22.65
		RB50#0	21.79	21.56	21.28	21.59	21.36	21.08
		RB50#50	21.69	21.55	21.26	21.49	21.35	21.06
		RB100#0	21.60	21.44	21.32	21.40	21.24	21.12

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)  
 For Band 7: Antenna Gain = 0.8dBi, Cable Loss=1.0dB\*(provided by the applicant)  
 Limit: EIRP ≤ 33dBm

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

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	5.22	5.71	5.45	13	Pass
QPSK (100RB Size)	5.67	5.74	5.71	13	Pass
16QAM (1RB Size)	6.54	6.79	5.96	13	Pass
16QAM (100RB Size)	6.54	6.57	6.54	13	Pass

**LTE Band 66:**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	25.40	25.62	25.50	25.30	25.52	25.40
		RB1#3	25.57	25.64	25.51	25.47	25.54	25.41
		RB1#5	25.54	25.60	25.54	25.44	25.50	25.44
		RB3#0	25.57	25.47	25.62	25.47	25.37	25.52
		RB3#3	25.54	25.47	25.58	25.44	25.37	25.48
		RB6#0	24.71	24.42	24.66	24.61	24.32	24.56
	16QAM	RB1#0	25.43	24.43	25.35	25.33	24.33	25.25
		RB1#3	25.43	24.51	25.38	25.33	24.41	25.28
		RB1#5	25.40	24.51	25.40	25.30	24.41	25.30
		RB3#0	24.56	24.45	24.76	24.46	24.35	24.66
		RB3#3	24.54	24.45	24.84	24.44	24.35	24.74
		RB6#0	23.79	23.79	23.98	23.69	23.69	23.88
3.0	QPSK	RB1#0	25.56	25.44	25.56	25.46	25.34	25.46
		RB1#8	25.55	25.43	25.59	25.45	25.33	25.49
		RB1#14	25.62	25.42	25.59	25.52	25.32	25.49
		RB6#0	24.67	24.54	24.71	24.57	24.44	24.61
		RB6#9	24.60	24.57	24.70	24.5	24.47	24.60
		RB15#0	24.68	24.52	24.60	24.58	24.42	24.50
	16QAM	RB1#0	25.05	25.24	24.47	24.95	25.14	24.37
		RB1#8	24.93	25.25	24.45	24.83	25.15	24.35
		RB1#14	24.92	25.25	24.56	24.82	25.15	24.46
		RB6#0	24.00	23.53	23.99	23.9	23.43	23.89
		RB6#9	23.90	23.58	24.05	23.80	23.48	23.95
		RB15#0	23.90	23.71	23.92	23.80	23.61	23.82

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	25.69	25.61	25.70	25.59	25.51	25.6
		RB1#13	25.61	25.66	25.66	25.51	25.56	25.56
		RB1#24	25.58	25.71	25.72	25.48	25.61	25.62
		RB15#0	24.81	24.55	24.77	24.71	24.45	24.67
		RB15#10	24.72	24.53	24.71	24.62	24.43	24.61
		RB25#0	24.71	24.61	24.69	24.61	24.51	24.59
	16QAM	RB1#0	23.98	24.78	24.41	23.88	24.68	24.31
		RB1#13	23.99	24.77	24.49	23.89	24.67	24.39
		RB1#24	23.98	24.82	24.46	23.88	24.72	24.36
		RB15#0	23.94	23.63	23.87	23.84	23.53	23.77
		RB15#10	23.83	23.59	23.83	23.73	23.49	23.73
		RB25#0	23.98	23.72	23.74	23.88	23.62	23.64
10.0	QPSK	RB1#0	25.65	25.65	25.64	25.55	25.55	25.54
		RB1#25	25.66	25.62	25.72	25.56	25.52	25.62
		RB1#49	25.67	25.67	25.78	25.57	25.57	25.68
		RB25#0	24.79	24.64	24.71	24.69	24.54	24.61
		RB25#25	24.77	24.64	24.81	24.67	24.54	24.71
		RB50#0	24.69	24.59	24.74	24.59	24.49	24.64
	16QAM	RB1#0	25.28	25.12	24.15	25.18	25.02	24.05
		RB1#25	25.18	25.17	24.18	25.08	25.07	24.08
		RB1#49	25.17	25.18	24.18	25.07	25.08	24.08
		RB25#0	23.88	23.76	23.89	23.78	23.66	23.79
		RB25#25	23.85	23.80	24.01	23.75	23.70	23.91
		RB50#0	23.88	23.81	23.86	23.78	23.71	23.76



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	25.59	25.63	25.43	25.49	25.53	25.33
		RB1#38	25.59	25.71	25.49	25.49	25.61	25.39
		RB1#74	25.66	25.75	25.54	25.56	25.65	25.44
		RB36#0	24.73	24.57	24.67	24.63	24.47	24.57
		RB36#39	24.75	24.53	24.67	24.65	24.43	24.57
		RB75#0	24.73	24.62	24.68	24.63	24.52	24.58
	16QAM	RB1#0	25.25	25.10	24.82	25.15	25.00	24.72
		RB1#38	25.12	25.20	24.96	25.02	25.10	24.86
		RB1#74	25.10	25.20	24.96	25.00	25.10	24.86
		RB36#0	23.88	23.80	23.90	23.78	23.70	23.8
		RB36#39	23.83	23.84	23.84	23.73	23.74	23.74
		RB75#0	23.82	23.85	23.77	23.72	23.75	23.67
20.0	QPSK	RB1#0	25.86	25.59	25.73	25.76	25.49	25.63
		RB1#50	25.77	25.64	25.78	25.67	25.54	25.68
		RB1#99	25.71	25.72	25.84	25.61	25.62	25.74
		RB50#0	24.74	24.62	24.74	24.64	24.52	24.64
		RB50#50	24.73	24.64	24.72	24.63	24.54	24.62
		RB100#0	24.81	24.58	24.72	24.71	24.48	24.62
	16QAM	RB1#0	24.81	25.07	25.46	24.71	24.97	25.36
		RB1#50	24.73	25.12	25.48	24.63	25.02	25.38
		RB1#99	24.70	25.18	25.50	24.6	25.08	25.4
		RB50#0	23.96	23.84	23.67	23.86	23.74	23.57
		RB50#50	23.89	23.86	23.81	23.79	23.76	23.71
		RB100#0	23.90	23.65	23.84	23.8	23.55	23.74

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)  
 For Band 66: Antenna Gain = 0.7dBi, Cable Loss=0.8dB\*(provided by the applicant)  
 Limit: EIRP ≤ 30dBm

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

<b>Modulation</b>	<b>Low channel (dB)</b>	<b>Middle channel (dB)</b>	<b>High channel (dB)</b>	<b>PAR Limit (dB)</b>	<b>Result</b>
QPSK (1RB Size)	8.49	4.65	4.81	13	Pass
QPSK (100RB Size)	5.64	5.48	5.54	13	Pass
16QAM (1RB Size)	5.80	5.54	5.77	13	Pass
16QAM (100RB Size)	6.44	6.38	6.38	13	Pass

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

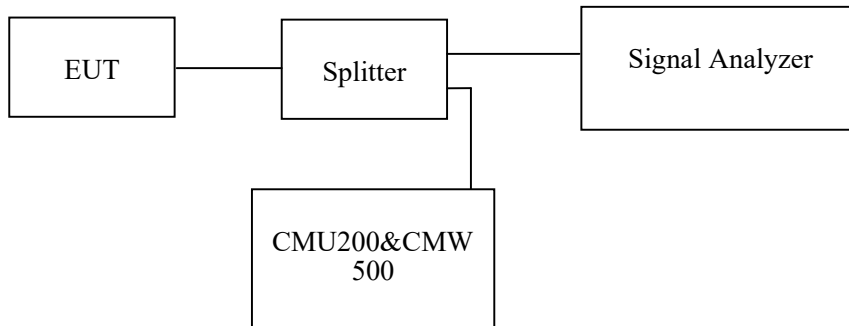
**Applicable Standard**

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**

<b>Temperature:</b>	28~28.2 °C
<b>Relative Humidity:</b>	55~59 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Zero Yan and Pedro Yun from 2021-05-15 to 2021-06-15.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the following tables and plots.*

**Cellular Band (Part 22H)**

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	824.2	244.57	322.70
	836.6	246.02	321.30
	848.8	246.02	319.80

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.69
	836.6	4.15	4.69
	846.6	4.15	4.69
HSDPA	826.4	4.15	4.67
	836.6	4.15	4.69
	846.6	4.14	4.70
HSUPA	826.4	4.15	4.69
	836.6	4.15	4.67
	846.6	4.14	4.67

**PCS Band (Part 24E)**

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1850.2	244.57	316.90
	1880.0	243.13	315.50
	1909.8	246.02	319.80

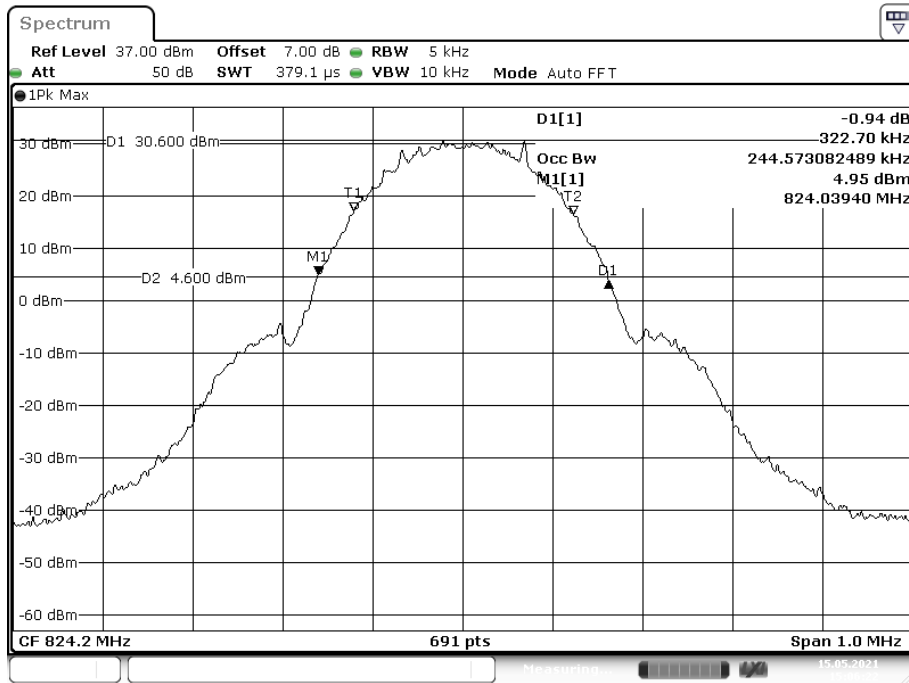
	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.14	4.68
	1880.0	4.14	4.69
	1907.6	4.15	4.69
HSDPA	1852.4	4.15	4.69
	1880.0	4.15	4.69
	1907.6	4.15	4.69
HSUPA	1852.4	4.14	4.69
	1880.0	4.14	4.69
	1907.6	4.15	4.67

**AWS Band (Part 27)**

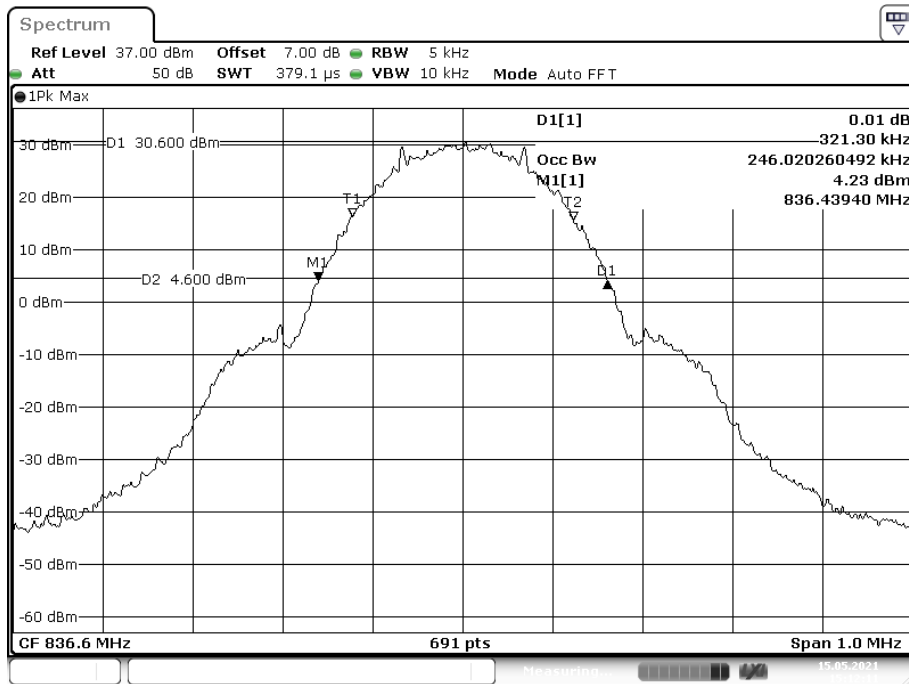
	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.14	4.69
	1732.6	4.14	4.69
	1752.6	4.14	4.69
HSDPA	1712.4	4.15	4.67
	1732.6	4.15	4.69
	1752.6	4.15	4.69
HSUPA	1712.4	4.15	4.69
	1732.6	4.14	4.69
	1752.6	4.15	4.69

**Cellular Band (Part 22H)**

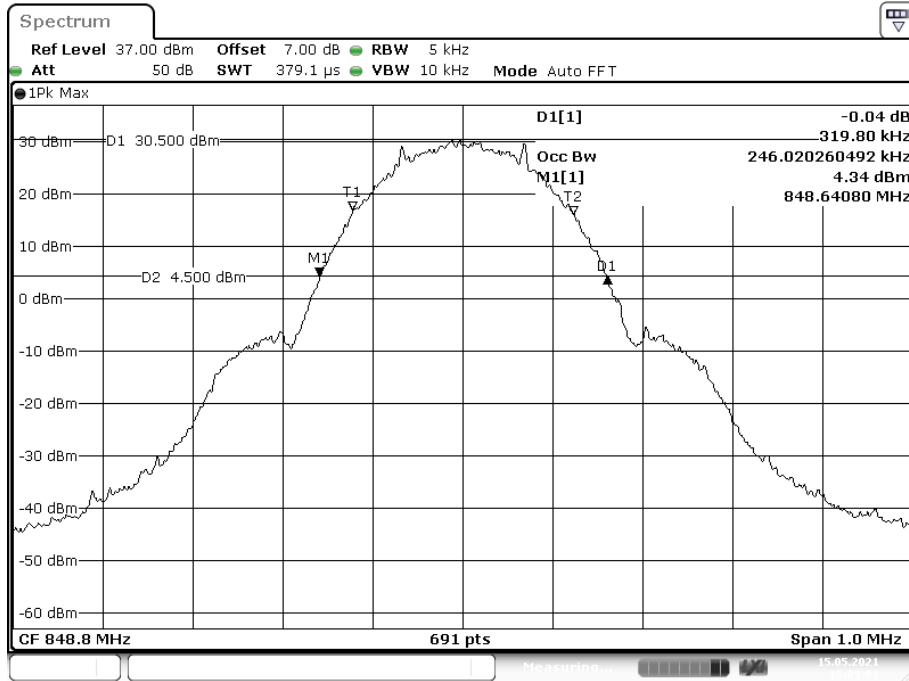
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**



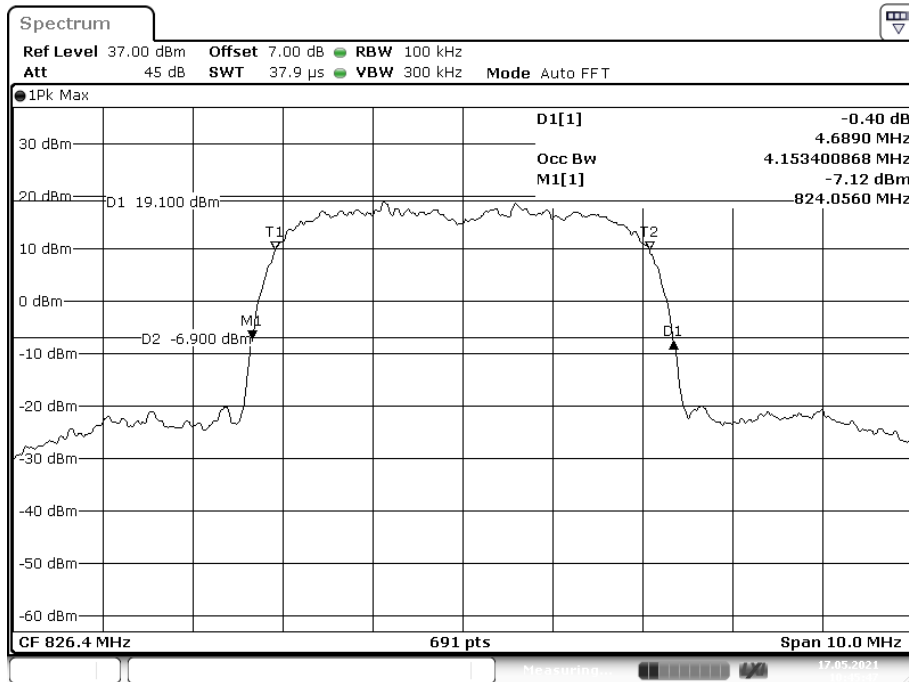
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel**



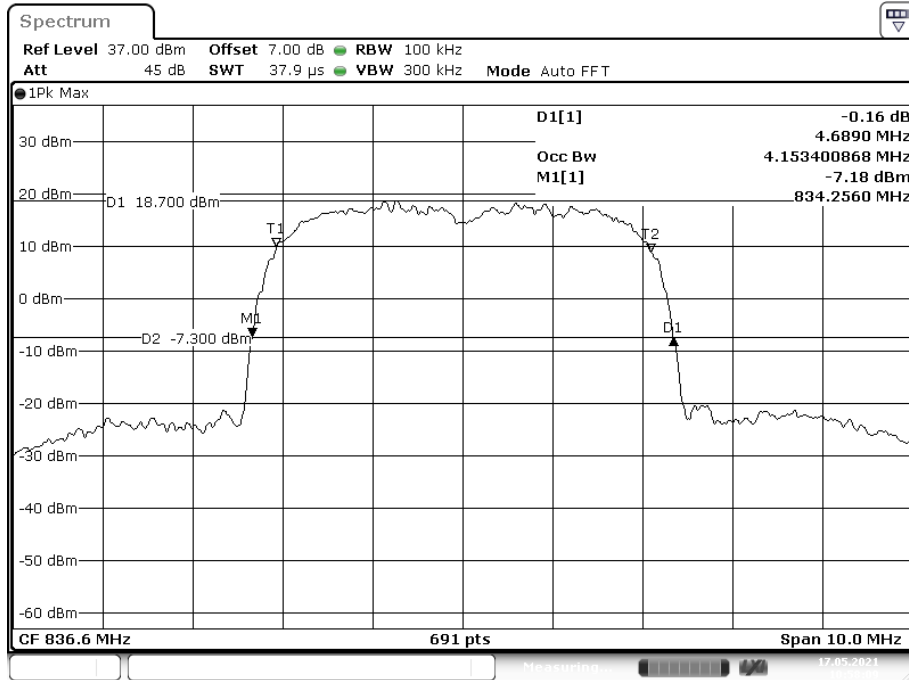
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel



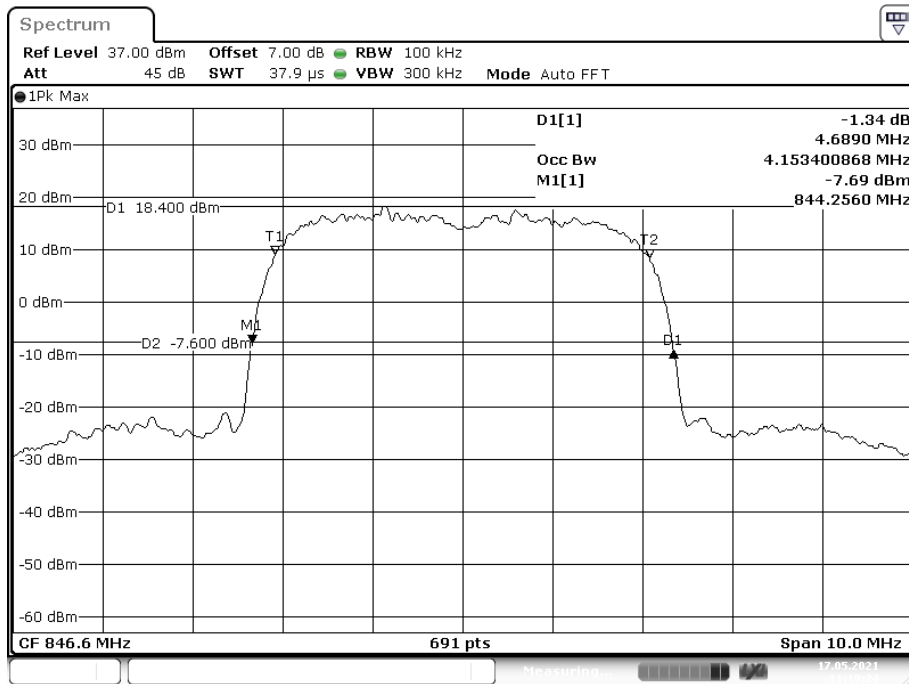
26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel



