

FCC LTE REPORT

Certification

Applicant Name:		Date of Issue:
SAMSUNG Electronics Co., I	Ltd.	February 10, 2021
		Location:
Address:		HCT CO., LTD.,
129, Samsung-ro, Yeongtong	J-gu,	74, Seoicheon-ro 578beon-gil, Majang-myeon,
Suwon-si, Gyeonggi-do, 1667	77, Rep. of Korea	Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
		Report No.: HCT-RF-2102-FC017
FCC ID:	A3LSMA326U	

APPLICANT:

SAMSUNG Electronics Co., Ltd.

Model(s):	SM-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
EUT Type:	Mobile Phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2

Mode	Tx Frequency (MHz)	Emission Designator		ERP	
(MHz)			Modulation	Max. Power	Max. Power
(1411 12)				(W)	(dBm)
		4M50G7D	QPSK	0.177	22.47
LTE – Band13 (5)	779.5 –784.5	4M50W7D	16QAM	0.149	21.72
		4M51W7D	64QAM	0.114	20.58
		9M00G7D	QPSK	0.173	22.37
LTE – Band13 (10)	782.0	8M98W7D	16QAM	0.146	21.64
		8M98W7D	64QAM	0.111	20.47

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)



REVIEWED BY

4 mer.

Report prepared by : Jae Mun Do Engineer of Telecommunication Testing Center Report approved by : Jong Seok Lee Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *. The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

* The report shall not be reproduced except in full(only partly) without approval of the laboratory.



<u>Version</u>

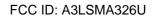
TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2102-FC017	February 10, 2021	- First Approval Report

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.



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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMA326U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	Mobile Phone
Model(s):	SM-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
Tx Frequency:	779.5 MHz –784.5 MHz (LTE – Band 13 (5MHz))
	782 MHz (LTE – Band 13 (10 MHz))
Date(s) of Tests:	January 04, 2021 ~ January 28, 2021
Serial number:	Radiated: R3CNC01KD6F
	Conducted: 4C19CDBD771C7ECE

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS, CDMA(BC0, 1, 10) and LTE, Sub6. It also supports IEEE 802.11 a/b/g/n/ac (HT20/40/80), Bluetooth, BT LE, NFC.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74**, **Seoicheon-ro 578beon-gil**, **Majang-myeon**, **Icheon-si**, **Gyeonggi-do**, **17383**, **Rep. of KOREA**.



3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3
	- ANSI C63.26-2015 – Section 5.4.4
Band Edge	- KDB 971168 D01 v03r01 – Section 6.0
	- ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna	- KDB 971168 D01 v03r01 – Section 6.0
Terminal	- ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8
Effective Isotropic Radiated Power	- ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2
	- ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power"

measurement capability for signals with continuous operation.

- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW \ge 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points > 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

Test Note

- 1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
- 2. A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

 $P_{d(dBm)} = Pg_{(dBm)} - cable loss_{(dB)} + antenna gain_{(dB)}$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference

between the gain of the horn and an isotropic antenna are taken into consideration

- 4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- 5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW \geq 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = Peak
- 6. Trace mode = Max Hold
- 7. The trace was allowed to stabilize
- 8. Test channel : Low/ Middle/ High
- 9. Frequency range : We are performed all frequency to 10th harmonics from 9 kHz.

Test Note

- Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- 2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
- 3. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The spurious emissions is calculated by the following formula;

 $\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss }_{(dB)} + \text{antenna gain }_{(dBi)}$

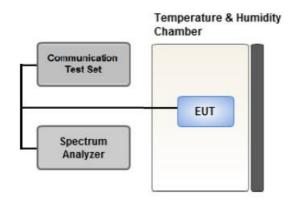
Where: P_{g} is the generator output power into the substitution antenna.

If the fundamental frequency is below 1GHz, RF output power has been converted to EIRP.