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

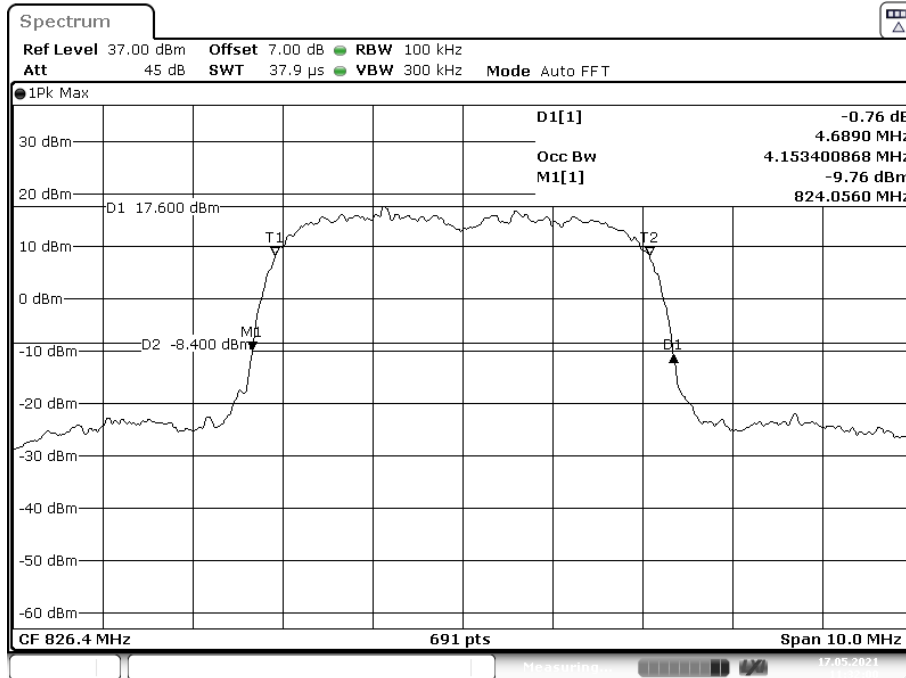


**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



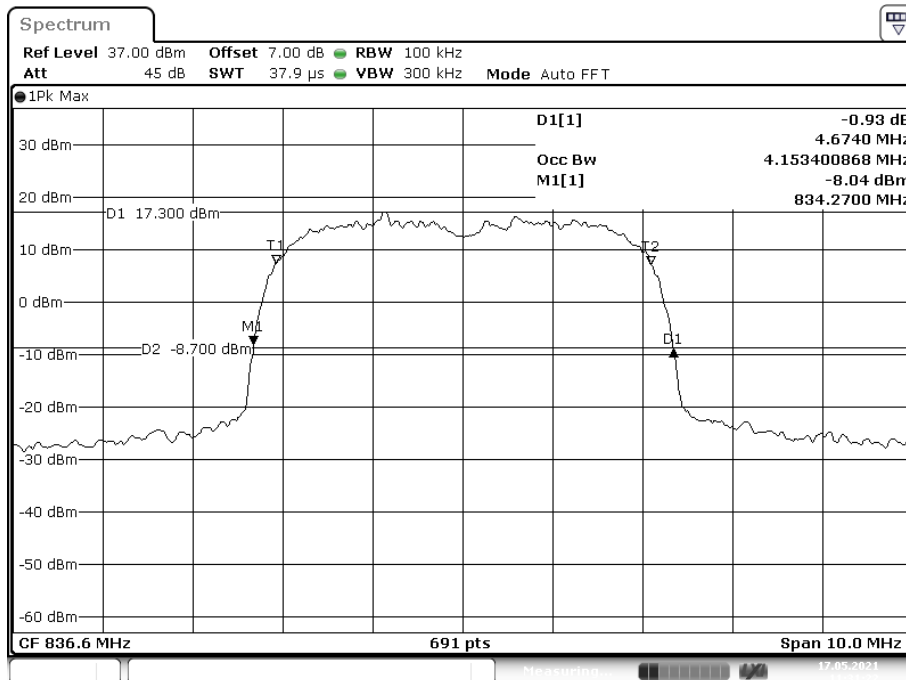


**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



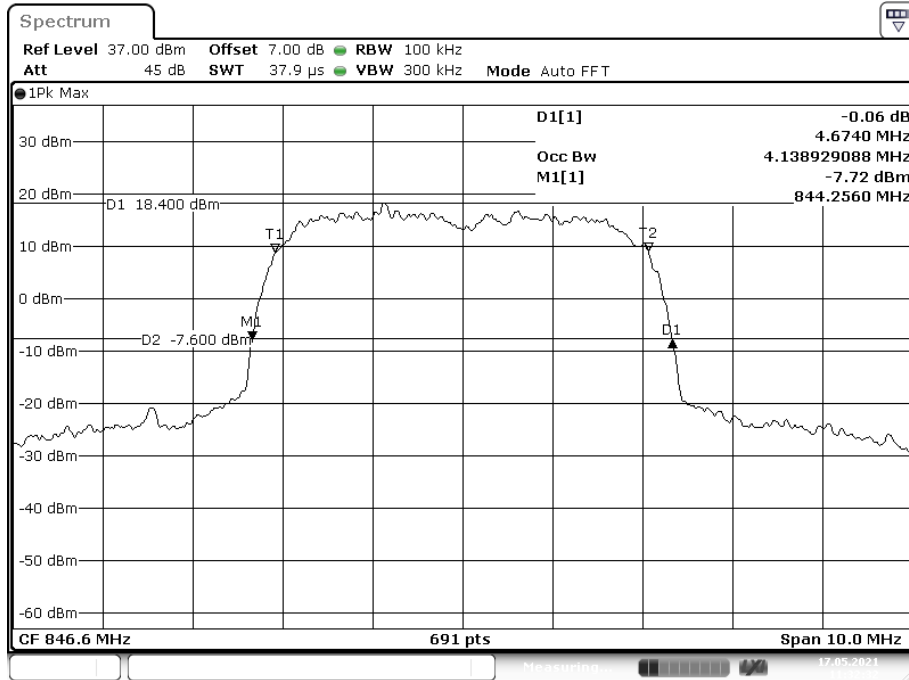
Date: 17.MAY.2021 11:32:01

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

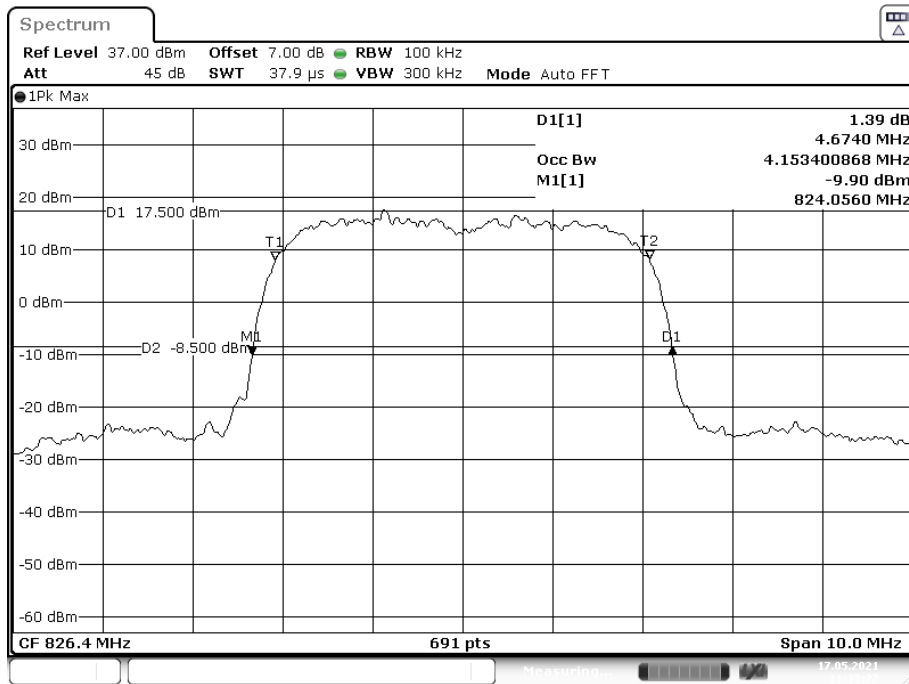


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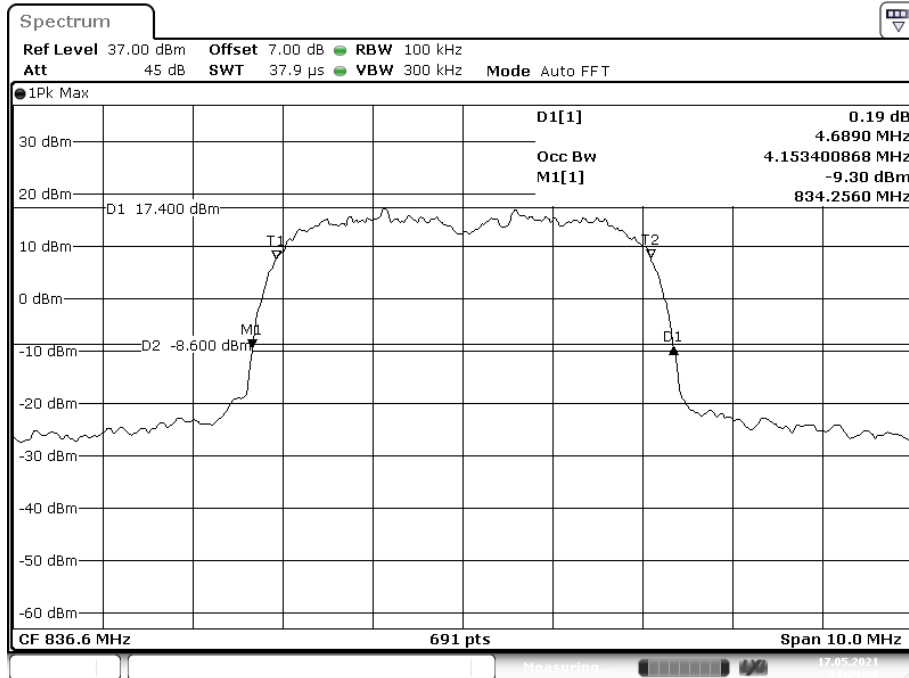
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, High channel**



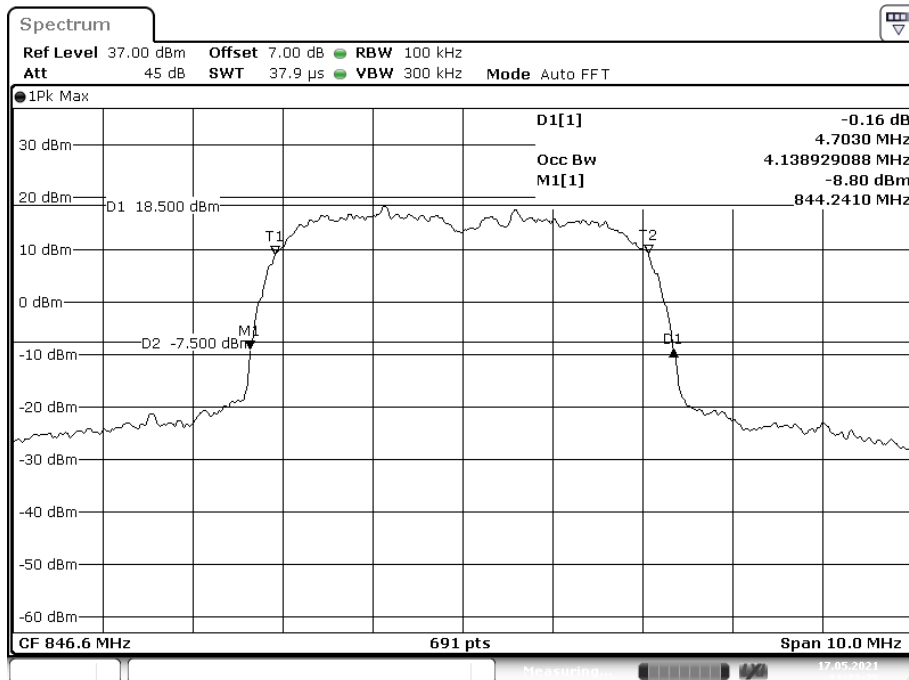
**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



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

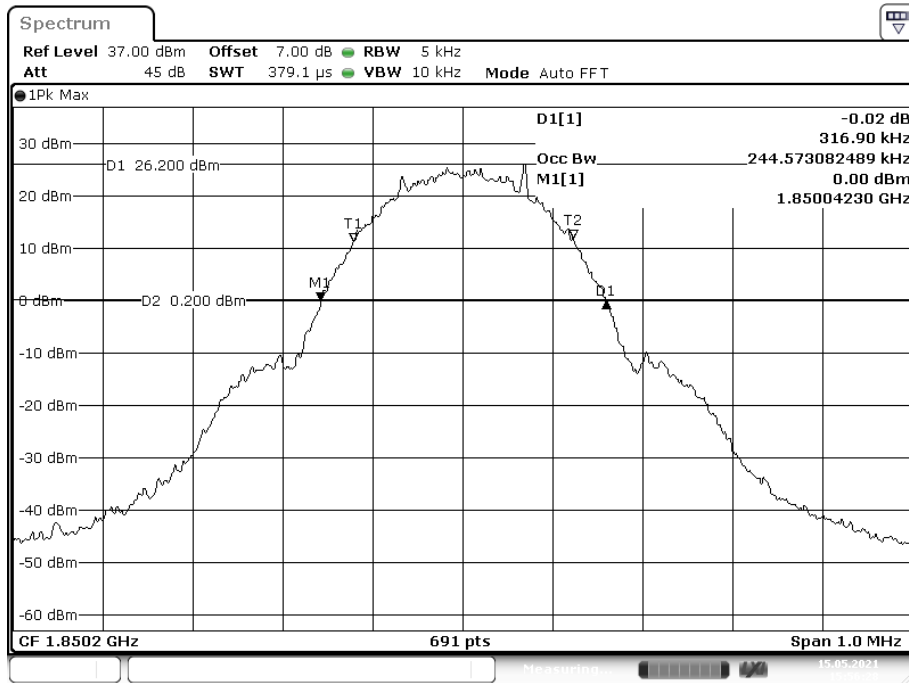


**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**

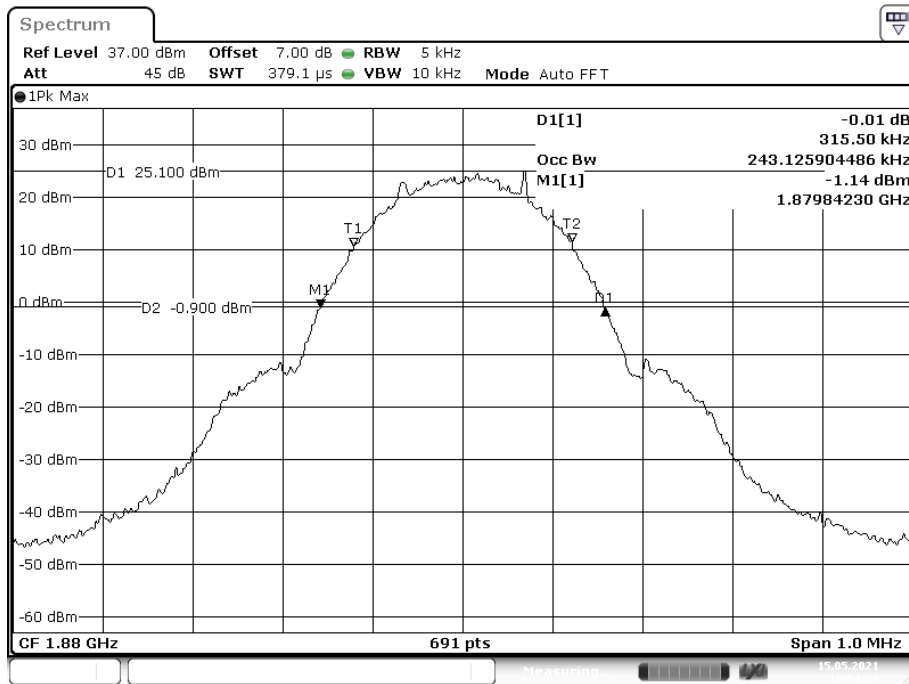


**PCS Band (Part 24E)**

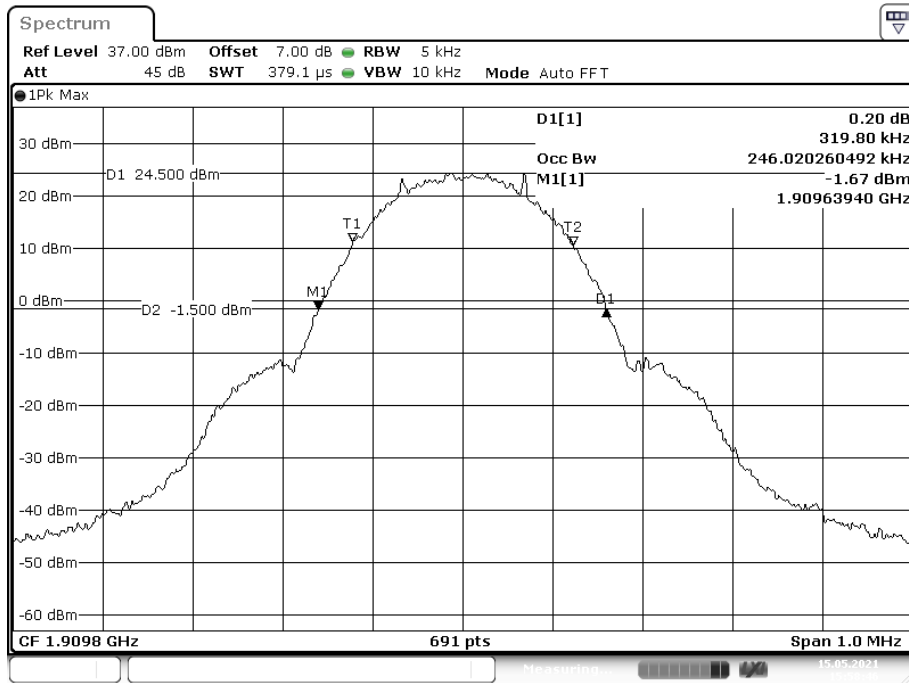
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Low channel**



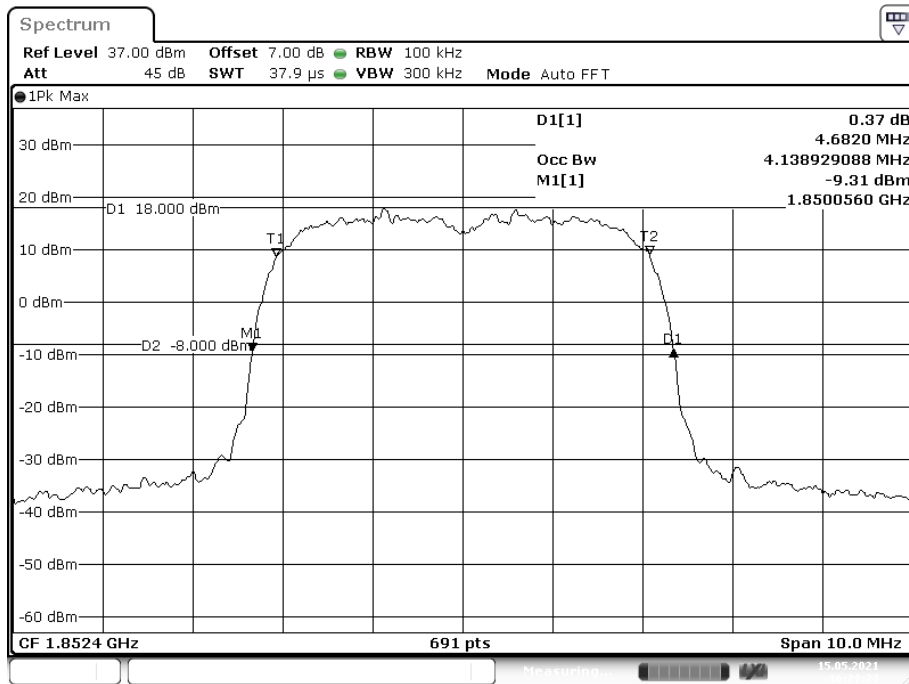
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, Middle channel**



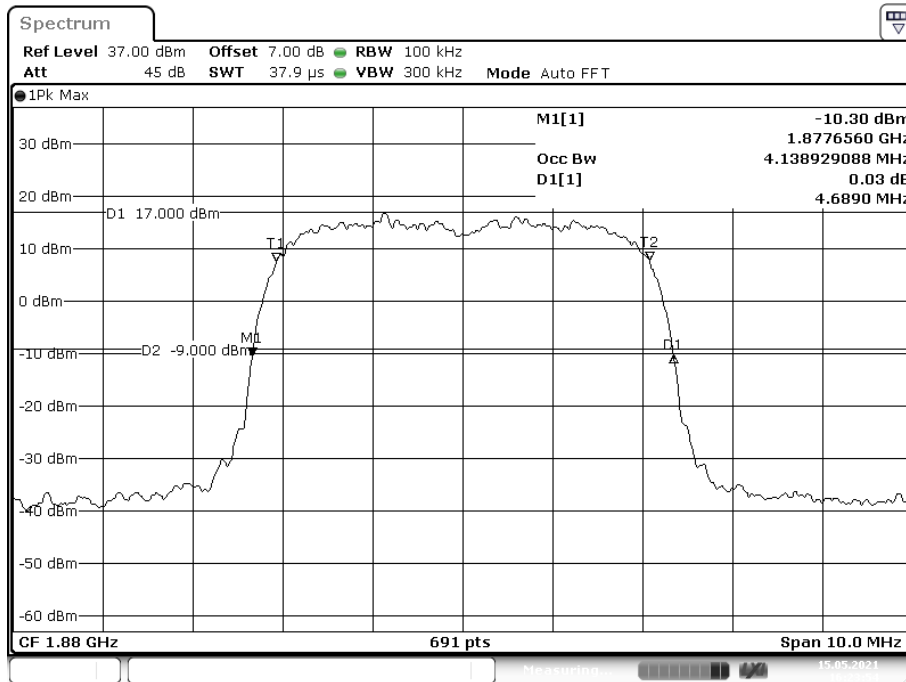
**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode, High channel**



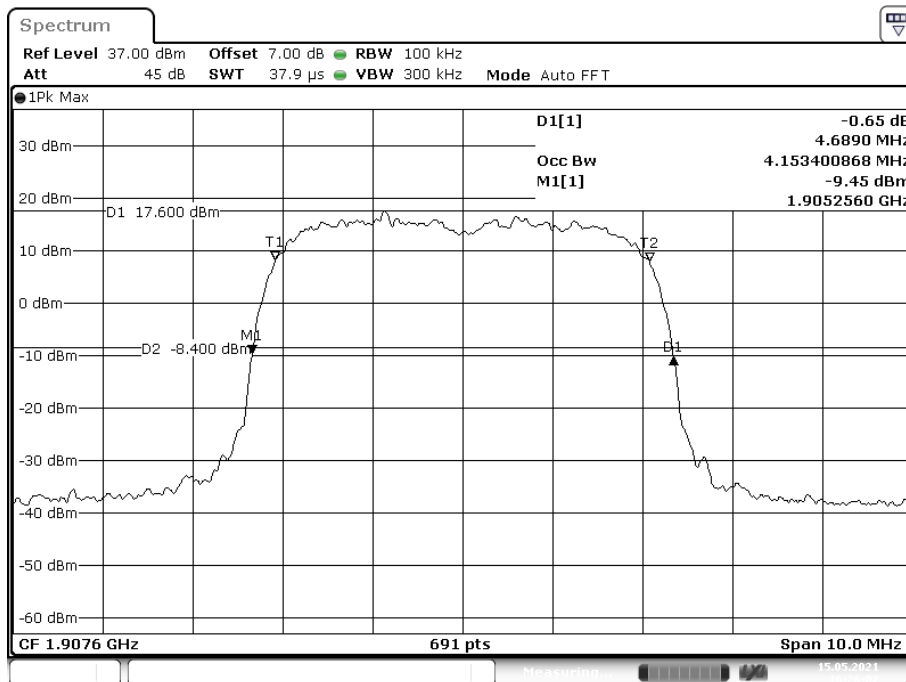
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**



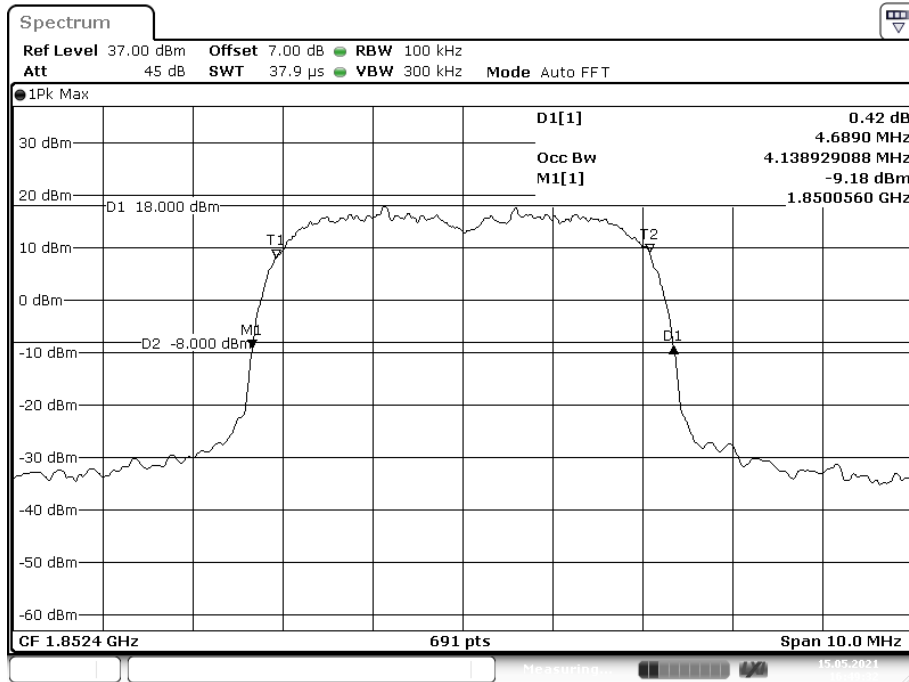
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**



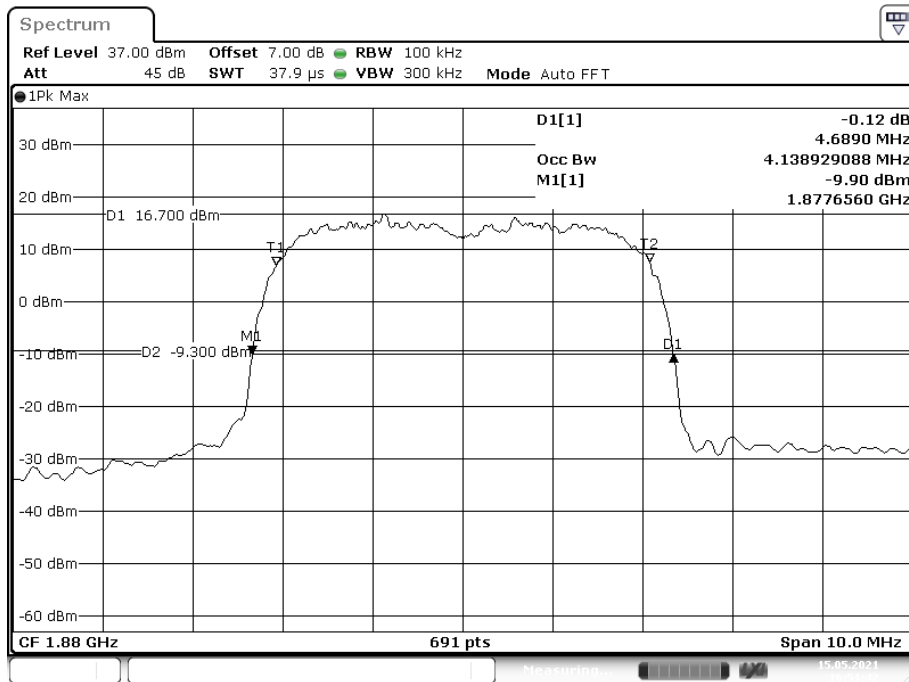
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



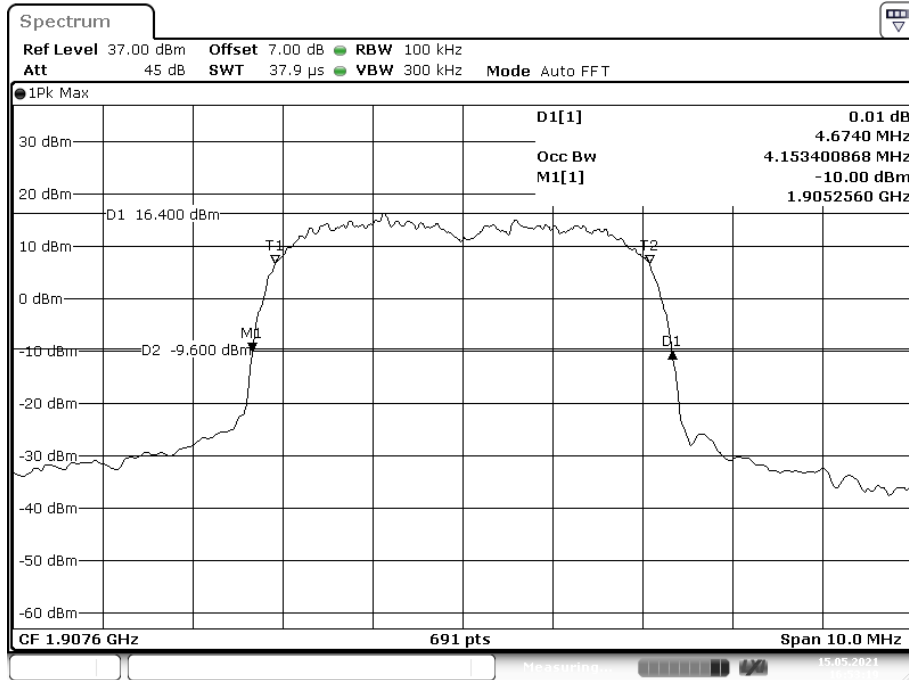
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



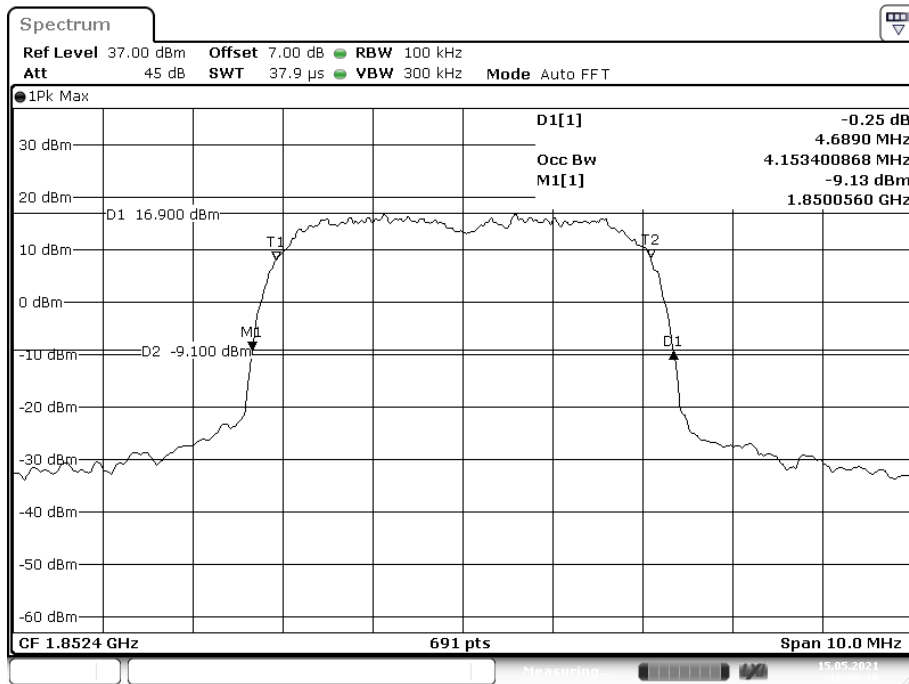
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel**



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

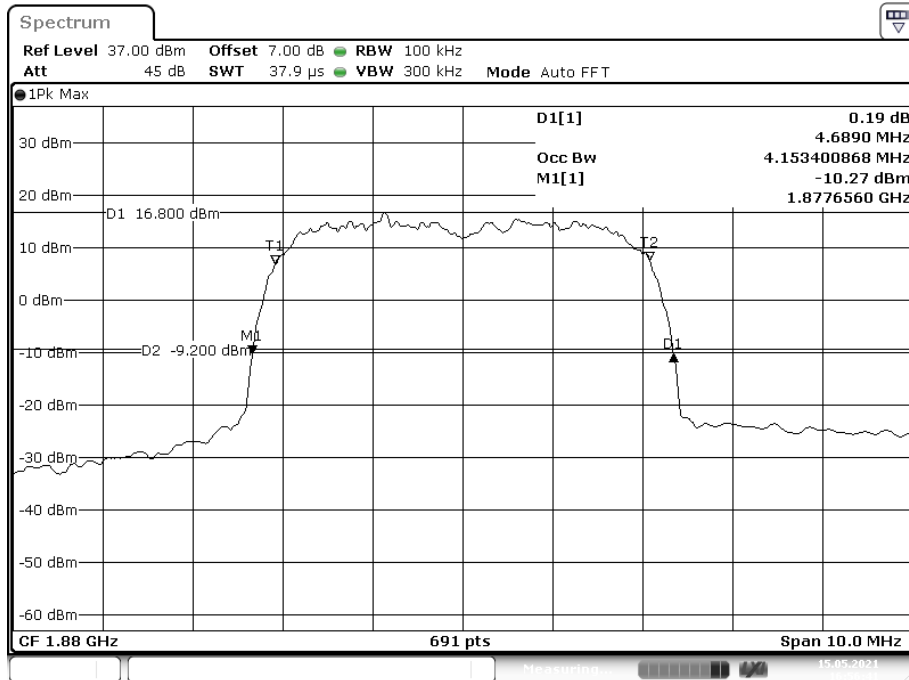


**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**

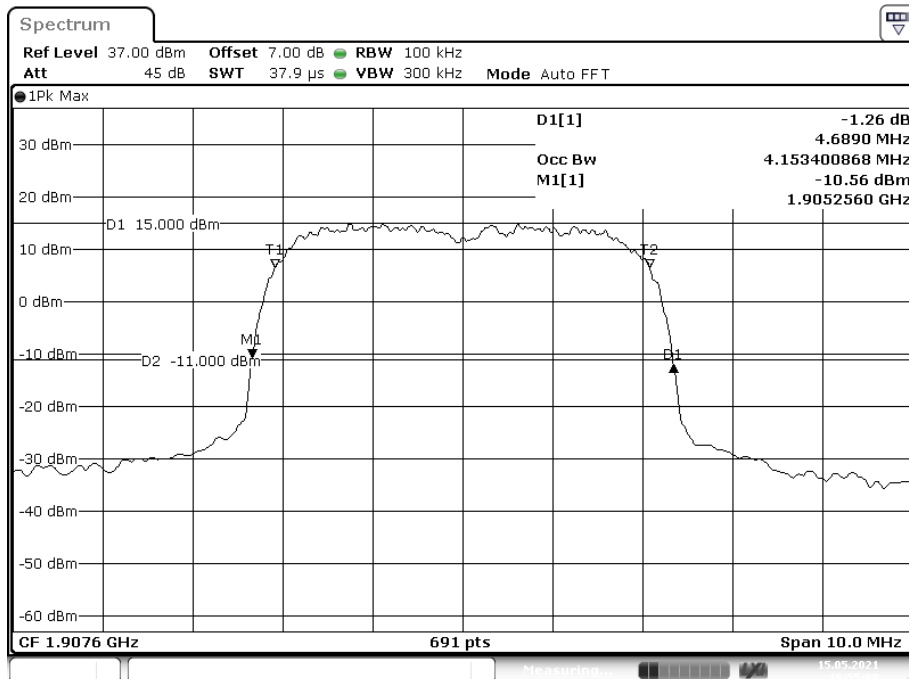




**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel**

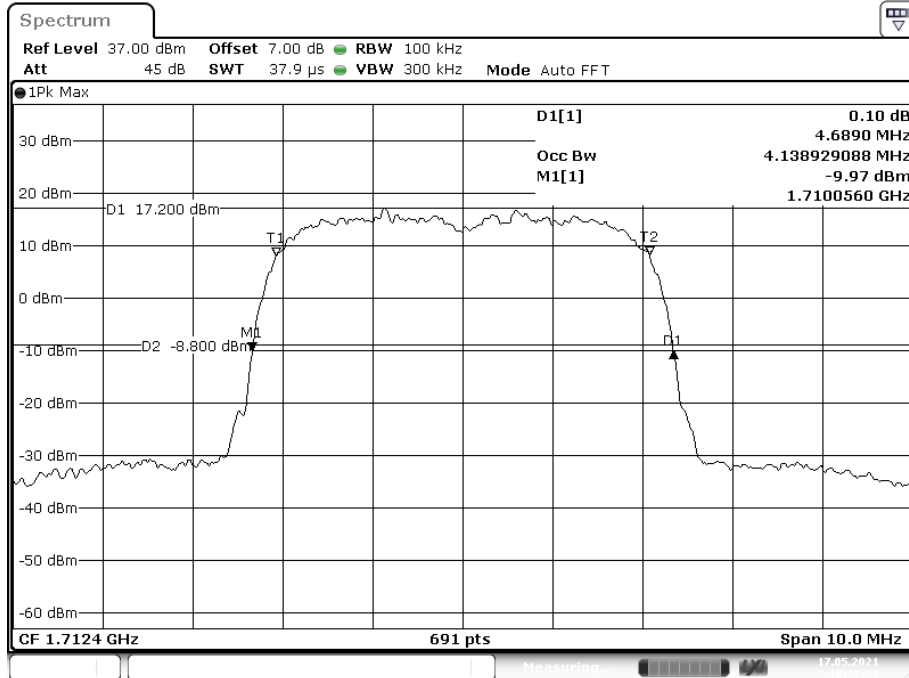


**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, High channel**

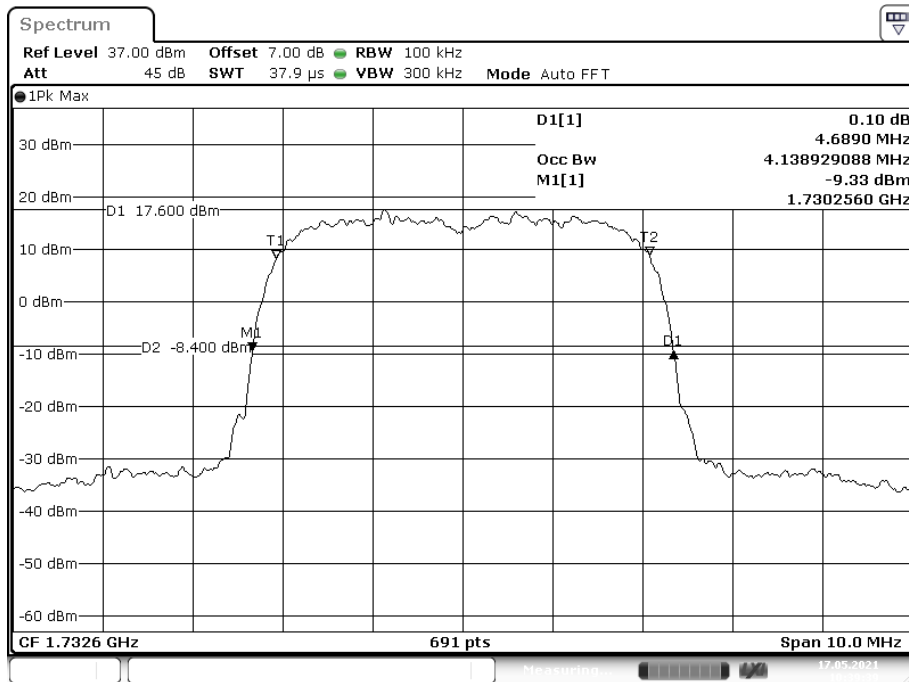


**AWS Band (Part 27)**

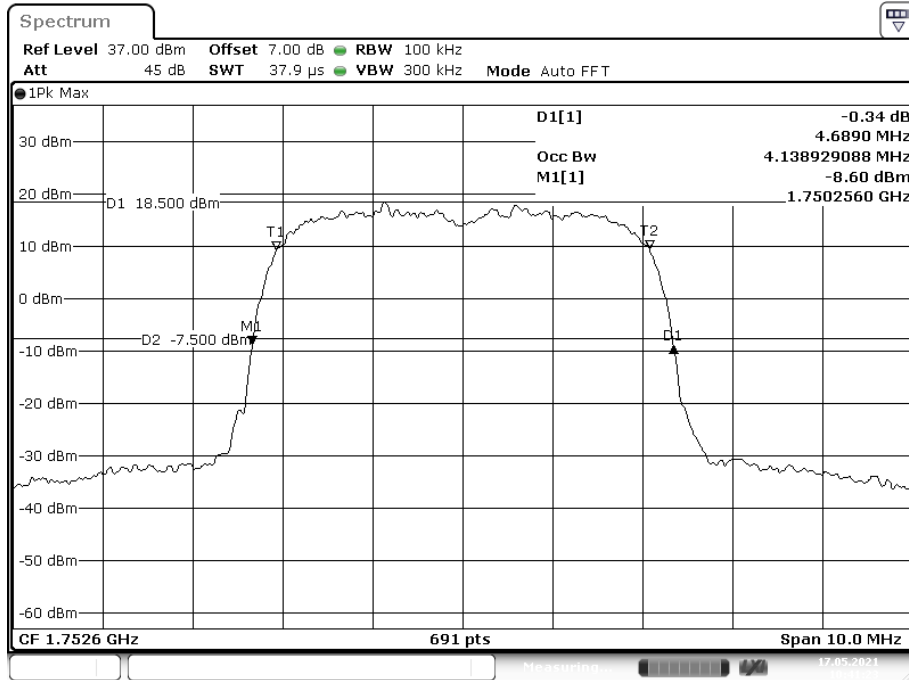
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Low channel**



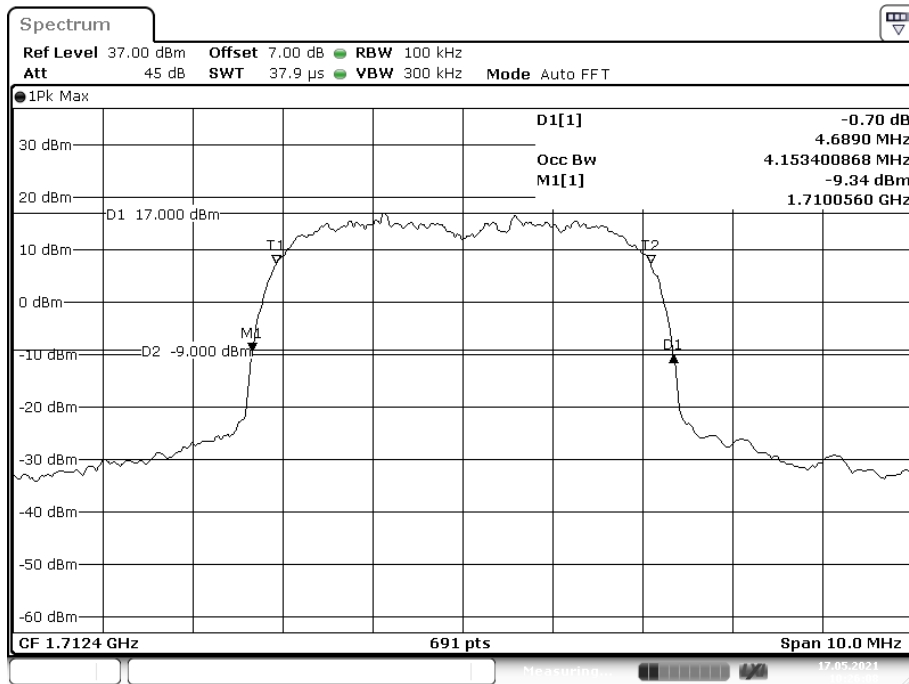
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel**



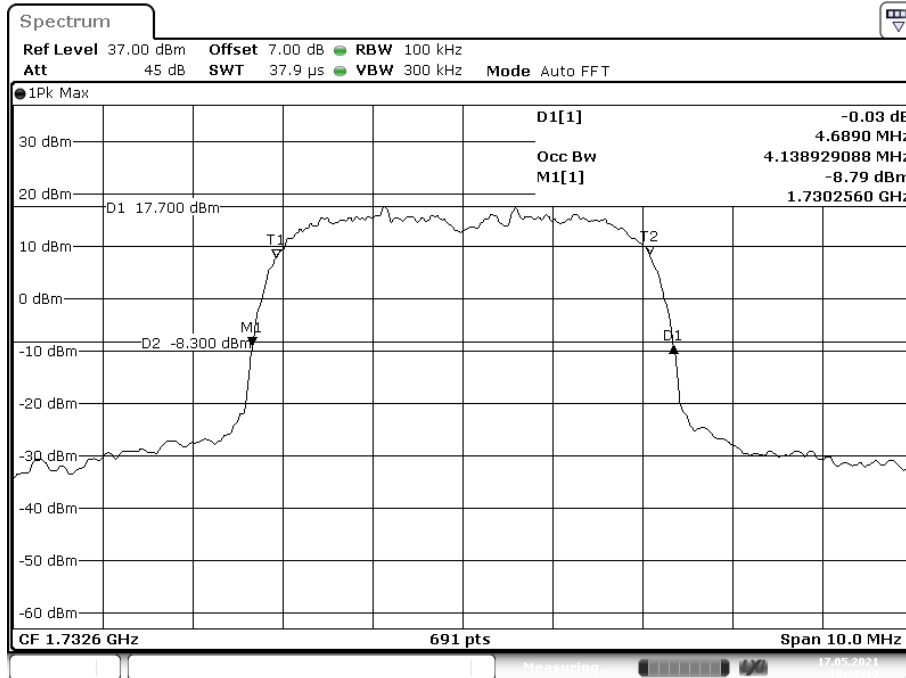
**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode, High channel**



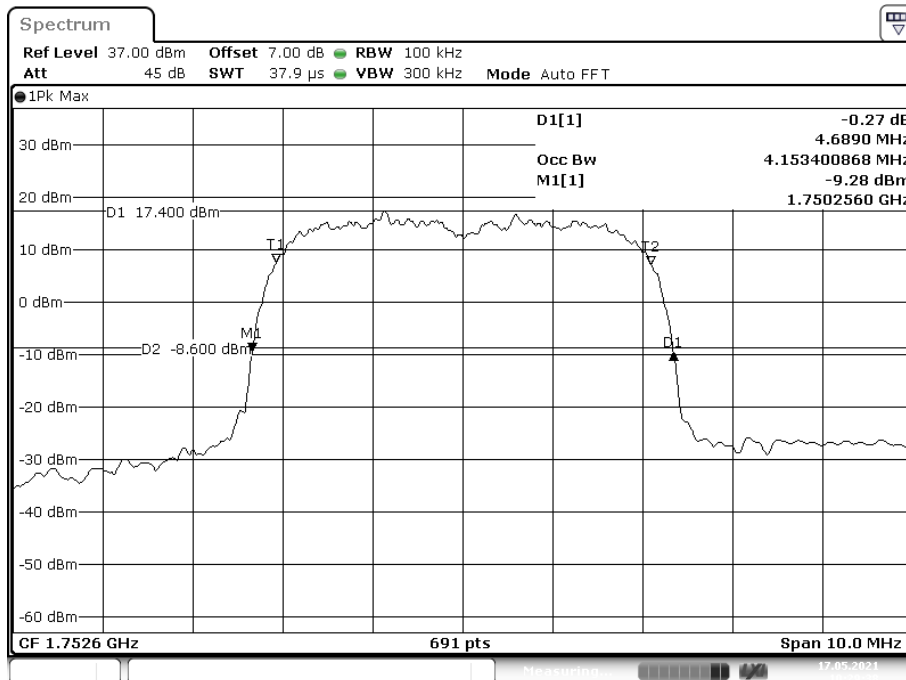
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Low channel**



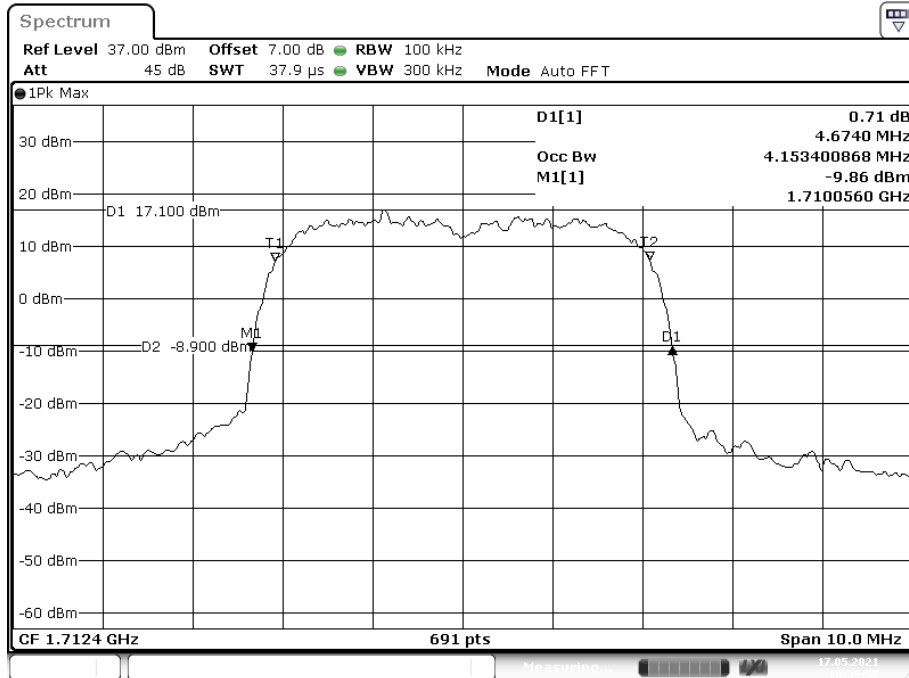
**26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode, Middle channel**



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

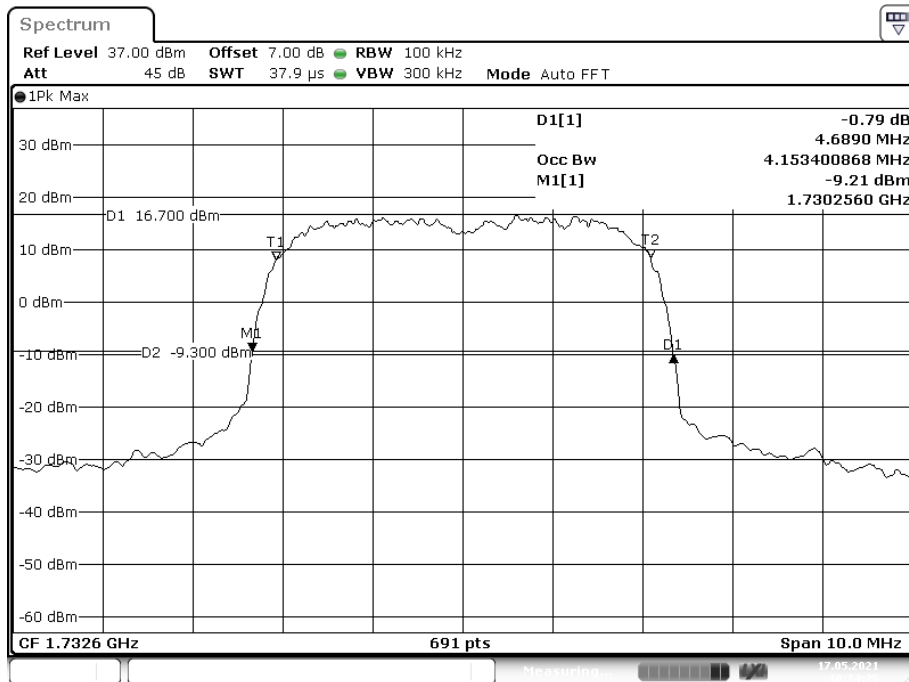


**26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode, Low channel**



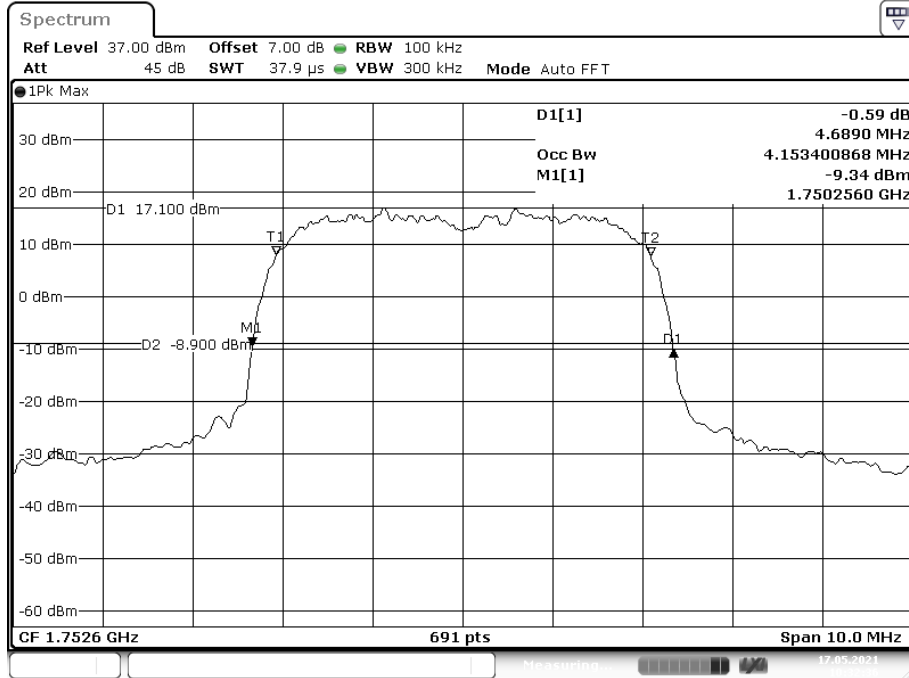
Date: 17.MAY.2021 10:35:57

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



Date: 17.MAY.2021 10:34:25

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



Date: 17.MAY.2021 10:32:36

**LTE Band 2:**

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.290
		Middle	1.104	1.290
		High	1.104	1.320
	16QAM	Low	1.104	1.290
		Middle	1.110	1.272
		High	1.098	1.290
3	QPSK	Low	2.700	3.012
		Middle	2.700	3.024
		High	2.700	3.000
	16QAM	Low	2.688	3.012
		Middle	2.700	3.060
		High	2.700	3.072
5	QPSK	Low	4.540	5.280
		Middle	4.520	5.260
		High	4.520	5.340
	16QAM	Low	4.540	5.320
		Middle	4.560	5.460
		High	4.540	5.420
10	QPSK	Low	8.960	9.800
		Middle	8.960	9.800
		High	8.960	9.840
	16QAM	Low	8.960	9.760
		Middle	9.000	9.920
		High	8.960	10.160
15	QPSK	Low	13.560	15.480
		Middle	13.500	15.120
		High	13.560	15.600
	16QAM	Low	13.560	15.000
		Middle	13.560	15.420
		High	13.500	15.060
20	QPSK	Low	18.000	19.840
		Middle	18.000	19.840
		High	17.920	20.000
	16QAM	Low	18.000	20.080
		Middle	18.000	19.680
		High	18.000	19.920

**LTE Band 4:**

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.284
		Middle	1.116	1.320
		High	1.110	1.302
	16QAM	Low	1.116	1.266
		Middle	1.104	1.266
		High	1.110	1.320
3	QPSK	Low	2.712	3.012
		Middle	2.700	3.024
		High	2.700	3.024
	16QAM	Low	2.700	3.000
		Middle	2.700	3.072
		High	2.700	3.072
5	QPSK	Low	4.560	5.360
		Middle	4.520	5.260
		High	4.540	5.340
	16QAM	Low	4.520	5.260
		Middle	4.560	5.380
		High	4.560	5.460
10	QPSK	Low	8.960	9.840
		Middle	8.960	9.880
		High	8.960	9.840
	16QAM	Low	8.960	9.840
		Middle	9.000	9.960
		High	8.960	10.000
15	QPSK	Low	13.560	15.540
		Middle	13.560	15.300
		High	13.560	15.660
	16QAM	Low	13.500	15.060
		Middle	13.560	15.300
		High	13.500	15.000
20	QPSK	Low	18.000	19.920
		Middle	18.013	20.140
		High	18.000	20.160
	16QAM	Low	18.000	19.920
		Middle	18.000	20.000
		High	18.000	20.240



**LTE Band 5:**

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.110	1.290
		Middle	1.104	1.344
		High	1.110	1.332
	16QAM	Low	1.110	1.278
		Middle	1.098	1.302
		High	1.104	1.284
3	QPSK	Low	2.712	3.000
		Middle	2.700	3.048
		High	2.700	3.024
	16QAM	Low	2.688	3.048
		Middle	2.700	3.048
		High	2.700	3.084
5	QPSK	Low	4.540	5.400
		Middle	4.520	5.300
		High	4.520	5.440
	16QAM	Low	4.520	5.320
		Middle	4.540	5.500
		High	4.560	5.420
10	QPSK	Low	8.960	9.800
		Middle	9.000	9.840
		High	8.960	9.720
	16QAM	Low	8.960	9.760
		Middle	9.000	9.880
		High	8.960	9.960

**LTE Band 7:**

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.520	5.360
		Middle	4.520	5.220
		High	4.540	5.320
	16QAM	Low	4.520	5.260
		Middle	4.560	5.440
		High	4.560	5.560
10	QPSK	Low	9.000	9.840
		Middle	8.960	9.840
		High	8.960	9.880
	16QAM	Low	8.960	9.800
		Middle	8.960	9.920
		High	8.960	10.000
15	QPSK	Low	13.620	15.600
		Middle	13.500	15.300
		High	13.500	16.020
	16QAM	Low	13.500	15.180
		Middle	13.620	15.360
		High	13.500	15.000
20	QPSK	Low	18.000	19.840
		Middle	18.000	20.000
		High	18.000	20.080
	16QAM	Low	18.000	20.000
		Middle	18.000	19.920
		High	18.000	20.160

**LTE Band 66:**

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.106	1.312
		Middle	1.110	1.320
		High	1.104	1.284
	16QAM	Low	1.098	1.302
		Middle	1.104	1.314
		High	1.116	1.278
3	QPSK	Low	2.700	3.024
		Middle	2.700	3.024
		High	2.688	3.036
	16QAM	Low	2.700	3.024
		Middle	2.700	3.096
		High	2.700	3.060
5	QPSK	Low	4.540	5.340
		Middle	4.520	5.280
		High	4.520	5.480
	16QAM	Low	4.520	5.280
		Middle	4.560	5.460
		High	4.560	5.420
10	QPSK	Low	8.960	9.840
		Middle	8.960	9.760
		High	8.960	9.720
	16QAM	Low	8.960	9.760
		Middle	9.000	9.920
		High	8.960	10.120
15	QPSK	Low	13.620	15.660
		Middle	13.500	15.660
		High	13.620	16.020
	16QAM	Low	13.620	15.300
		Middle	13.620	15.480
		High	13.560	15.060
20	QPSK	Low	18.000	20.160
		Middle	18.000	20.320
		High	18.000	20.160
	16QAM	Low	18.000	20.080
		Middle	18.000	19.840
		High	18.000	19.760

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

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

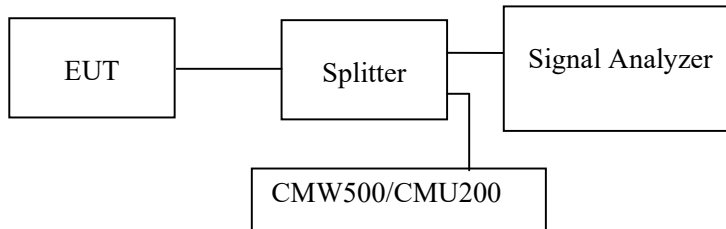
**Applicable Standard**

FCC §2.1051, §22.917(a) 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 10<sup>th</sup> harmonic.