 $EIRP_{(dBm)} = ERP_{(dBm)} + 2.15$



3.4 OCCUPIED BANDWIDTH.



Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

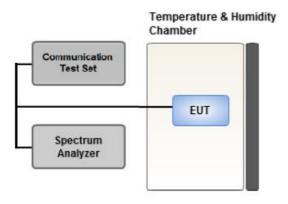
The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \ge 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
 - 1-5% of the 99% occupied bandwidth observed in Step 7



3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

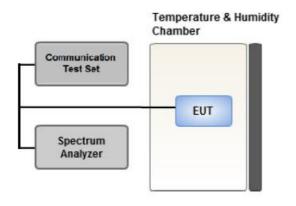
All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

- 1. RBW = 1 MHz
- 2. VBW ≥ 3 MHz
- 3. Detector = RMS
- 4. Trace Mode = trace average
- 5. Sweep time = auto
- 6. Number of points in sweep $\ge 2 \times \text{Span} / \text{RBW}$



3.6 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW > 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points \geq 2 x Span/RBW
- 7. Trace mode = trace average
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

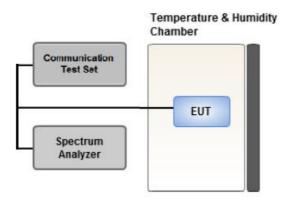
Test Notes

According to FCC 22.917, 24.238, 27.53 specified that 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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.



3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

The temperature is varied from -30°C to +50°C in 10°C increments using an

environmental chamber.

- 2. Primary Supply Voltage:
 - .- Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value

for other than hand carried battery equipment.

.- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature

(20°C to provide a reference).

- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.8 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
- The worst case is reported with the EUT positioning, modulations, RB sizes and offsets,

and channel bandwidth configurations shown in the test data.

- Please refer to the table below.
- SM-A326U & additional models were tested and the worst case results are reported.

(Worst case : SM-A326U)

Test Description	Modulation	RB size	RB offset	Axis	
	QPSK,				
Effective Radiated Power	16QAM,	1	0	Х	
	64QAM				
Radiated Spurious and Harmonic Emissions	QPSK	1	0	Z	

[Worst case]



3.9 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.

- SM-A326U & additional models were tested and the worst case results are reported.

(Worst case : SM-A326U)

[Worst case] Bandwidth Modulation Frequency **RB** size **RB offset Test Description** (MHz) QPSK, **Occupied Bandwidth** 16QAM, 5, 10 Full RB 0 Mid 64QAM Low 1 0 5 High 1 24 Low 1 0 **Band Edge** QPSK 10 1 49 High Low, Full RB 5, 10 0 High Low, Spurious and Harmonic Emissions at QPSK 5, 10 Mid, 1 0 **Antenna Terminal** High



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4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibrati on Interval	Calibration Due
T&M SYSTEM	FBSR-02B(WHK1.2/15G-10EF)/H.P.F	-	03/09/2020	Annual	03/09/2021
T&M SYSTEM	FBSR-02B(WHK3.3/18G-10EF)/H.P.F	-	03/09/2020	Annual	03/09/2021
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/27/2020	Annual	04/27/2021
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Schwarzbeck	UHAP/ Dipole Antenna	557	03/29/2019	Biennial	03/29/2021
Schwarzbeck	UHAP/ Dipole Antenna	558	03/29/2019	Biennial	03/29/2021
ESPEC	SU-642 / Chamber	93008124	03/18/2020	Annual	03/18/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	08/29/2019	Biennial	08/29/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	09/25/2019	Biennial	09/25/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/29/2019	Biennial	04/29/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	02/11/2020	Biennial	02/11/2022
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY51110063	04/27/2020	Annual	04/27/2021
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/04/2020	Annual	06/04/2021
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/14/2020	Annual	10/14/2021
Agilent	8960 (E5515C)/ Base Station	MY48360800	08/26/2020	Annual	08/26/2021
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	04/26/2019	Biennial	04/26/2021
Schwarzbeck	VULB9160/ Bilog Antenna	3150	03/12/2019	Biennial	03/12/2021
Schwarzbeck	VULB9160/ Hybrid Antenna	760	03/22/2019	Biennial	03/22/2021
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6262116770	07/22/2020	Annual	07/22/2021
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	01/07/2021	Annual	01/07/2022
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/13/2020	Annual	07/13/2021
KEYSIGHT	N9030B / Signal Analyzer(5Hz~40.0GHz)	MY55480167	06/04/2020	Annual	06/04/2021
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