**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	28~28.2 °C
<b>Relative Humidity:</b>	55~59 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Zero Yan and Pedro Yun from 2021-05-15 to 2021-05-19.*

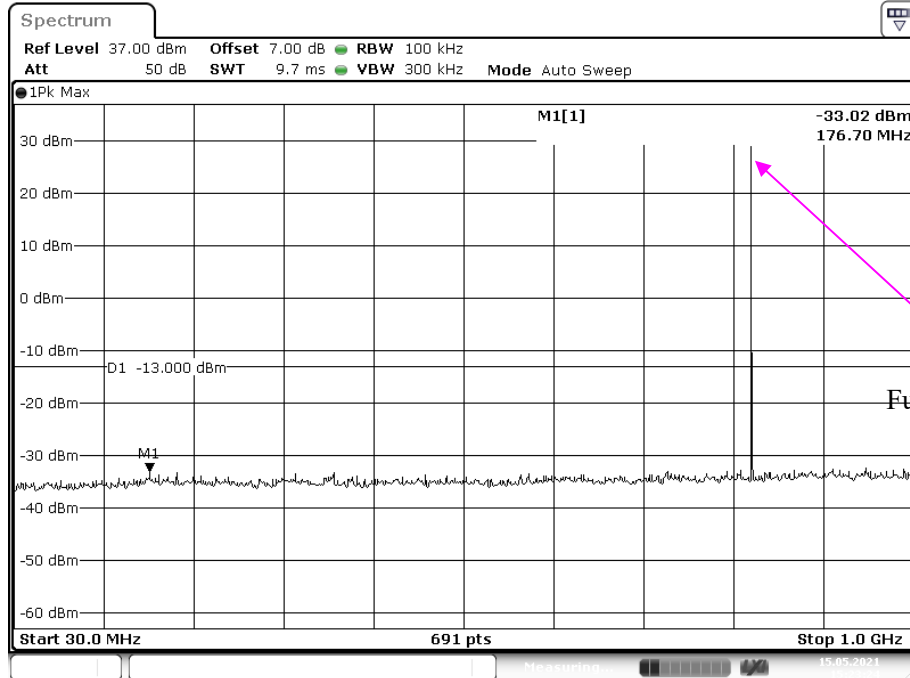
*EUT operation mode: Transmitting*

**Test result: Pass**

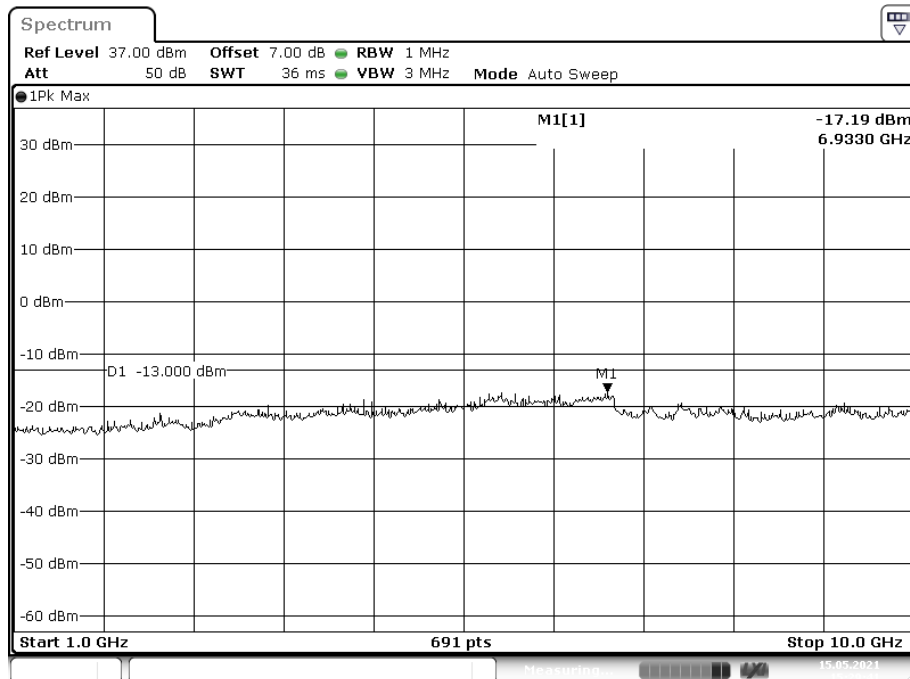
*Please refer to the following plots.*

**Cellular Band (Part 22H)**  
**Low Channel:**

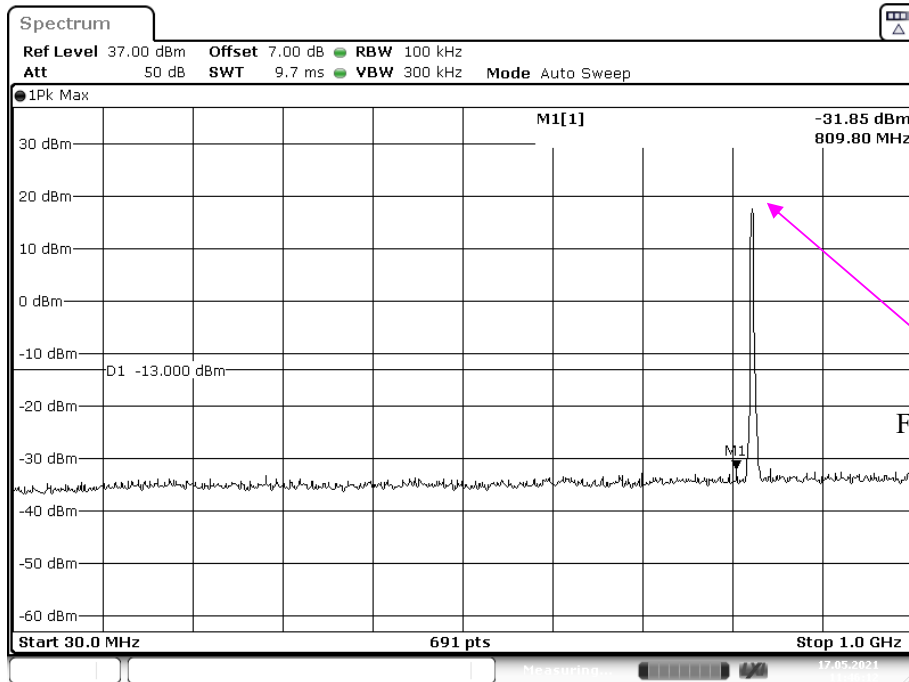
**30 MHz – 1 GHz (GSM Mode)**



**1 GHz – 10 GHz (GSM Mode)**

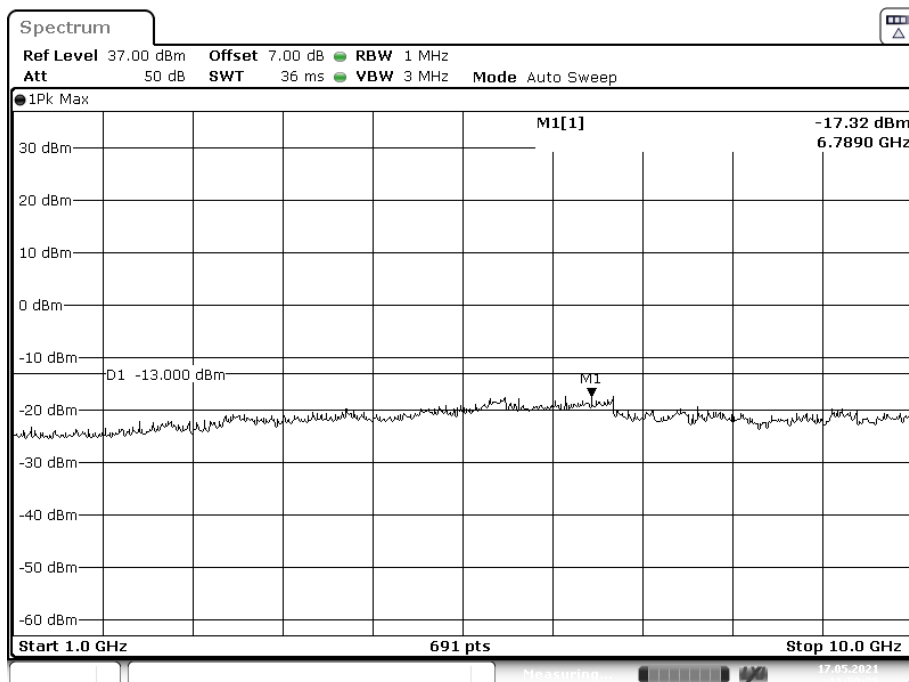


### 30 MHz – 1 GHz (WCDMA Mode)



Date: 17.MAY.2021 11:46:12

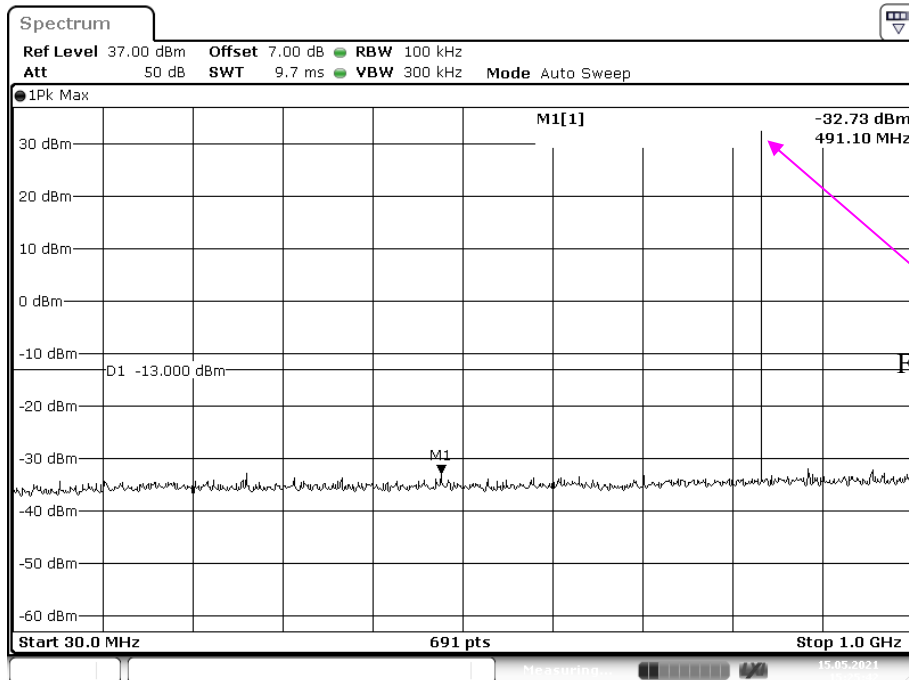
### 1 GHz – 10 GHz (WCDMA Mode)



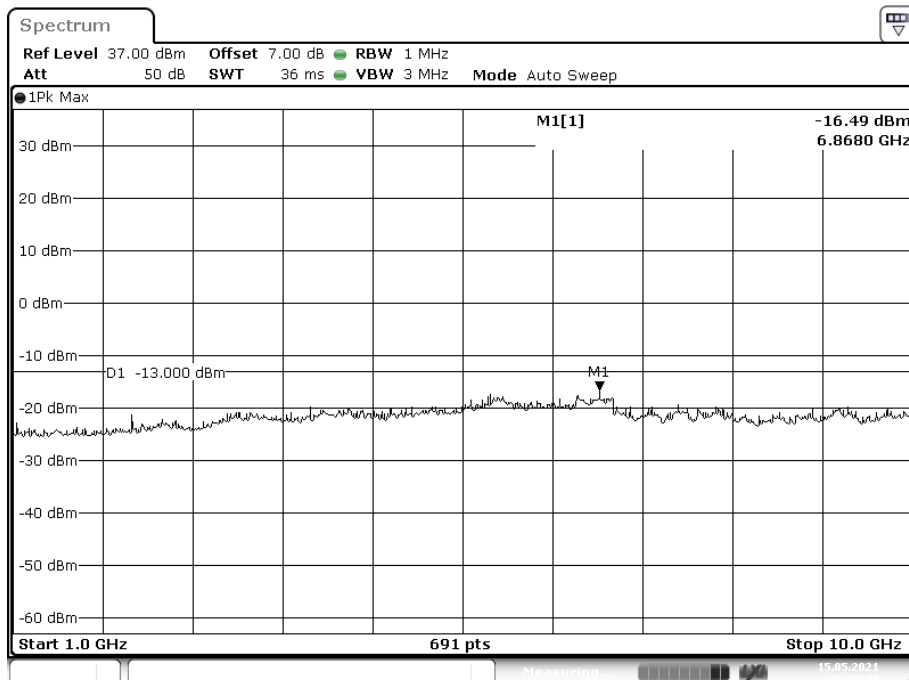
Date: 17.MAY.2021 11:50:39

Middle Channel:

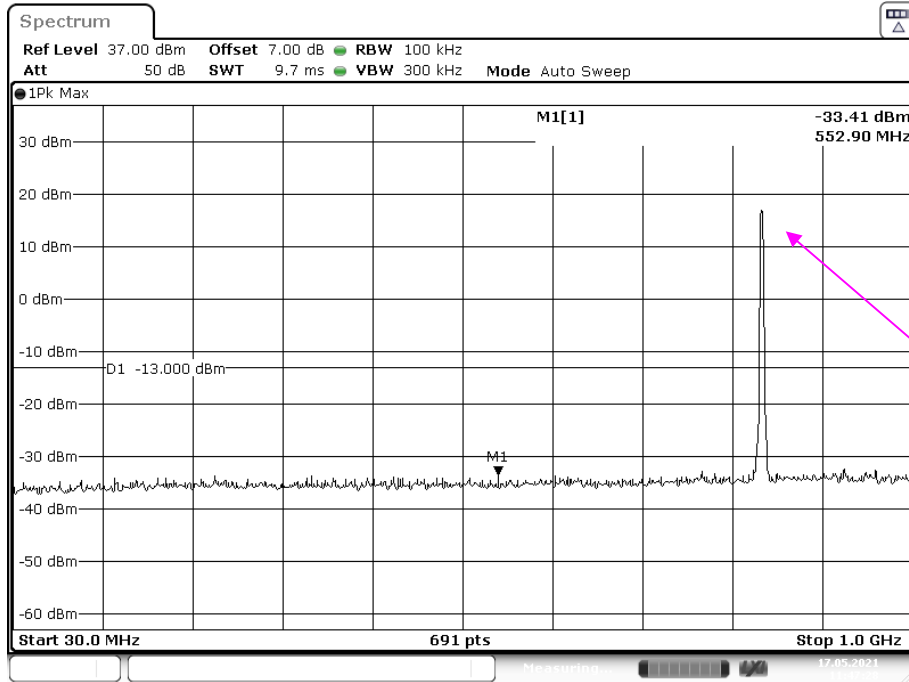
30 MHz – 1 GHz (GSM Mode)



1 GHz – 10 GHz (GSM Mode)



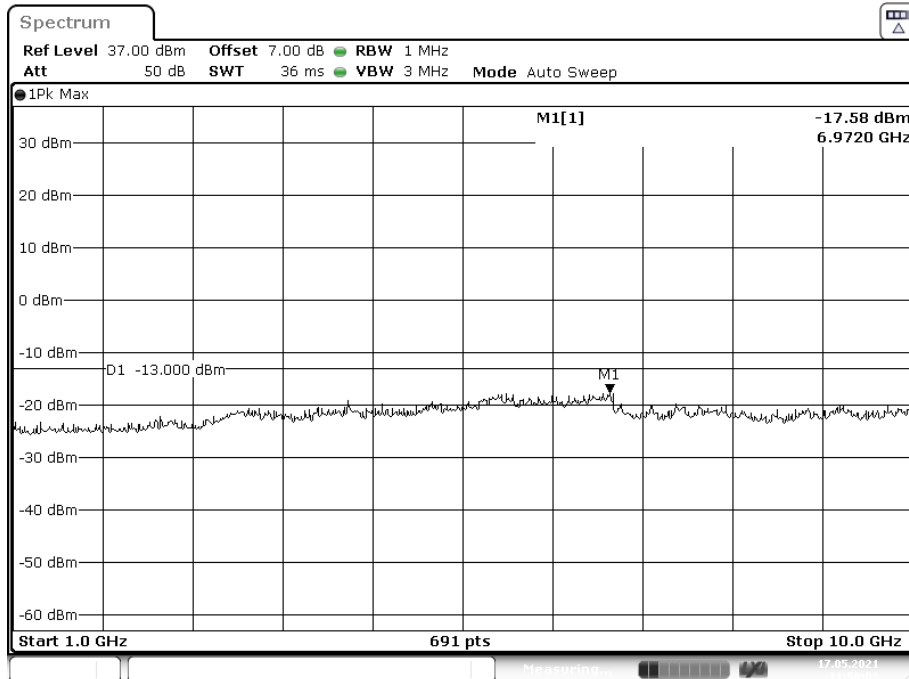
### 30 MHz – 1 GHz (WCDMA Mode)



Date: 17.MAY.2021 11:47:28

Fundamental test

### 1 GHz – 10 GHz (WCDMA Mode)

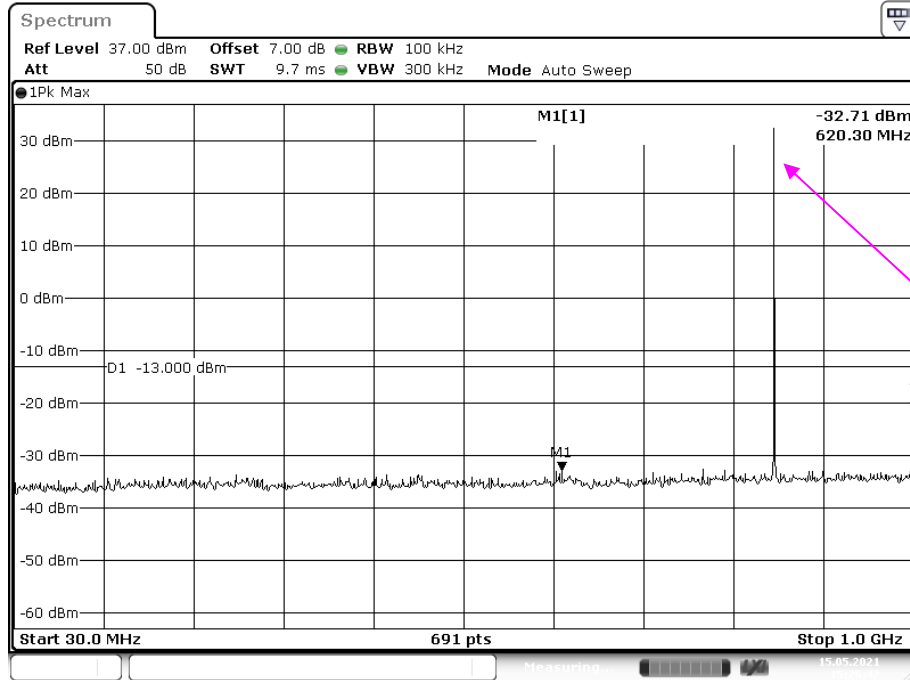


Date: 17.MAY.2021 11:50:04



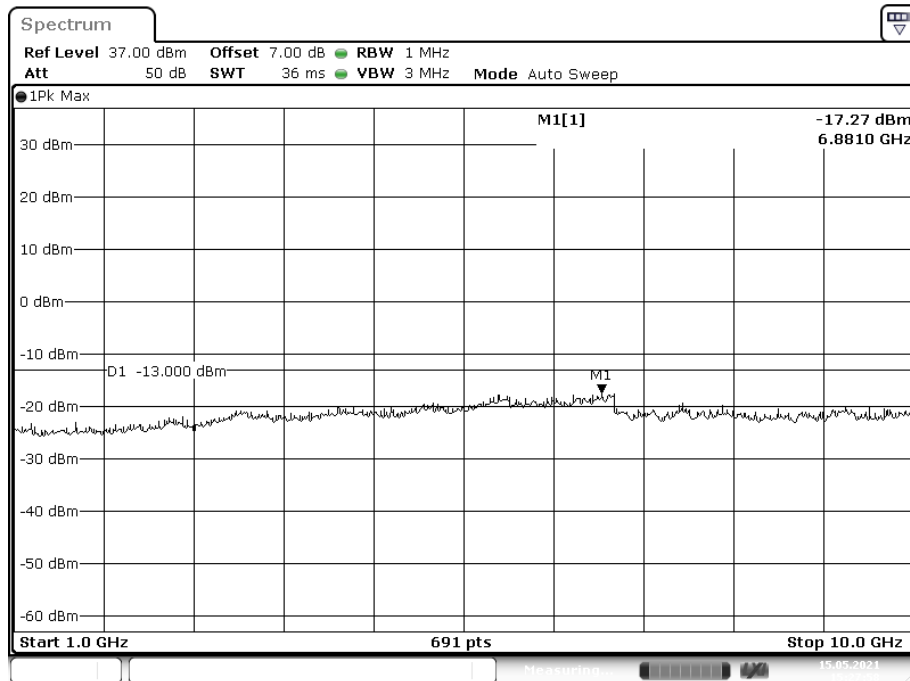
**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**



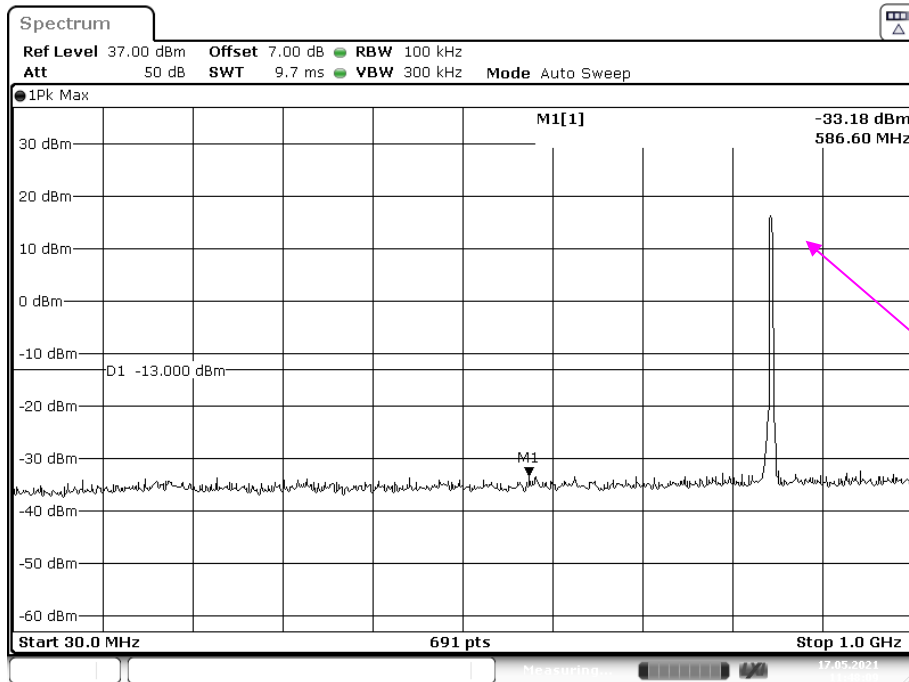
Date: 15.MAY.2021 15:26:42

**1 GHz – 10 GHz (GSM Mode)**



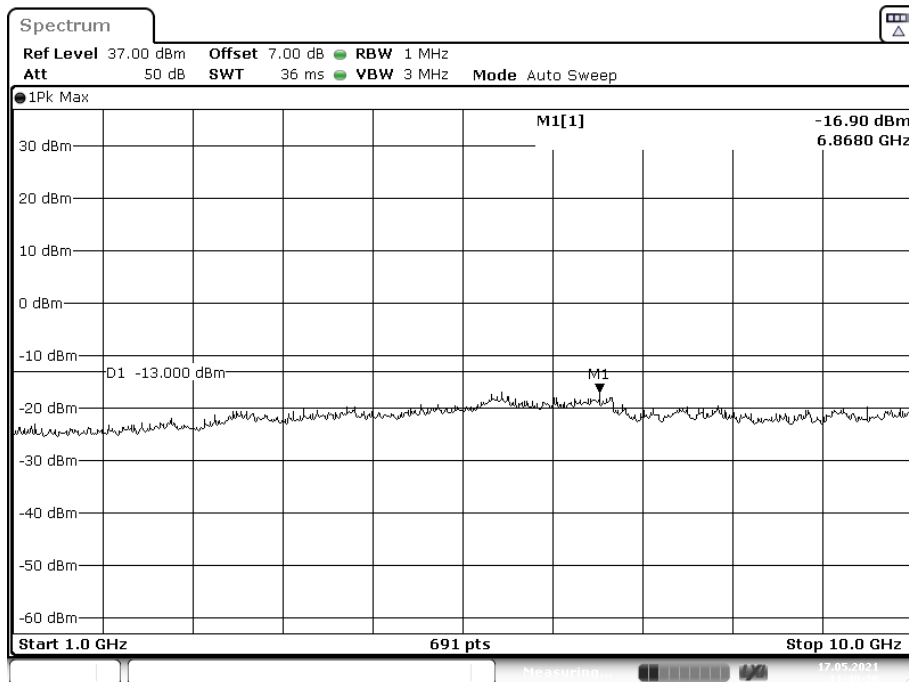
Date: 15.MAY.2021 15:27:58

### 30 MHz – 1 GHz (WCDMA Mode)



Date: 17.MAY.2021 11:48:09

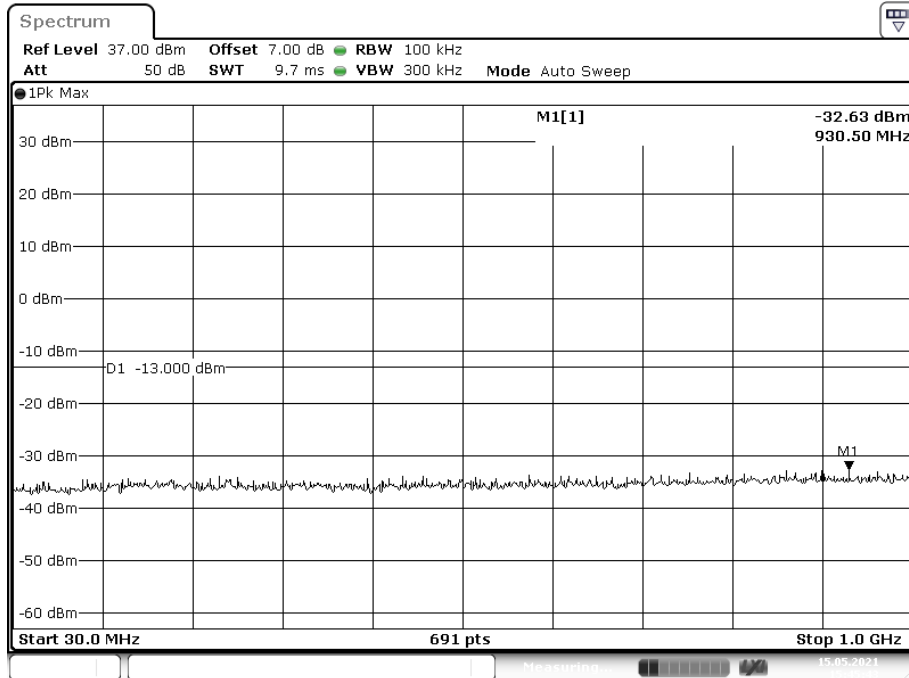
### 1 GHz – 10 GHz (WCDMA Mode)