2. Espectially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05



6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(c)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
On all frequencies between 763- 775 MHz and 793-805 MHz.	§27.53(c)(4)	< 65 + 10log10 (P[Watts])	PASS <u>(See Note2)</u>
Conducted Output Power	§2.1046	N/A	See Note1
Frequency stability / variation of ambient temperature	§2.1055, § 27.54	Emission must remain in band	PASS

Note:

- 1. See SAR Report
- Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result	
Effective Radiated Power	§27.50(b)(10)	< 3 Watts max. ERP	PASS	
Radiated Spurious and Harmonic	§2.1053,	< 43 + 10log10 (P[Watts]) for	PASS	
Emissions	§27.53(g)	all out-of band emissions	FA00	
Undesirable Emissions in	< -70dBW/MHz EIRP (wideband		PASS	
the 1559 – 1610 MHz band	§2.1053, 27.53(f)	< -80dBW EIRP (narrowband)	FA00	



7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch.	/ Freq.	Measured	Substitute	Ant. Gain	C.L	Pol.	EF	RP
channel	Freq.(MHz)	Level(dBm)	Level(dBm)	(dBd)	U.L	P01.	w	dBm
128	824.20	-21.37	38.40	-10.61	0.95	Н	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test, the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch	./ Freq.	Measured	Substitute	Ant. Gain		Del	EIRP	
channel	Freq.(MHz)	Level(dBm)	Level(dBm)	(dBi)	C.L	Pol.	w	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	Н	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.



7.3. Emission Designator

Emission Designator = 249KGXW GSM BW = 249 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W GSM BW = 249 kHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

- F = Frequency Modulation
- 9 = Composite Digital Info
- W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D LTE BW = 4.48 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D LTE BW = 4.48 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand



8. TEST DATA

8.1 EFFECTIVE RADIATED POWER

Freq	Mod	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EF	RP
(MHz)	(Bandwidth)	woodulation	Level (dBm)	Level (dBm)	Gain(dBd)	U.L	POI	w	W	dBm
		QPSK	-28.34	33.66	-10.08	1.36	Н		0.167	22.22
779.5		16-QAM	-29.09	32.91	-10.08	1.36	Н		0.140	21.47
		64-QAM	-30.23	31.77	-10.08	1.36	Н		0.108	20.33
	LTE B13	QPSK	-28.41	33.79	-10.09	1.36	Н		0.171	22.34
782.0	(5 MHz)	16-QAM	-29.20	33.00	-10.09	1.36	Н	< 3.00	0.143	21.55
		64-QAM	-30.29	31.91	-10.09	1.36	Н		0.111	20.46
		QPSK	-28.40	33.92	-10.10	1.36	Н		0.177	22.47
784.5		16-QAM	-29.15	33.17	-10.10	1.36	Н		0.149	21.72
		64-QAM	-30.29	32.03	-10.10	1.36	Н		0.114	20.58

Freq	Mod	Modulation	Measured	Substitute	Ant.	C.L	Pol	Limit	EF	RP
(MHz)	Bandwidth)		Level (dBm)	Level (dBm)	Gain(dBd)			w	W	dBm
		QPSK	-28.38	33.82	-10.09	1.36	Н		0.173	22.37
782.0	LTE B13 (10 MHz)	16-QAM	-29.11	33.09	-10.09	1.36	Н	< 3.00	0.146	21.64
	()	64-QAM	-30.28	31.92	-10.09	1.36	Н		0.111	20.47