Date: 17.MAY.2021 11:49:21

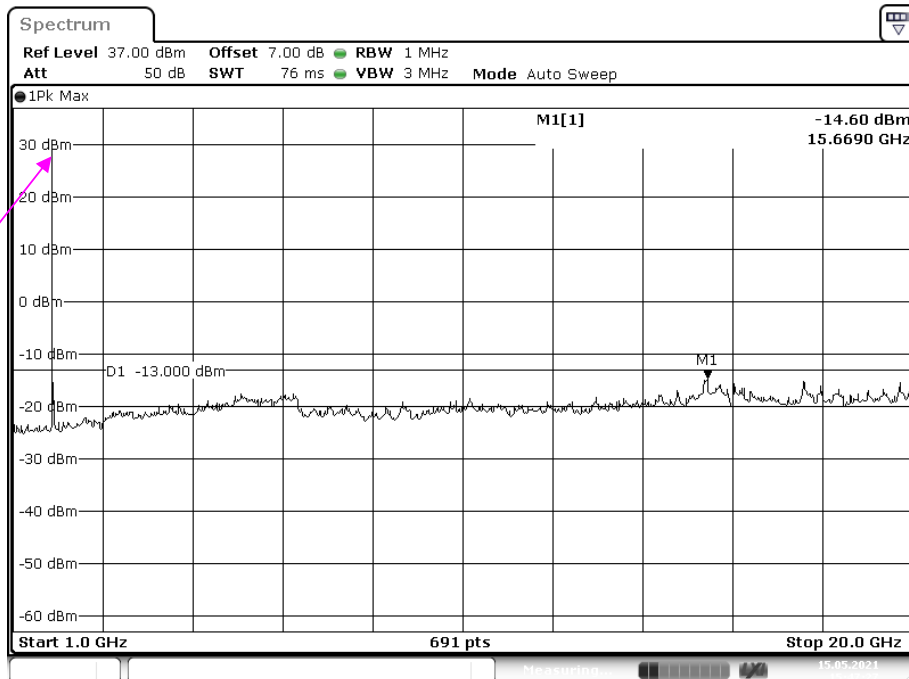
**PCS Band (Part 24E)  
Low Channel:**

**30 MHz – 1 GHz (GSM Mode)**

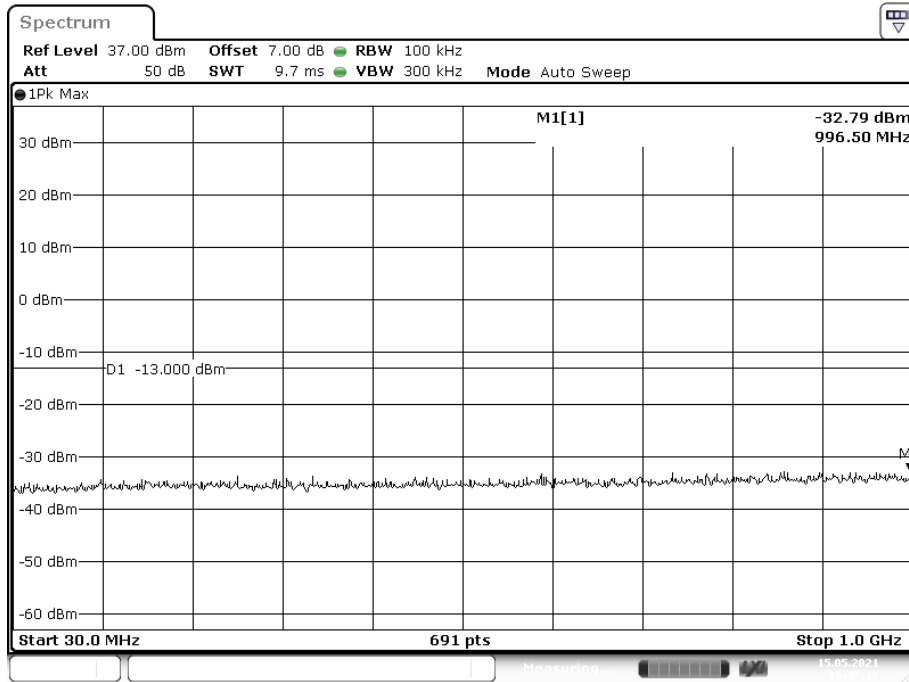


**1 GHz – 20 GHz (GSM Mode)**

Fundamental test

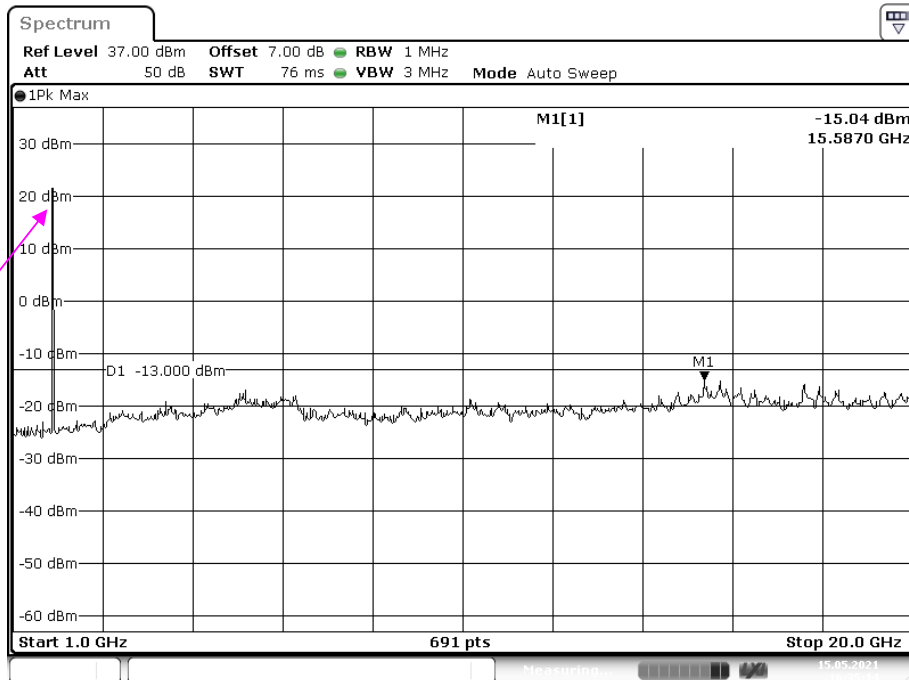


### 30 MHz – 1 GHz (WCDMA Mode)



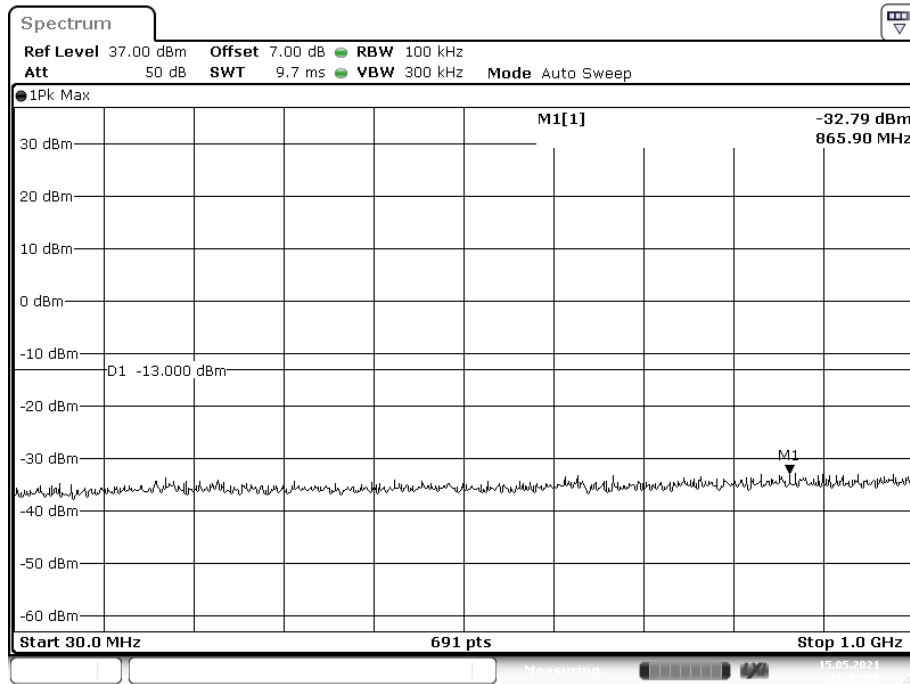
### 1 GHz – 20 GHz (WCDMA Mode)

Fundamental test



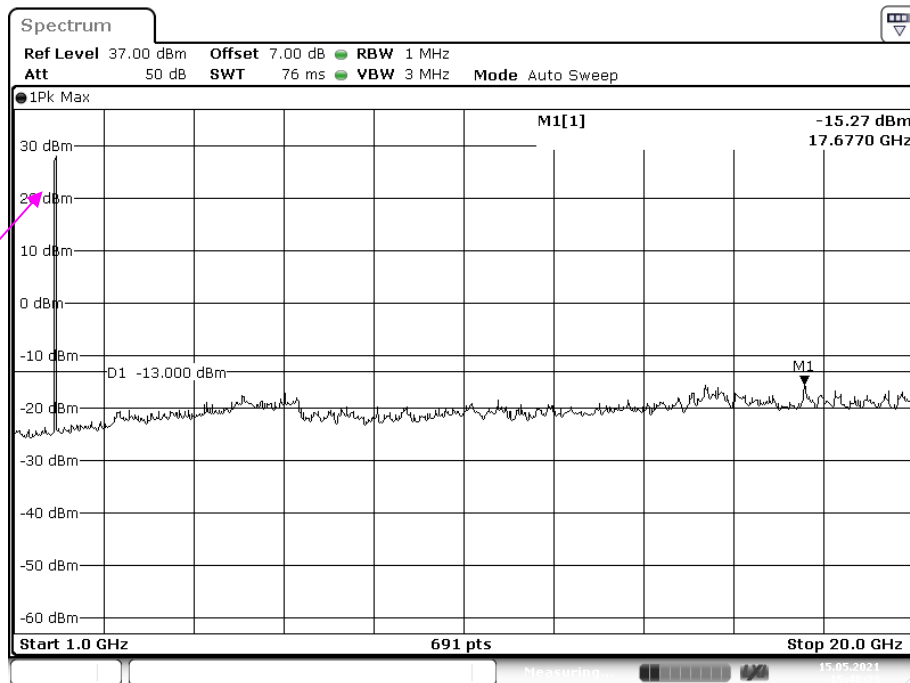
Middle Channel:

30 MHz – 1 GHz (GSM Mode)

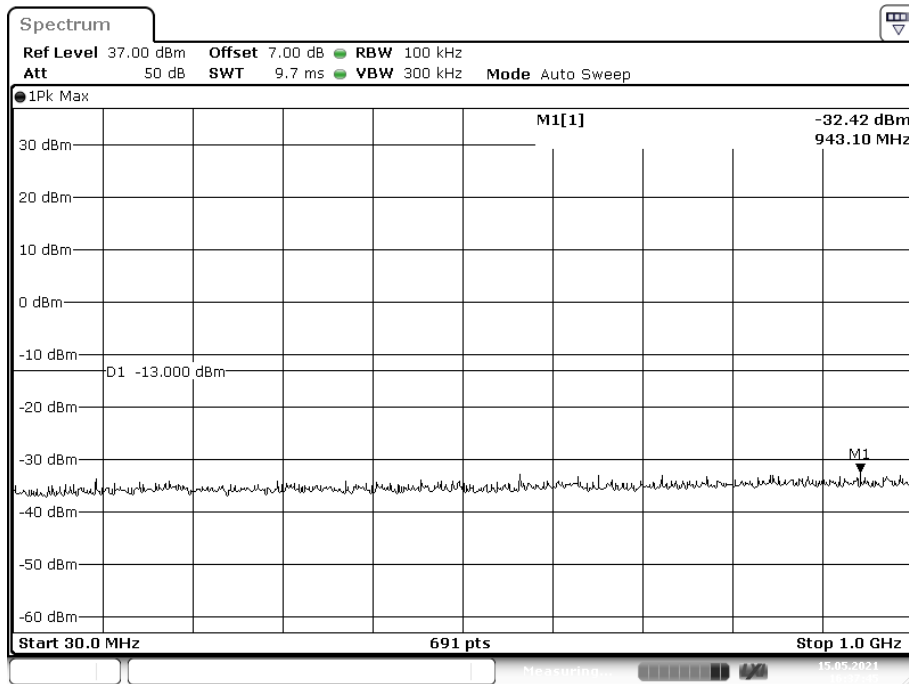


1 GHz – 20 GHz (GSM Mode)

Fundamental test

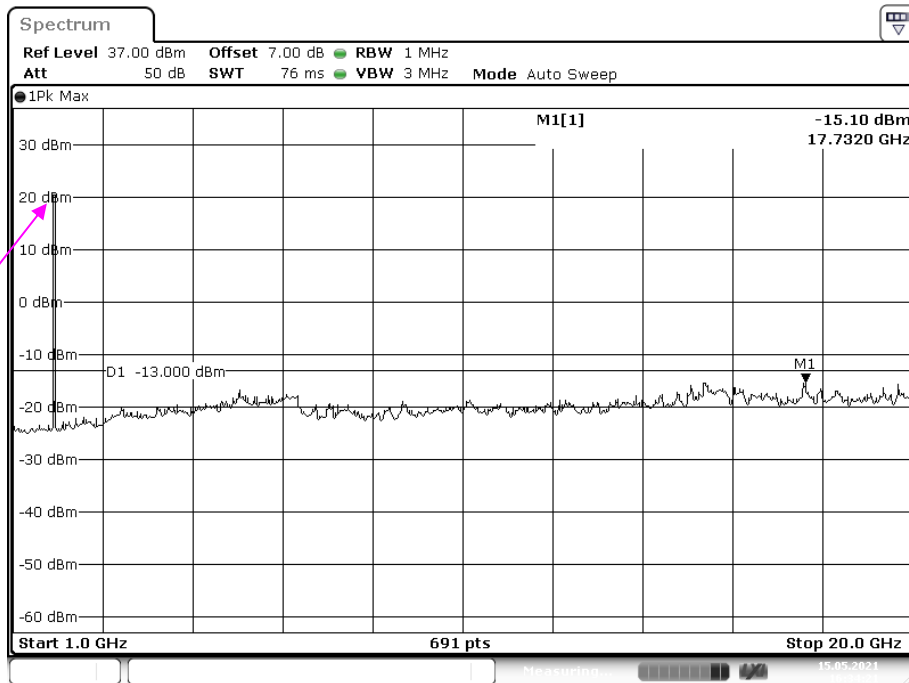


### 30 MHz – 1 GHz (WCDMA Mode)



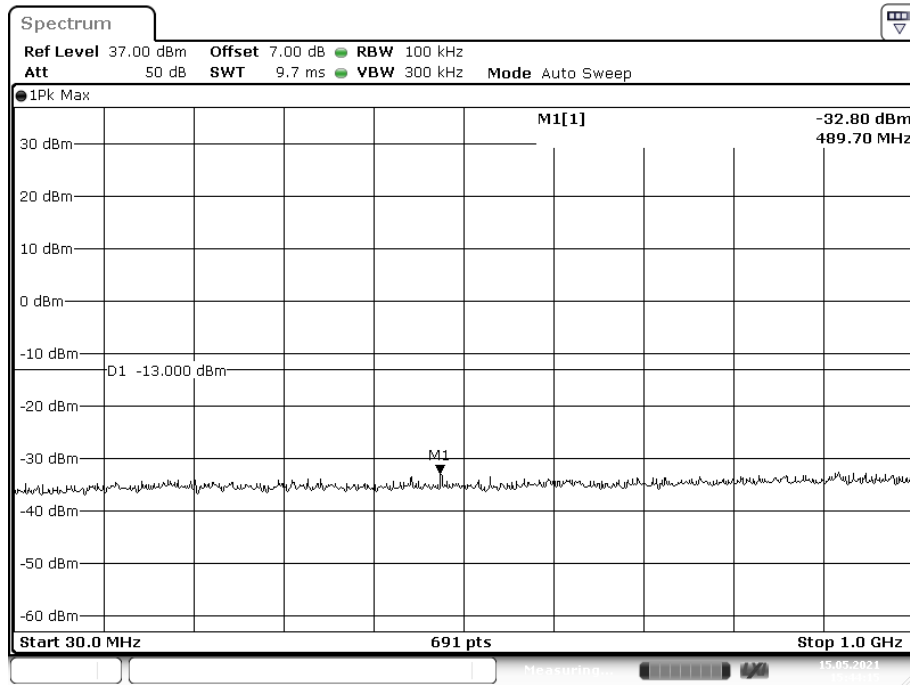
### 1 GHz – 20 GHz (WCDMA Mode)

Fundamental test

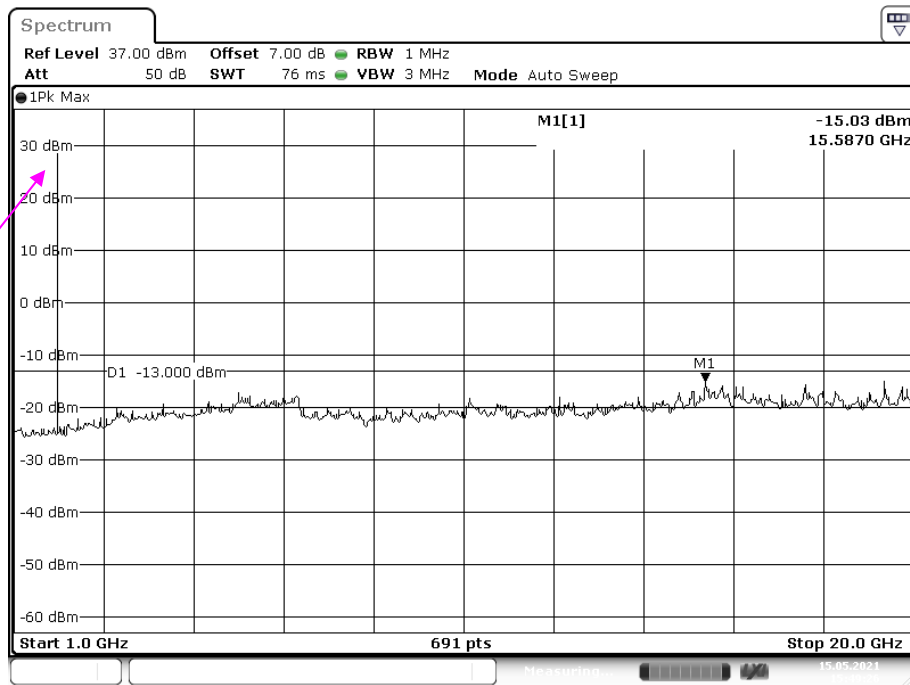


**High Channel:**

**30 MHz – 1 GHz (GSM Mode)**

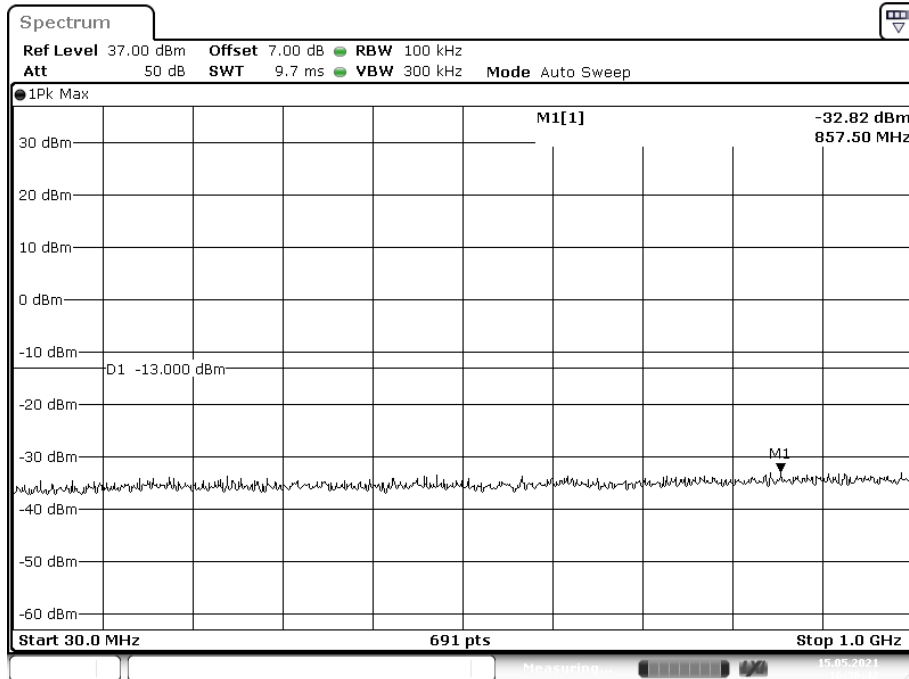


**1 GHz – 20 GHz (GSM Mode)**



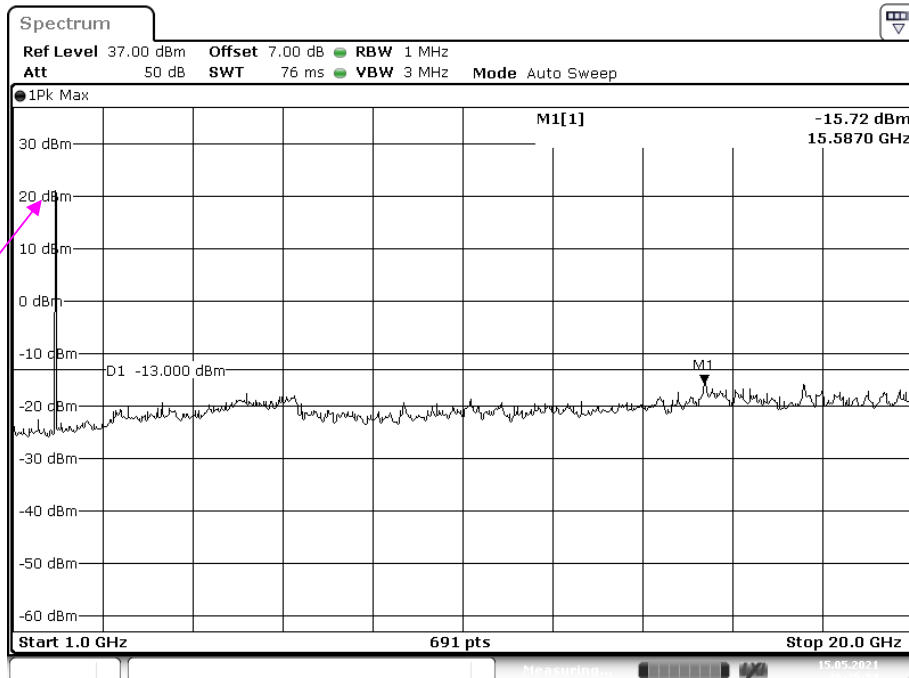
Fundamental test

### 30 MHz – 1 GHz (WCDMA Mode)



### 1 GHz – 20 GHz (WCDMA Mode)

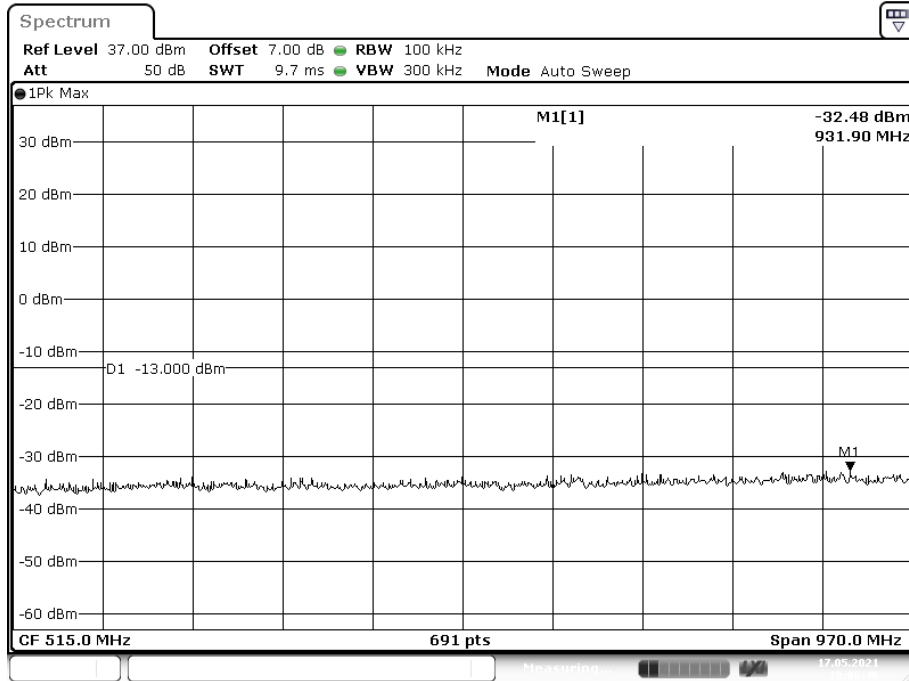
Fundamental test





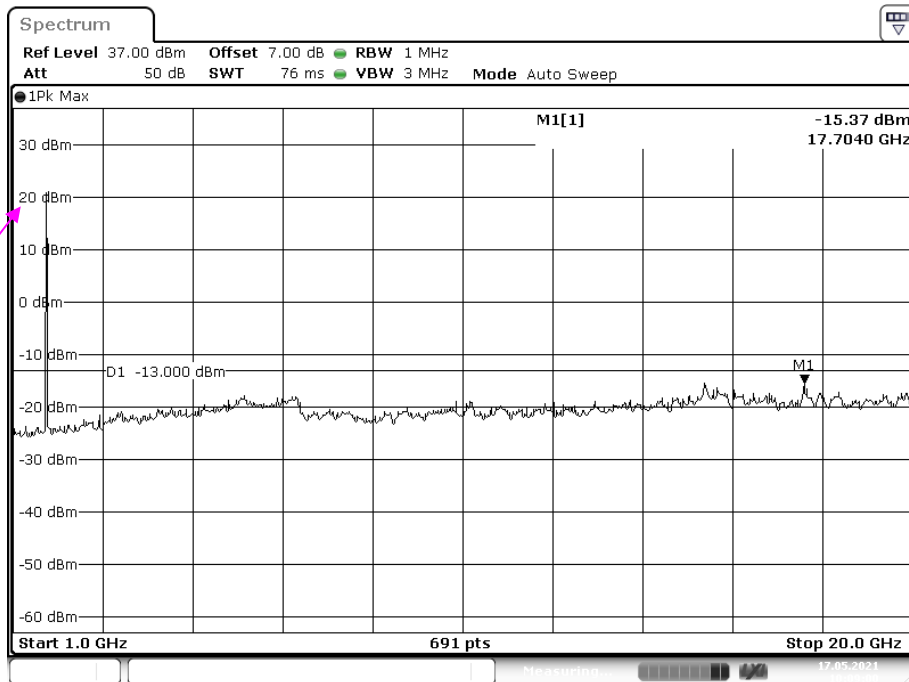
**AWS Band (Part 27)  
Low Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**



Date: 17.MAY.2021 10:06:47

**1 GHz – 20 GHz (WCDMA Mode)**

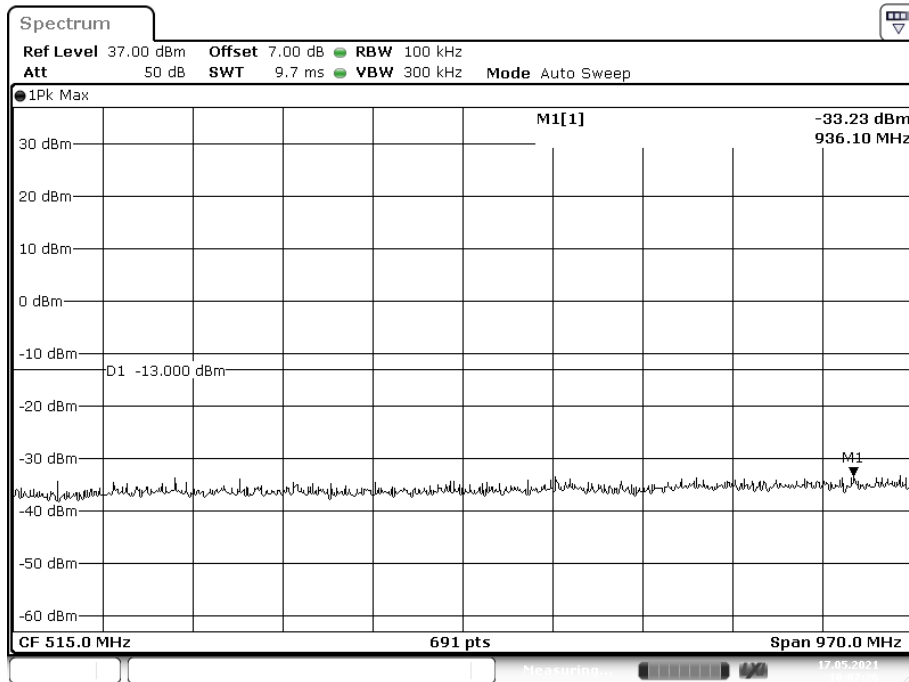


Fundamental test

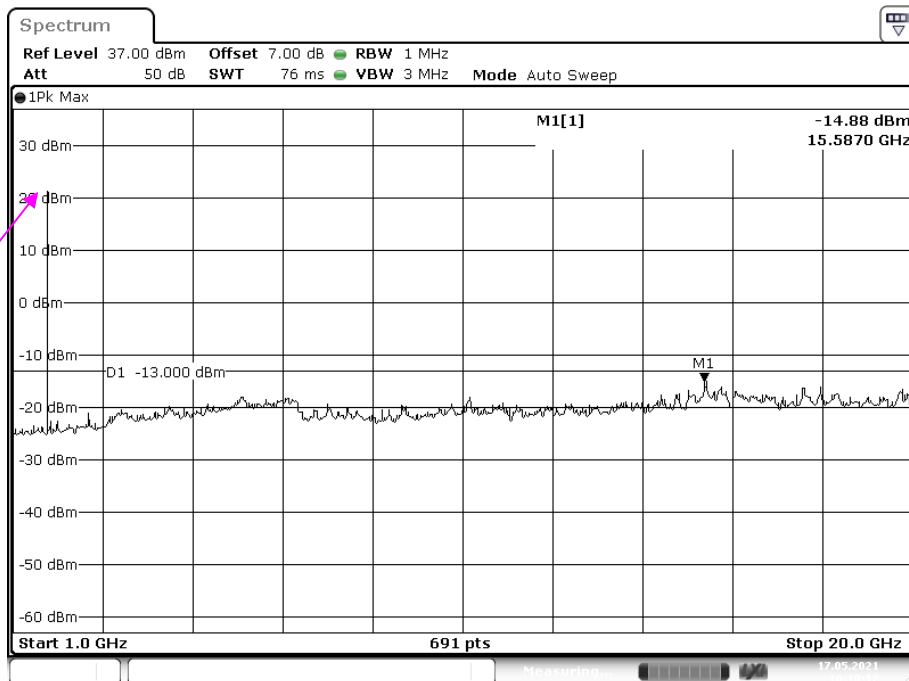
Date: 17.MAY.2021 10:09:01

Middle Channel

30 MHz – 1 GHz (WCDMA Mode)

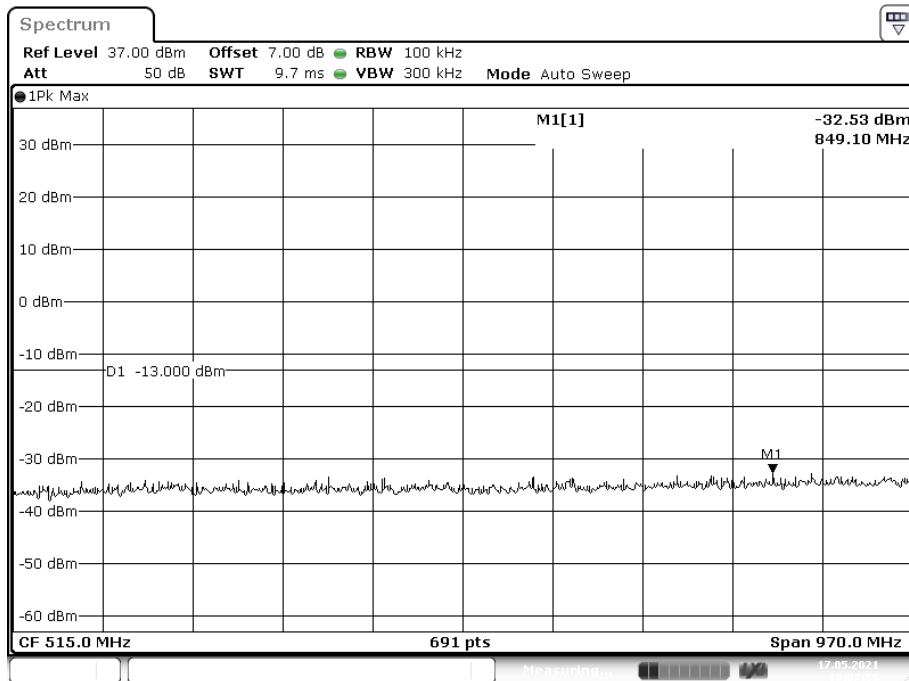


1 GHz – 20 GHz (WCDMA Mode)



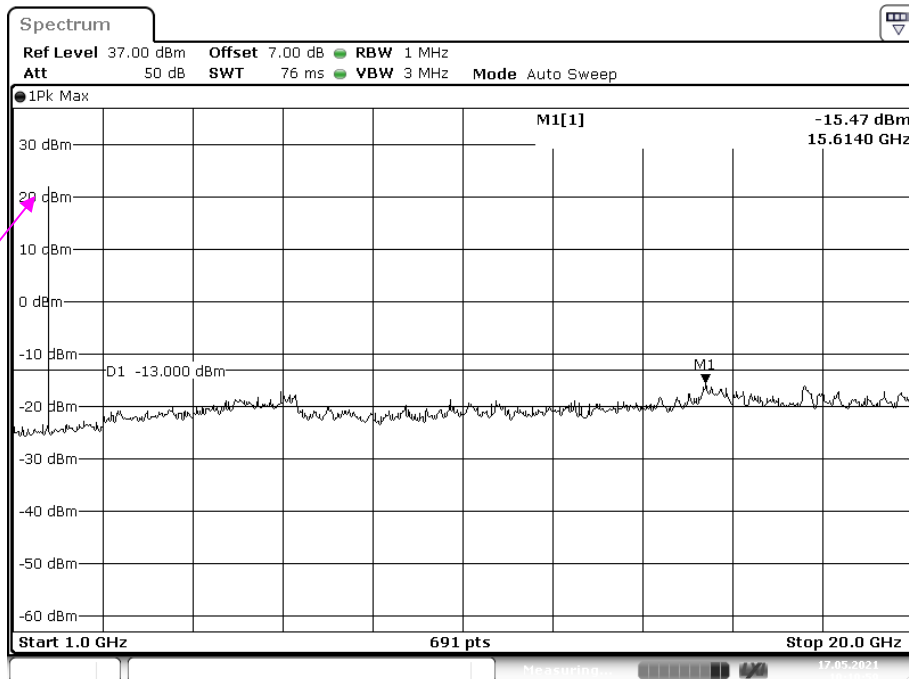
**High Channel:**

**30 MHz – 1 GHz (WCDMA Mode)**



Date: 17.MAY.2021 10:08:00

**1 GHz – 20 GHz (WCDMA Mode)**



Fundamental test

Date: 17.MAY.2021 10:10:59

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**

<b>Temperature:</b>	25.8~28 °C
<b>Relative Humidity:</b>	51~58 %
<b>ATM Pressure:</b>	101.0~101.2 kPa

*The testing was performed by Zero Yan on 2021-05-11 for below 1GHz, Hanic Pan on 2021-05-11 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										
957.3	32.68	171	1.8	H	-63.8	1.36	0.0	-65.16	-13	52.16
957.3	33.24	72	1.9	V	-60.8	1.36	0.0	-62.16	-13	49.16
1648.40	53.41	201	1.1	H	-54.7	1.40	8.70	-47.40	-13	34.40
1648.40	53.42	327	1.6	V	-54.4	1.40	8.70	-47.10	-13	34.10
2472.60	59.75	205	1.6	H	-43.6	2.60	10.20	-36.00	-13	23.00
2472.60	65.49	222	2.4	V	-37.3	2.60	10.20	-29.70	-13	16.70
3296.80	46.35	164	1.1	H	-54.5	1.50	11.70	-44.30	-13	31.30
3296.80	48.79	68	1.9	V	-52.1	1.50	11.70	-41.90	-13	28.90
Middle channel										
949.2	32.47	178	1.1	H	-64.0	1.36	0.0	-65.36	-13	52.36
949.2	33.34	149	1.6	V	-60.7	1.36	0.0	-62.06	-13	49.06
1673.20	53.24	141	2.1	H	-53.1	1.30	8.90	-45.50	-13	32.50
1673.20	52.93	275	1.8	V	-52.8	1.30	8.90	-45.20	-13	32.20
2509.80	60.41	322	1.1	H	-42.9	2.60	10.20	-35.30	-13	22.30
2509.80	65.76	47	2.2	V	-37.0	2.60	10.20	-29.40	-13	16.40
3346.40	47.13	121	2.3	H	-53.8	1.50	11.70	-43.60	-13	30.60
3346.40	48.49	286	1.1	V	-52.4	1.50	11.70	-42.20	-13	29.20
High channel										
956.5	32.54	246	1.6	H	-64.0	1.36	0.0	-65.36	-13	52.36
956.5	33.59	319	2.0	V	-60.5	1.36	0.0	-61.86	-13	48.86
1697.60	51.48	168	1.0	H	-54.9	1.30	8.90	-47.30	-13	34.30
1697.60	53.29	167	2.3	V	-52.4	1.30	8.90	-44.80	-13	31.80
2546.40	60.12	306	1.1	H	-43.2	2.60	10.20	-35.60	-13	22.60
2546.40	66.37	219	1.2	V	-36.4	2.60	10.20	-28.80	-13	15.80
3395.20	46.87	126	2.5	H	-54.4	1.40	11.80	-44.00	-13	31.00
3395.20	49.15	221	2.1	V	-51.9	1.40	11.80	-41.50	-13	28.50

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										
957.5	32.51	260	1.9	H	-64.0	1.36	0.0	-65.36	-13	52.36
957.5	33.48	136	1.7	V	-60.6	1.36	0.0	-61.96	-13	48.96
1652.80	47.58	172	2.0	H	-58.8	1.30	8.90	-51.20	-13	38.20
1652.80	48.69	110	2.4	V	-57.0	1.30	8.90	-49.40	-13	36.40
2479.20	45.74	237	2.3	H	-57.6	2.60	10.20	-50.00	-13	37.00
2479.20	46.23	299	1.8	V	-56.5	2.60	10.20	-48.90	-13	35.90
3305.60	44.26	175	2.5	H	-56.6	1.50	11.70	-46.40	-13	33.40
3305.60	45.17	301	1.6	V	-55.8	1.50	11.70	-45.60	-13	32.60
Middle channel										
960.3	32.68	277	1.4	H	-63.8	1.36	0.0	-65.16	-13	52.16
960.3	33.55	178	1.9	V	-60.5	1.36	0.0	-61.86	-13	48.86
1673.20	48.69	255	1.1	H	-57.6	1.30	8.90	-50.00	-13	37.00
1673.20	50.04	285	1.8	V	-55.7	1.30	8.90	-48.10	-13	35.10
2509.80	43.67	268	2.5	H	-59.7	2.60	10.20	-52.10	-13	39.10
2509.80	45.21	9	2.3	V	-57.5	2.60	10.20	-49.90	-13	36.90
3346.40	44.36	280	1.3	H	-56.5	1.50	11.70	-46.30	-13	33.30
3346.40	45.17	270	2.1	V	-55.8	1.50	11.70	-45.60	-13	32.60
High channel										
962.4	32.49	62	2.0	H	-64.0	1.36	0.0	-65.36	-13	52.36
962.4	33.62	99	1.1	V	-60.4	1.36	0.0	-61.76	-13	48.76
1693.20	48.74	226	2.3	H	-57.6	1.30	8.90	-50.00	-13	37.00
1693.20	49.83	304	2.4	V	-55.9	1.30	8.90	-48.30	-13	35.30
2539.80	44.65	174	1.1	H	-58.7	2.60	10.20	-51.10	-13	38.10
2539.80	45.44	109	2.0	V	-57.3	2.60	10.20	-49.70	-13	36.70
3386.40	43.67	146	2.2	H	-57.6	1.40	11.80	-47.20	-13	34.20
3386.40	44.29	312	1.9	V	-56.8	1.40	11.80	-46.40	-13	33.40

**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										
962.4	32.68	341	1.3	H	-63.8	1.36	0.0	-65.16	-13	52.16
962.4	33.29	205	1.4	V	-60.8	1.36	0.0	-62.16	-13	49.16
3700.40	49.26	142	2.5	H	-52.5	1.60	11.90	-42.20	-13	29.20
3700.40	50.47	20	2.4	V	-50.8	1.60	11.90	-40.50	-13	27.50
Middle channel										
960.2	32.54	153	1.6	H	-64.0	1.36	0.0	-65.36	-13	52.36
960.2	33.42	167	2.1	V	-60.6	1.36	0.0	-61.96	-13	48.96
3760.00	50.25	147	2.3	H	-51.8	1.50	11.80	-41.50	-13	28.50
3760.00	51.74	123	1.0	V	-49.8	1.50	11.80	-39.50	-13	26.50
High channel										
961.2	32.36	207	1.2	H	-64.1	1.36	0.0	-65.46	-13	52.46
961.2	33.61	219	1.5	V	-60.4	1.36	0.0	-61.76	-13	48.76
3819.60	49.32	290	2.3	H	-52.7	1.50	11.80	-42.40	-13	29.40
3819.60	51.05	314	2.0	V	-50.5	1.50	11.80	-40.20	-13	27.20

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode										
Low channel										
958.6	32.47	185	1.2	H	-64.0	1.36	0.0	-65.36	-13	52.36
958.6	33.44	175	2.0	V	-60.6	1.36	0.0	-61.96	-13	48.96
3704.80	47.26	320	2.3	H	-54.5	1.60	11.90	-44.20	-13	31.20
3704.80	48.29	294	1.5	V	-52.9	1.60	11.90	-42.60	-13	29.60
Middle channel										
954.8	32.62	220	2.3	H	-63.9	1.36	0.0	-65.26	-13	52.26
954.8	33.58	69	1.2	V	-60.5	1.36	0.0	-61.86	-13	48.86
3760.00	47.68	352	2.3	H	-54.4	1.50	11.80	-44.10	-13	31.10
3760.00	48.45	168	2.5	V	-53.1	1.50	11.80	-42.80	-13	29.80
High channel										
952.3	32.38	103	2.2	H	-64.1	1.36	0.0	-65.46	-13	52.46
952.3	33.62	71	1.6	V	-60.4	1.36	0.0	-61.76	-13	48.76
3815.20	47.16	160	2.0	H	-54.9	1.50	11.80	-44.60	-13	31.60
3815.20	48.33	290	2.4	V	-53.3	1.50	11.80	-43.00	-13	30.00



**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										
948.7	32.27	1	2.3	H	-64.2	1.36	0.0	-65.56	-13	52.56
948.7	33.34	291	1.6	V	-60.7	1.36	0.0	-62.06	-13	49.06
3424.80	47.16	1	1.4	H	-53.6	1.40	11.80	-43.20	-13	30.20
3424.80	48.33	357	1.5	V	-52.3	1.40	11.80	-41.90	-13	28.90
Middle channel										
952.8	32.45	194	1.0	H	-64.1	1.36	0.0	-65.46	-13	52.46
952.8	33.36	257	2.4	V	-60.7	1.36	0.0	-62.06	-13	49.06
3465.20	47.26	85	1.6	H	-53.5	1.50	12.00	-43.00	-13	30.00
3465.20	48.18	224	1.3	V	-53.3	1.50	12.00	-42.80	-13	29.80
High channel										
956.3	32.47	294	1.1	H	-64.0	1.36	0.0	-65.36	-13	52.36
956.3	33.65	262	1.9	V	-60.4	1.36	0.0	-61.76	-13	48.76
3505.20	47.14	105	1.2	H	-53.6	1.50	12.00	-43.10	-13	30.10
3505.20	48.12	311	1.6	V	-53.4	1.50	12.00	-42.90	-13	29.90

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

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
960.2	32.59	47	1.7	H	-63.9	1.36	0.0	-65.26	-13	52.26
960.2	33.38	106	2.3	V	-60.7	1.36	0.0	-62.06	-13	49.06
3701.40	46.74	235	1.7	H	-55.1	1.60	11.90	-44.80	-13	31.80
3701.40	48.59	142	1.1	V	-52.6	1.60	11.90	-42.30	-13	29.30
1.4 MHz, Middle channel										
959.3	32.47	324	2.0	H	-64.0	1.36	0.0	-65.36	-13	52.36
959.3	33.35	245	1.7	V	-60.7	1.36	0.0	-62.06	-13	49.06
3760.00	47.21	294	1.5	H	-54.8	1.50	11.80	-44.50	-13	31.50
3760.00	49.27	86	2.0	V	-52.3	1.50	11.80	-42.00	-13	29.00
1.4 MHz, High channel										
956.4	32.27	3	2.4	H	-64.2	1.36	0.0	-65.56	-13	52.56
956.4	33.16	53	1.7	V	-60.9	1.36	0.0	-62.26	-13	49.26
3800.00	47.52	246	1.3	H	-54.5	1.50	11.80	-44.20	-13	31.20
3800.00	48.69	263	2.2	V	-52.9	1.50	11.80	-42.60	-13	29.60
Band 4										
Test frequency range: 30 MHz ~ 20 GHz										
1.4 MHz, Low channel										
958.6	32.47	69	1.3	H	-64.0	1.36	0.0	-65.36	-13	52.36
958.6	33.65	205	2.3	V	-60.4	1.36	0.0	-61.76	-13	48.76
3421.40	49.22	349	1.8	H	-51.6	1.40	11.80	-41.20	-13	28.20
3421.40	51.41	87	1.8	V	-49.2	1.40	11.80	-38.80	-13	25.80
1.4 MHz, Middle channel										
956.4	32.56	270	2.0	H	-63.9	1.36	0.0	-65.26	-13	52.26
956.4	33.39	228	2.4	V	-60.7	1.36	0.0	-62.06	-13	49.06
3465.00	48.63	195	1.6	H	-52.1	1.50	12.00	-41.60	-13	28.60
3465.00	50.73	267	2.1	V	-50.8	1.50	12.00	-40.30	-13	27.30
1.4 MHz, High channel										
961.5	32.51	241	1.7	H	-64.0	1.36	0.0	-65.36	-13	52.36
961.5	33.42	213	1.0	V	-60.6	1.36	0.0	-61.96	-13	48.96
3508.60	48.59	226	1.8	H	-52.2	1.50	12.00	-41.70	-13	28.70
3508.60	50.66	311	1.7	V	-50.8	1.50	12.00	-40.30	-13	27.30

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
1.4 MHz, Low channel										
958.6	32.42	201	2.4	H	-64.1	1.36	0.0	-65.46	-13	52.46
958.6	33.55	290	1.3	V	-60.5	1.36	0.0	-61.86	-13	48.86
1649.40	53.65	15	2.3	H	-54.4	1.40	8.70	-47.10	-13	34.10
1649.40	54.37	50	2.2	V	-53.5	1.40	8.70	-46.20	-13	33.20
2474.10	53.48	39	1.2	H	-49.9	2.60	10.20	-42.30	-13	29.30
2474.10	54.26	85	1.7	V	-48.5	2.60	10.20	-40.90	-13	27.90
3298.80	48.36	273	1.1	H	-52.5	1.50	11.70	-42.30	-13	29.30
3298.80	49.22	215	1.5	V	-51.7	1.50	11.70	-41.50	-13	28.50
1.4 MHz, Middle channel										
948.5	32.28	214	1.1	H	-64.2	1.36	0.0	-65.56	-13	52.56
948.5	33.34	170	1.1	V	-60.7	1.36	0.0	-62.06	-13	49.06
1673.00	53.36	131	1.8	H	-53.0	1.30	8.90	-45.40	-13	32.40
1673.00	54.41	151	1.9	V	-51.3	1.30	8.90	-43.70	-13	30.70
2509.50	50.63	78	1.9	H	-52.7	2.60	10.20	-45.10	-13	32.10
2509.50	51.24	344	1.8	V	-51.5	2.60	10.20	-43.90	-13	30.90
3346.00	48.32	223	2.0	H	-52.6	1.50	11.70	-42.40	-13	29.40
3346.00	48.84	115	1.5	V	-52.1	1.50	11.70	-41.90	-13	28.90
1.4 MHz, High channel										
954.2	32.65	327	1.5	H	-63.9	1.36	0.0	-65.26	-13	52.26
954.2	33.47	198	2.1	V	-60.6	1.36	0.0	-61.96	-13	48.96
1696.60	53.49	233	2.5	H	-52.8	1.30	8.90	-45.20	-13	32.20
1696.60	54.32	190	2.3	V	-51.4	1.30	8.90	-43.80	-13	30.80
2544.90	50.26	148	2.2	H	-53.1	2.60	10.20	-45.50	-13	32.50
2544.90	51.34	170	1.3	V	-51.4	2.60	10.20	-43.80	-13	30.80
3393.20	47.58	351	1.3	H	-53.7	1.40	11.80	-43.30	-13	30.30
3393.20	48.33	57	2.4	V	-52.7	1.40	11.80	-42.30	-13	29.30

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 7										
Test frequency range: 30 MHz ~26.5GHz										
5 MHz, Low channel										
958.4	32.48	294	1.9	H	-64.0	1.36	0.0	-65.36	-25	40.36
958.4	33.57	89	1.2	V	-60.5	1.36	0.0	-61.86	-25	36.86
5005.00	52.68	321	2.1	H	-47.9	1.70	12.00	-37.60	-25	12.60
5005.00	54.75	176	1.7	V	-45.3	1.70	12.00	-35.00	-25	10.00
5 MHz, Middle channel										
960.3	32.40	245	1.7	H	-64.1	1.36	0.0	-65.46	-25	40.46
960.3	33.38	242	1.8	V	-60.7	1.36	0.0	-62.06	-25	37.06
5070.00	54.57	48	2.1	H	-45.4	1.60	12.10	-34.90	-25	9.90
5070.00	56.42	337	1.3	V	-43.6	1.60	12.10	-33.10	-25	8.10
5 MHz, High channel										
959.2	32.38	142	2.5	H	-64.1	1.36	0.0	-65.46	-25	40.46
959.2	33.43	100	1.7	V	-60.6	1.36	0.0	-61.96	-25	36.96
5135.00	55.47	87	2.5	H	-44.5	1.60	12.10	-34.00	-25	9.00
5135.00	56.78	284	2.3	V	-43.2	1.60	12.10	-32.70	-25	7.70
Band 66										
Test frequency range: 30 MHz ~ 20GHz										
1.4 MHz, Low channel										
956.8	32.64	171	1.0	H	-63.9	1.36	0.0	-65.26	-13	52.26
956.8	33.71	55	2.2	V	-60.3	1.36	0.0	-61.66	-13	48.66
3421.40	51.36	151	1.4	H	-49.4	1.40	11.80	-39.00	-13	26.00
3421.40	52.07	323	1.7	V	-48.5	1.40	11.80	-38.10	-13	25.10
1.4 MHz, Middle channel										
948.6	32.41	66	1.5	H	-64.1	1.36	0.0	-65.46	-13	52.46
948.6	33.60	214	1.3	V	-60.5	1.36	0.0	-61.86	-13	48.86
3510.00	49.57	320	2.3	H	-51.2	1.50	12.00	-40.70	-13	27.70
3510.00	51.27	238	2.0	V	-50.2	1.50	12.00	-39.70	-13	26.70
1.4 MHz, High channel										
949.7	32.24	79	1.7	H	-64.3	1.36	0.0	-65.66	-13	52.66
949.7	33.40	319	1.8	V	-60.7	1.36	0.0	-62.06	-13	49.06
3558.60	50.23	147	1.0	H	-51.3	1.50	12.10	-40.70	-13	27.70
3558.60	52.46	248	2.5	V	-48.6	1.50	12.10	-38.00	-13	25.00

**Note:**

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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

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

**Applicable Standard**

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

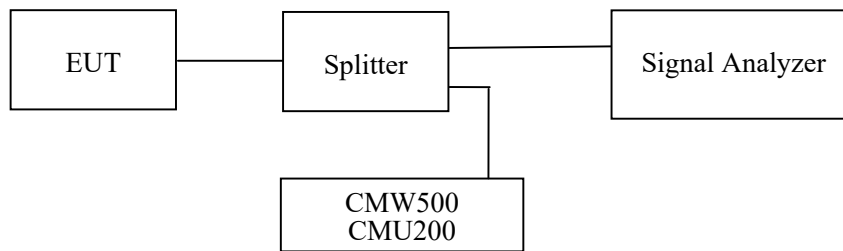
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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

**Test Procedure**

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

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



**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	28~28.2 °C
<b>Relative Humidity:</b>	55~59 %
<b>ATM Pressure:</b>	101.0 kPa

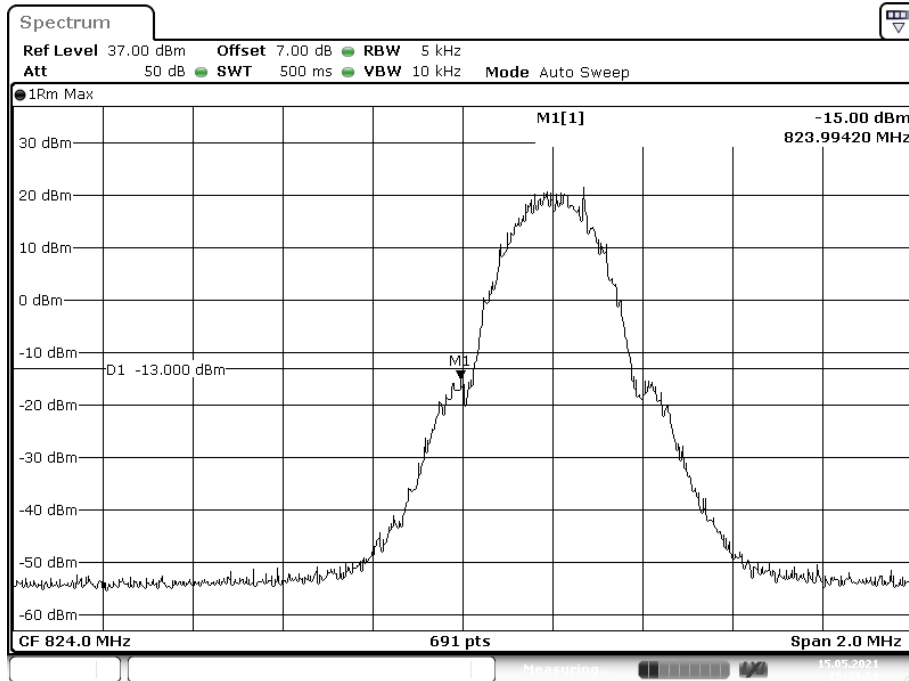
*The testing was performed by Zero Yan and Pedro Yun from 2021-05-15 to 2021-05-23.*

*EUT operation mode: Transmitting (Worst case)*

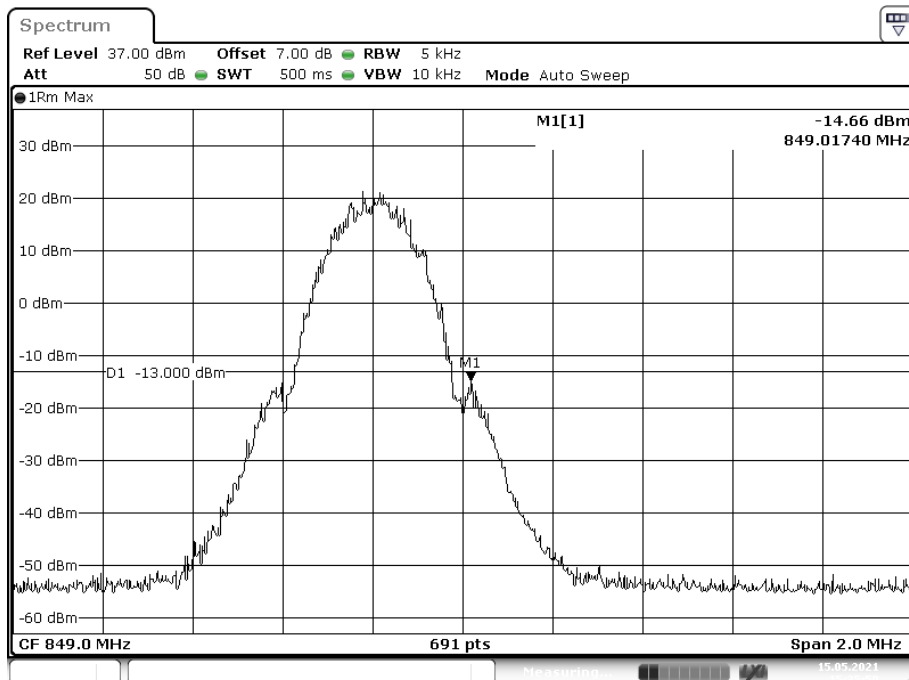
**Test Result: Pass**

*Please refer to the following plots.*

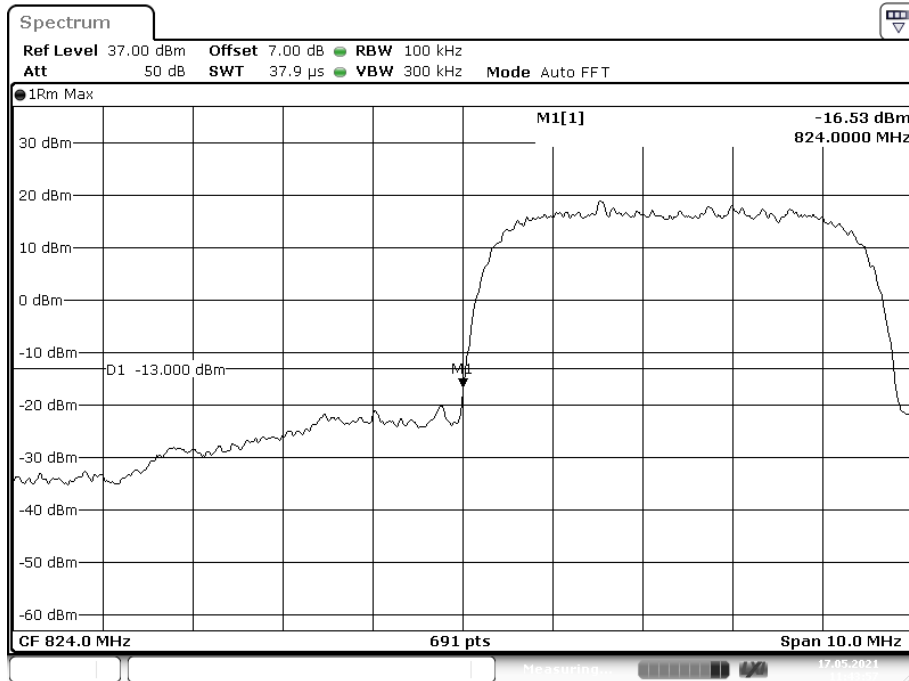
**Cellular Band, Left Band Edge for GSM (GMSK) Mode**



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

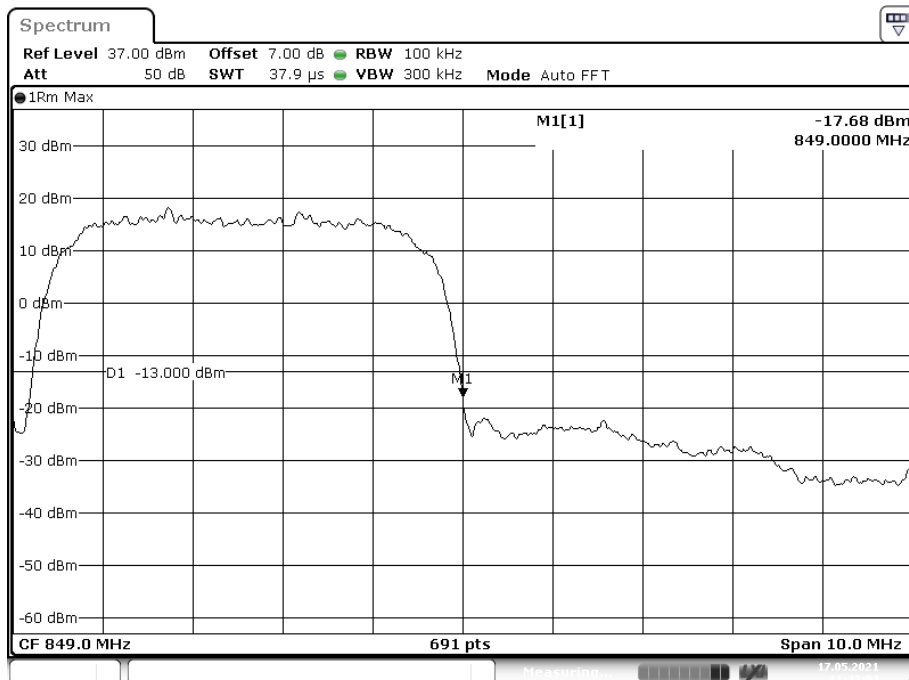


### Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



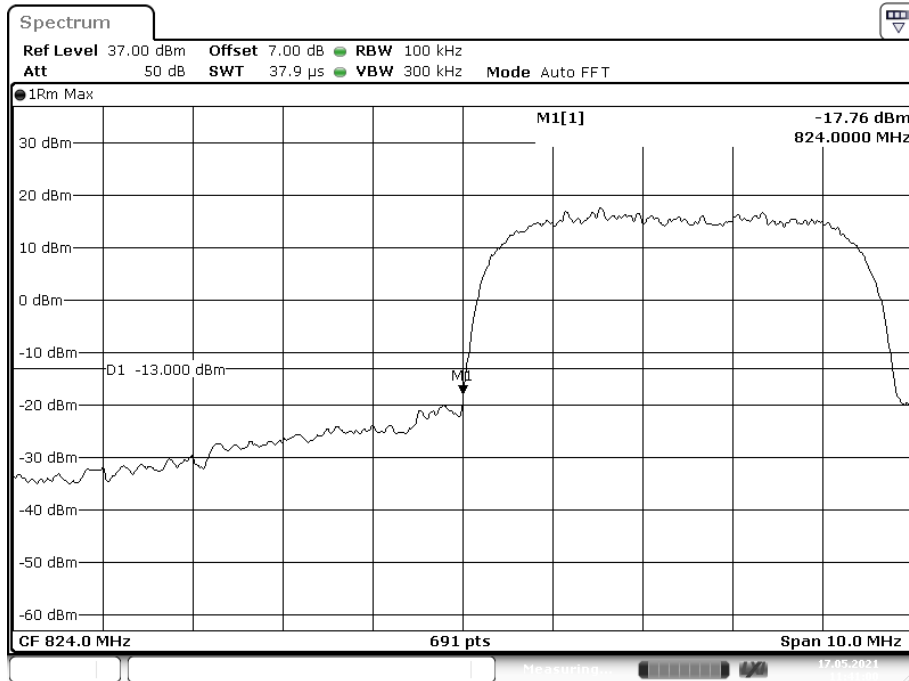
Date: 17.MAY.2021 11:43:58

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



Date: 17.MAY.2021 11:43:04

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



Date: 17.MAY.2021 11:41:00

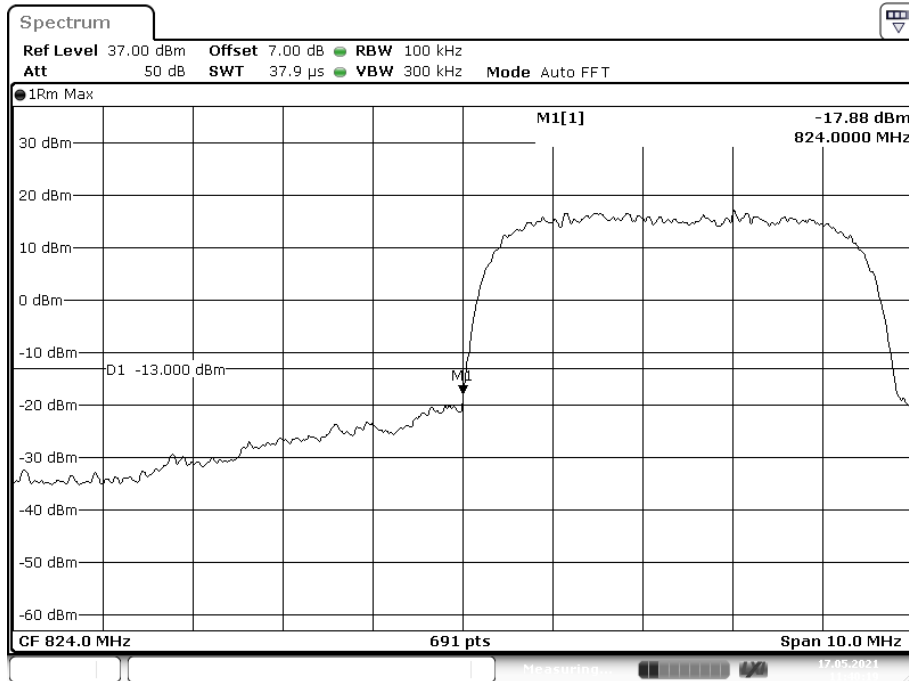
**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**



Date: 17.MAY.2021 11:41:53



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



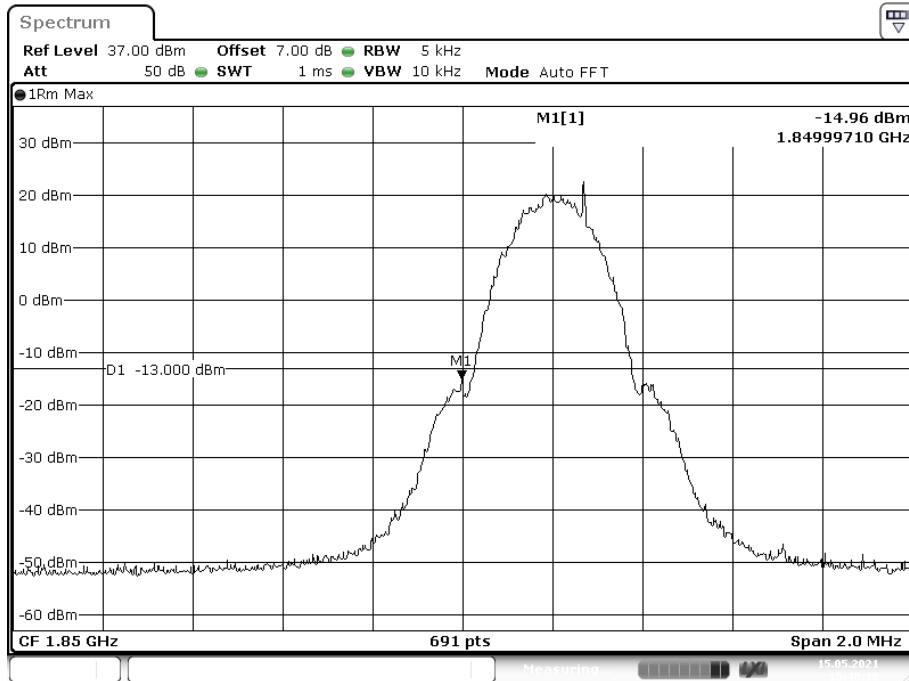
Date: 17.MAY.2021 11:40:20

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



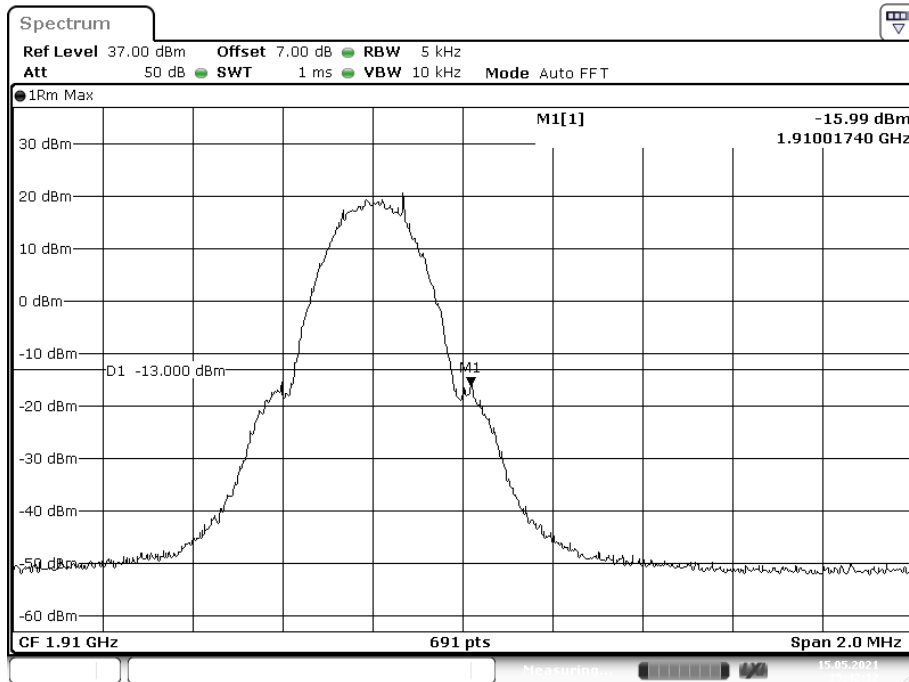
Date: 17.MAY.2021 11:39:23

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



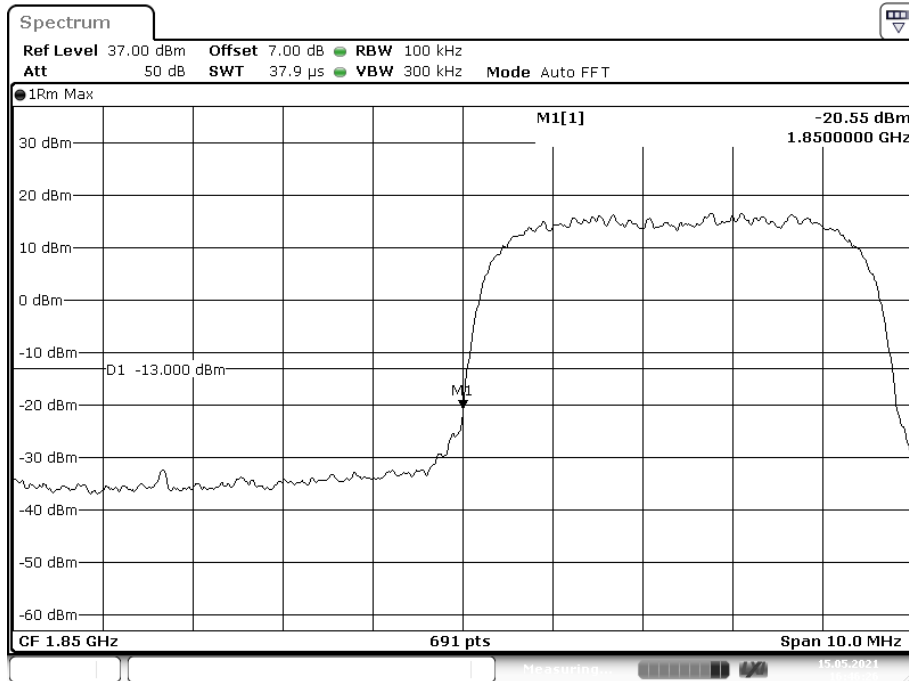
Date: 15.MAY.2021 15:40:38

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



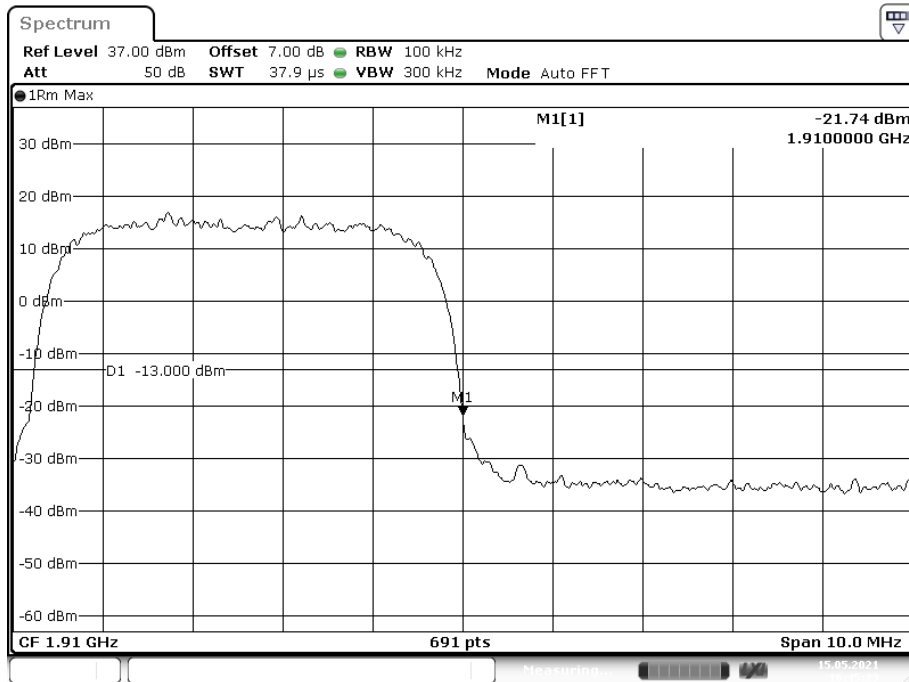
Date: 15.MAY.2021 15:42:12

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



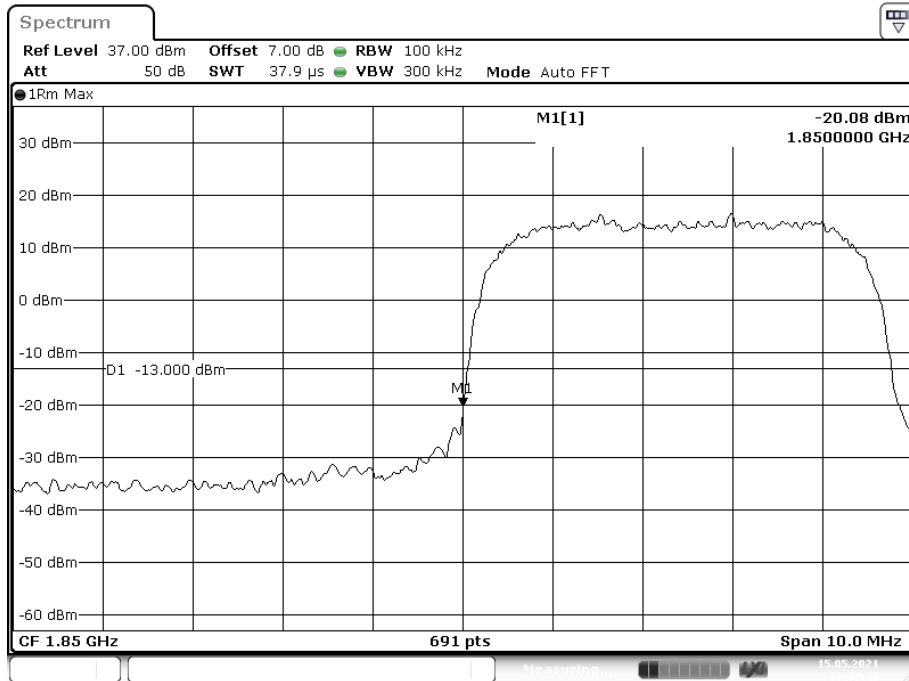
Date: 15.MAY.2021 16:46:26

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



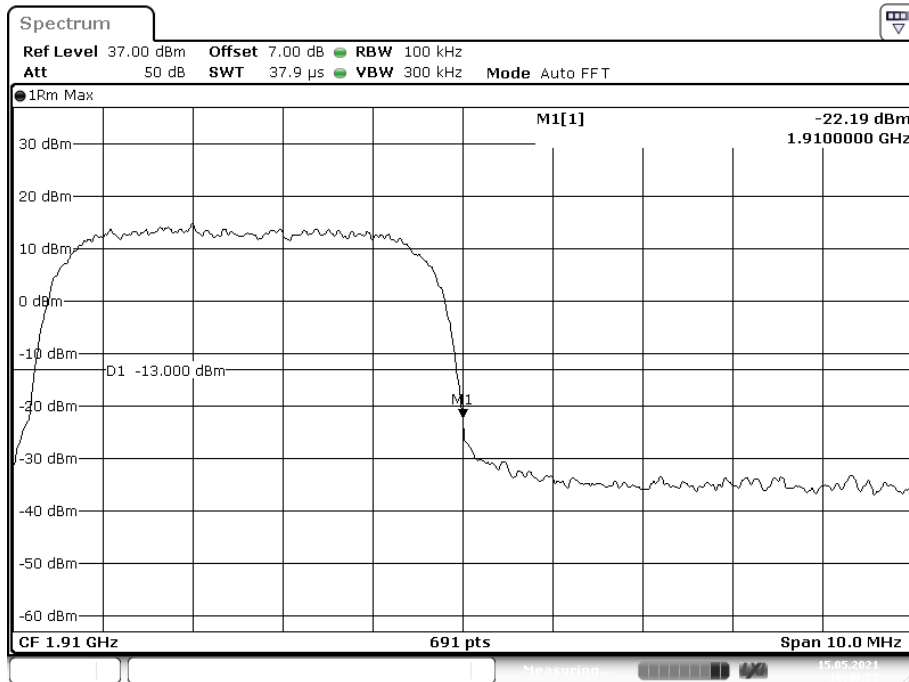
Date: 15.MAY.2021 16:45:24

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



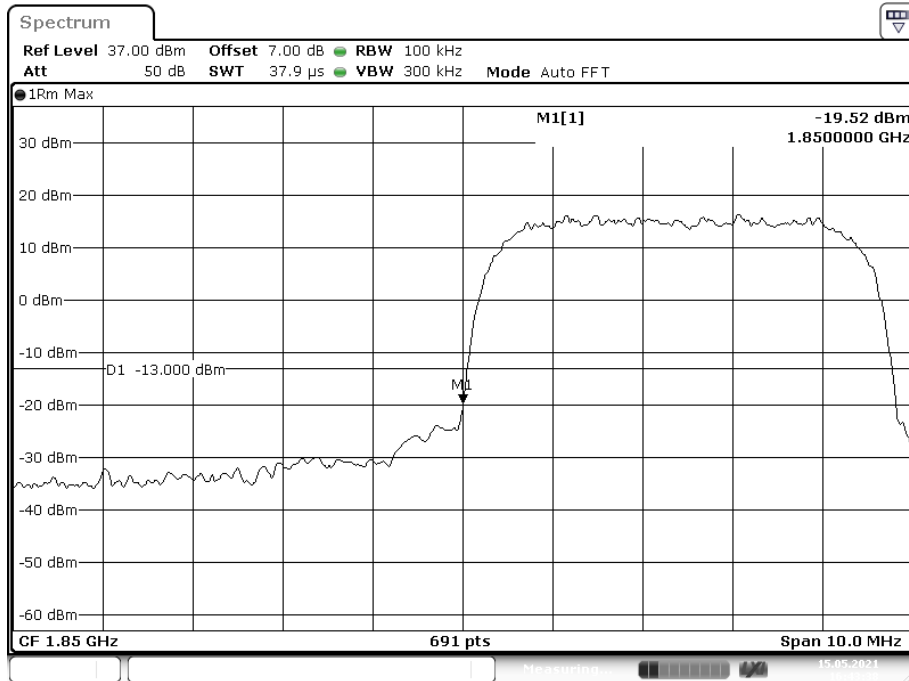
Date: 15.MAY.2021 16:42:49

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

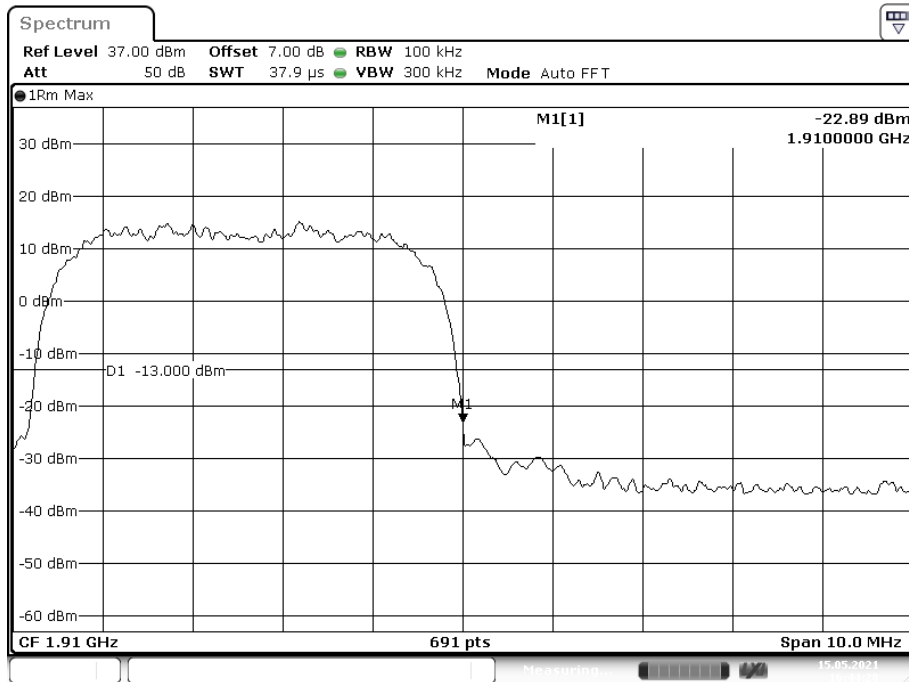


Date: 15.MAY.2021 16:40:55

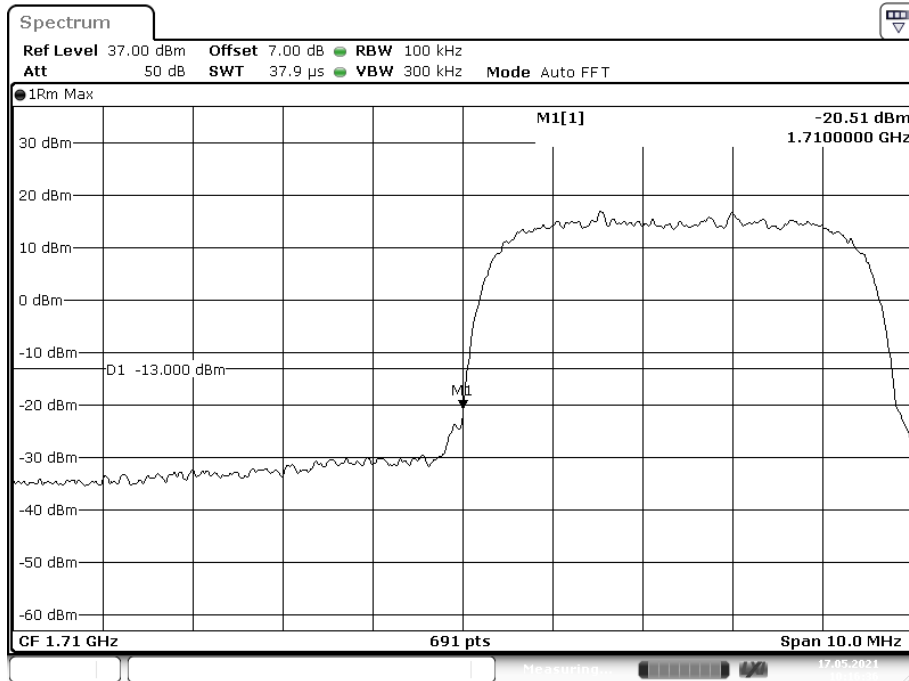
### PCS Band, Left Band Edge for HSUPA (BPSK) Mode



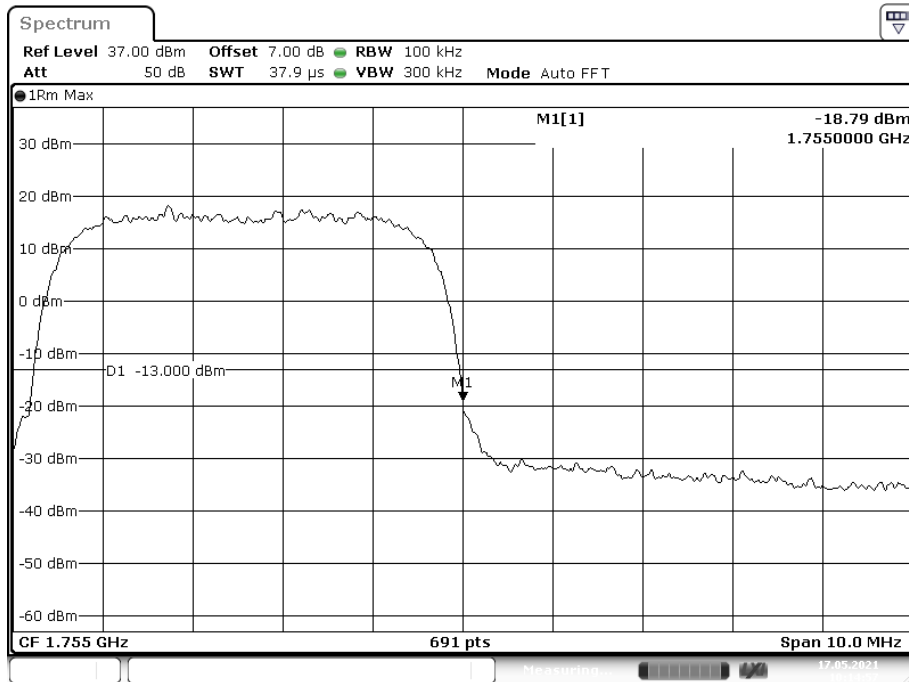
### PCS Band, Right Band Edge for HSUPA (BPSK) Mode



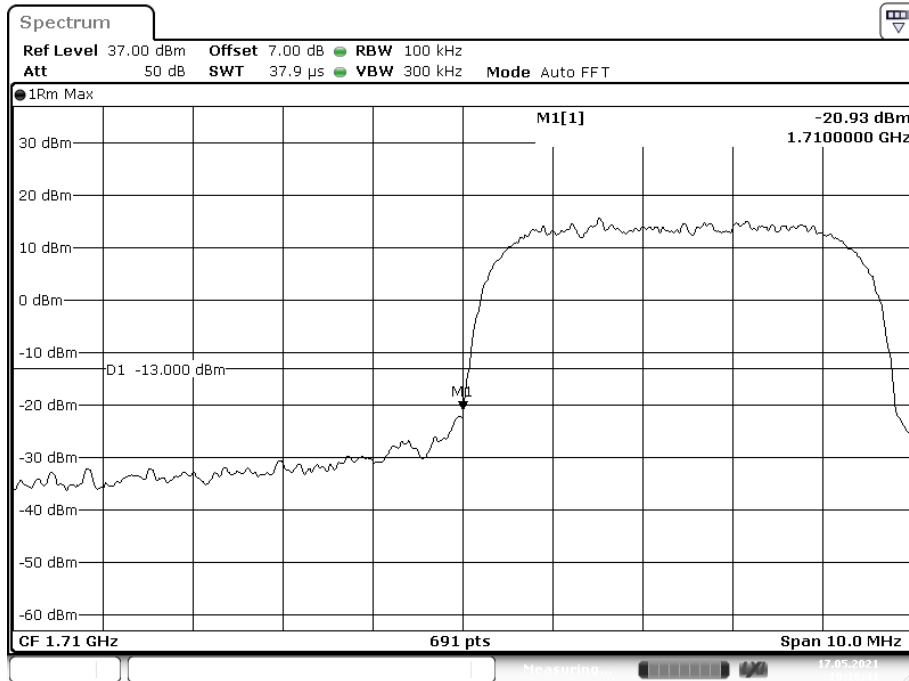
### AWS Band, Left Band Edge for WCDMA (BPSK) Mode



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

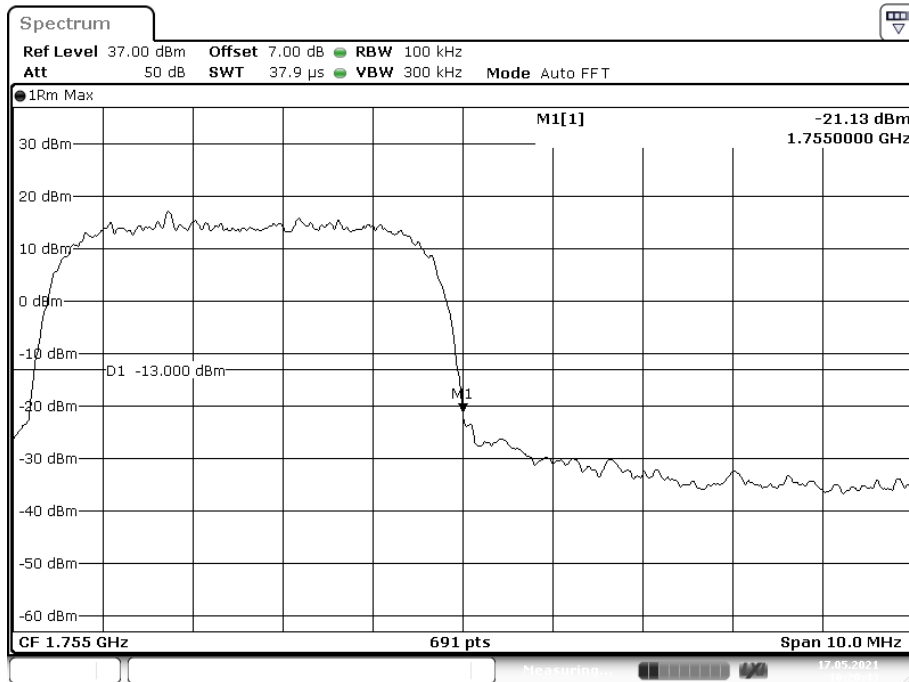


### AWS Band, Left Band Edge for HSDPA (16QAM) Mode



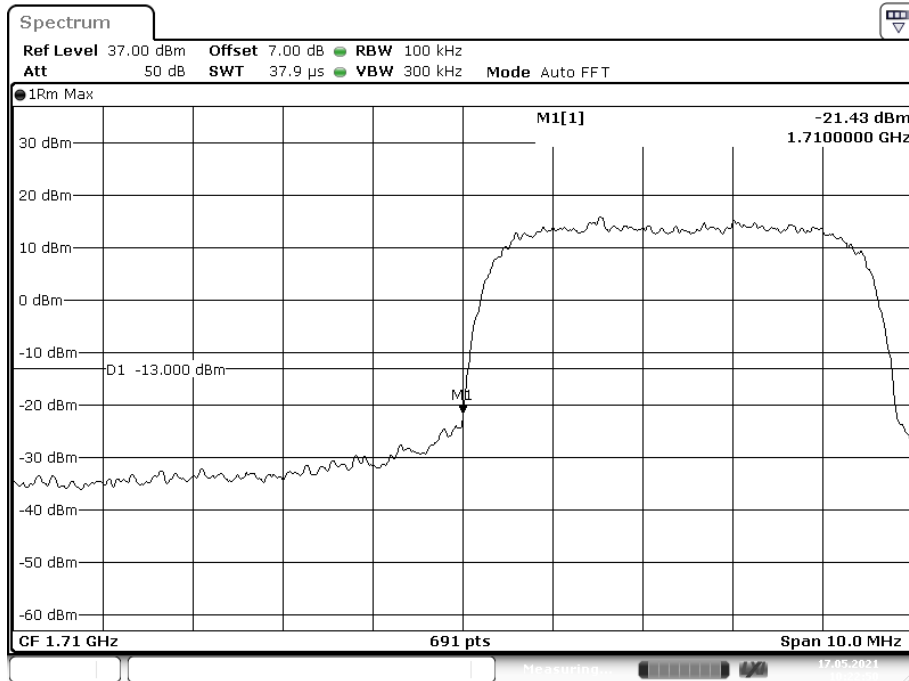
Date: 17.MAY.2021 10:19:41

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



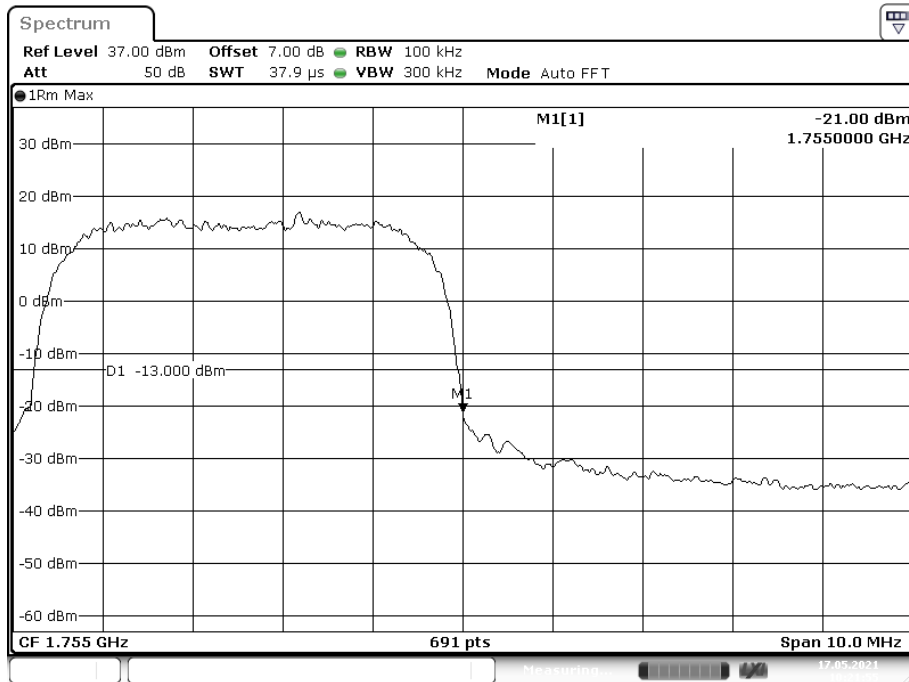
Date: 17.MAY.2021 10:20:43

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



Date: 17.MAY.2021 10:22:50

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



Date: 17.MAY.2021 10:21:55

The test plot of LTE band please refer to the Appendix C



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

**Applicable Standard**

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

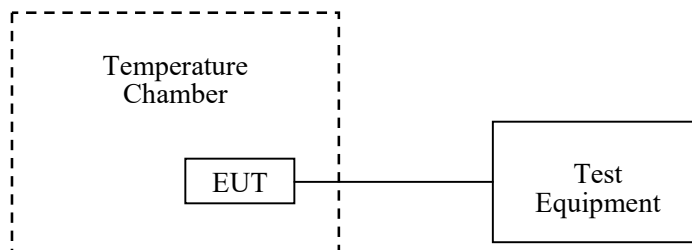
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

**Test Procedure**

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

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

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



**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	20~25.2 °C
<b>Relative Humidity:</b>	55~59 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Zero Yan and Pedro Yun from 2021-05-15 to 2021-05-18.

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 <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-4	-0.0048	2.5
-20		-5	-0.0060	2.5
-10		-2	-0.0024	2.5
0		-6	-0.0072	2.5
10		-5	-0.0060	2.5
20		-3	-0.0036	2.5
30		-4	-0.0048	2.5
40		-3	-0.0036	2.5
50		0	0.0000	2.5
20		V min.= 3.5	2	0.0024
	V max.= 4.35	3	0.0036	2.5

**WCDMA Mode**

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-2	-0.0024	2.5
-20		-4	-0.0048	2.5
-10		-1	-0.0012	2.5
0		2	0.0024	2.5
10		-3	-0.0036	2.5
20		0	0.0000	2.5
30		3	0.0036	2.5
40		1	0.0012	2.5
50		3	0.0036	2.5
20		V min.= 3.5	-2	-0.0024
	V max.= 4.35	-1	-0.0012	2.5

**PCS Band (Part 24E)**

**GSM Mode**

Middle Channel, $f_0=1880.0\text{ MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	2	0.0011	pass
-20		-1	-0.0005	pass
-10		3	0.0016	pass
0		4	0.0021	pass
10		-3	-0.0016	pass
20		-1	-0.0005	pass
30		-4	-0.0021	pass
40		2	0.0011	pass
50		-5	-0.0027	pass
20		V min.= 3.5	3	0.0016
	V max.= 4.35	1	0.0005	pass

**WCDMA Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-3	-0.0016	pass
-20		-1	-0.0005	pass
-10		-4	-0.0021	pass
0		-2	-0.0011	pass
10		-5	-0.0027	pass
20		-3	-0.0016	pass
30		-2	-0.0011	pass
40		1	0.0005	pass
50		3	0.0016	pass
20		V min.= 3.5	-4	-0.0021
	V max.= 4.35	-2	-0.0011	pass

**AWS Band (Part 27)**

Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	1710.1355	1754.8629	1710	1755
-20		1710.1365	1754.8625	1710	1755
-10		1710.1330	1754.8628	1710	1755
0		1710.1374	1754.8629	1710	1755
10		1710.1324	1754.8624	1710	1755
20		1710.1328	1754.8626	1710	1755
30		1710.1342	1754.8672	1710	1755
40		1710.1312	1754.8655	1710	1755
50		1710.1365	1754.8664	1710	1755
20		V min.= 3.5	1710.1338	1754.8606	1710
	V max.= 4.35	1710.1299	1754.8620	1710	1755

**LTE:**  
**QPSK:**  
**Band 2:**

10.0 MHz Middle Channel, $f_o = 1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-5.65	-0.0030	pass
-20		-9.95	-0.0053	pass
-10		-6.10	-0.0032	pass
0		6.13	0.0033	pass
10		7.88	0.0042	pass
20		6.47	0.0034	pass
30		-6.46	-0.0034	pass
40		7.17	0.0038	pass
50		-9.47	-0.0050	pass
20		V min.= 3.5	-8.10	-0.0043
	V max.= 4.35	-6.73	-0.0036	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	1710.4390	1754.5444	1710	1755
-20		1710.2746	1754.6026	1710	1755
-10		1710.3975	1754.5281	1710	1755
0		1710.2714	1754.5322	1710	1755
10		1710.5360	1754.4239	1710	1755
20		1710.4691	1754.7142	1710	1755
30		1710.4961	1754.3098	1710	1755
40		1710.6099	1754.6684	1710	1755
50		1710.5906	1754.7965	1710	1755
20		V min.= 3.5	1710.4763	1754.5623	1710
	V max.= 4.35	1710.5339	1754.5194	1710	1755

**Band 5:**

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-8.98	-0.0107	2.5
-20		8.92	0.0107	2.5
-10		8.49	0.0101	2.5
0		-6.80	-0.0081	2.5
10		-5.08	-0.0061	2.5
20		7.28	0.0087	2.5
30		-5.98	-0.0071	2.5
40		5.26	0.0063	2.5
50		6.69	0.0080	2.5
20		V min.= 3.5	9.71	0.0116
	V max.= 4.35	10.12	0.0121	2.5

**Band 7:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	2500.5854	2569.5652	2500	2570
-20		2500.6907	2569.7147	2500	2570
-10		2500.4729	2569.5763	2500	2570
0		2500.5652	2569.5143	2500	2570
10		2500.6366	2569.5224	2500	2570
20		2500.5009	2569.6546	2500	2570
30		2500.4411	2569.3435	2500	2570
40		2500.4107	2569.5176	2500	2570
50		2500.5265	2569.5326	2500	2570
20		V min.= 3.5	2500.4958	2569.3193	2500
	V max.= 4.35	2500.1673	2569.6551	2500	2570

**Band 66:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	1710.3997	1779.8183	1710	1780
-20		1710.1888	1779.8127	1710	1780
-10		1710.3385	1779.6096	1710	1780
0		1710.2694	1779.6630	1710	1780
10		1710.2068	1779.6609	1710	1780
20		1710.4001	1779.4060	1710	1780
30		1710.2906	1779.8886	1710	1780
40		1710.2860	1779.6360	1710	1780
50		1710.4351	1779.7872	1710	1780
20		V min.= 3.5	1710.4901	1779.5866	1710
	V max.= 4.35	1710.3911	1779.7446	1710	1780

**16QAM:**

**Band 2:**

10.0 MHz Middle Channel, f <sub>0</sub> =1880MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-7	-0.0037	pass
-20		-4	-0.0021	pass
-10		8	0.0043	pass
0		-4	-0.0021	pass
10		7	0.0037	pass
20		-8	-0.0043	pass
30		-6	-0.0032	pass
40		-4	-0.0021	pass
50		11	0.0059	pass
20		V min.= 3.5	10	0.0053
	V max.= 4.35	9	0.0048	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	1710.4479	1754.5331	1710	1755
-20		1710.5368	1754.6008	1710	1755
-10		1710.5072	1754.5642	1710	1755
0		1710.2553	1754.3202	1710	1755
10		1710.4232	1754.5438	1710	1755
20		1710.4763	1754.6001	1710	1755
30		1710.4589	1754.4496	1710	1755
40		1710.4126	1754.5798	1710	1755
50		1710.6583	1754.5768	1710	1755
20		V min.= 3.5	1710.4914	1754.5649	1710
	V max.= 4.35	1710.5873	1754.3849	1710	1755

**Band 5:**

10.0 MHz Middle Channel, f <sub>0</sub> =836.5MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-3	-0.0036	2.5
-20		6	0.0072	2.5
-10		-9	-0.0108	2.5
0		-7	-0.0084	2.5
10		-8	-0.0096	2.5
20		-9	-0.0108	2.5
30		8	0.0096	2.5
40		6	0.0072	2.5
50		-5	-0.0060	2.5
20		V min.= 3.5	9	0.0108
	V max.= 4.35	11	0.0131	2.5



**Band 7:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	2500.6060	2569.4758	2500	2570
-20		2500.5272	2569.4847	2500	2570
-10		2500.5102	2569.5386	2500	2570
0		2500.2967	2569.4412	2500	2570
10		2500.5138	2569.6209	2500	2570
20		2500.5652	2569.4941	2500	2570
30		2500.2361	2569.3483	2500	2570
40		2500.4195	2569.7984	2500	2570
50		2500.3868	2569.5249	2500	2570
20		V min.= 3.5	2500.5518	2569.5827	2500
	V max.= 4.35	2500.3697	2569.4251	2500	2570

**Band 66:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	3.8	1710.3848	1779.8244	1710	1780
-20		1710.2682	1779.7604	1710	1780
-10		1710.3315	1779.6089	1710	1780
0		1710.5556	1779.6983	1710	1780
10		1710.4084	1779.6103	1710	1780
20		1710.2979	1779.7725	1710	1780
30		1710.3526	1779.8180	1710	1780
40		1710.5084	1779.6223	1710	1780
50		1710.2990	1779.7153	1710	1780
20		V min.= 3.5	1710.2032	1779.7707	1710
	V max.= 4.35	1710.3451	1779.5577	1710	1780

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