8.2 RADIATED SPURIOUS EMISSIONS

I MODE:	LTE B13
MODULATION SIGNAL:	<u>5 MHz QPSK</u>
DISTANCE:	3 meters

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit
	1 559.0	-51.03	8.93	-57.88	1.94	Н	-50.89	-13.00
23205 (779.5)	2 338.5	-53.26	9.83	-55.48	2.41	Н	-48.06	-13.00
(3 118.0	-55.04	11.15	-55.27	2.82	Н	-46.94	-13.00
	1 564.0	-50.39	8.99	-57.40	1.94	Н	-50.35	-13.00
23230 (782.0)	2 346.0	-54.05	9.87	-56.20	2.41	Н	-48.75	-13.00
(102.0)	3 128.0	-56.62	11.15	-57.07	2.81	Н	-48.73	-13.00
	1 569.0	-51.35	9.05	-58.53	1.94	Н	-51.42	-13.00
23255 (784.5)	2 353.5	-54.64	9.94	-56.77	2.41	V	-49.24	-13.00
(1010)	3 138.0	-55.25	11.18	-55.23	2.82	V	-46.87	-13.00



I MODE:	<u>LTE B13</u>
MODULATION SIGNAL:	<u>10 MHz QPSK</u>
DISTANCE:	3 meters

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit
	1 564.0	-50.49	8.99	-57.50	1.94	V	-50.45	-13.00
23230 (782.0)	2 346.0	-56.48	9.87	-58.63	2.41	Н	-51.18	-13.00
(102.0)	3 128.0	-56.71	11.15	-57.16	2.81	V	-48.82	-13.00



1559 MHz ~ 1610 MHz BAND

OPERATING FREQUENCY:	779.5 MHz, 782.0 MHz, 784.5 MHz
MEASURED OUTPUT POWER:	<u>5 MHz QPSK</u>
DISTANCE:	<u>3 meters</u>
WIDEBAND EMISSION LIMIT:	-80 dBW/ MHz (= -50 dBm/ MHz)

Operating Frequency (MHz)	Measured Frequency (MHz)	EMISSION TYPE	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Margin (dB)
779.5	1607.8		-63.63	9.35	-72.57	1.99	Н	-65.21	15.21
782.0	1559.7	Narrow Band	-63.22	8.93	-70.07	1.94	V	-63.08	13.08
784.5	1564.7		-62.20	8.99	-69.21	1.94	Н	-62.16	12.16

Note:

The lower narrowband limit was applied because the spurious emission was not found.

OPERATING FREQUENCY:	<u>782.0 MHz</u>
MEASURED OUTPUT POWER:	10 MHz QPSK
DISTANCE:	<u>3 meters</u>
WIDEBAND EMISSION LIMIT:	<u>-80 dBW/ MHz (= -50 dBm/ MHz)</u>

Operating Frequency (MHz)	Measured Frequency (MHz)	EMISSION TYPE	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Margin (dB)
782.0	1607.6	Narrow Band	-63.57	9.35	-72.51	1.99	Н	-65.15	15.15

Note:

The lower narrowband limit was applied because the spurious emission was not found.



8.3 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
			QPSK	25	0	4.5028
	5 MHz		16-QAM	25	0	4.4948
10			64-QAM	25	0	4.5142
13	10 MHz		QPSK	50	0	8.9995
			16-QAM	50	0	8.9793
			64-QAM	50	0	8.9772

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 32 ~ 37.



8.4 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)			Factor (dB) Measurement Maximum Data (dBm)		Limit (dBm)
		779.5	3.6965	27.976	-67.523	-39.547	
10	5	782.0	3.7204	27.976	-67.350	-39.374	-13.00
13		784.5	3.6930	27.976	-67.556	-39.580	-13.00
	10	782.0	3.7129	27.976	-67.286	-39.310	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 50 ~ 53.

2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0

3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)

4. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20	30.131

8.5 BAND EDGE

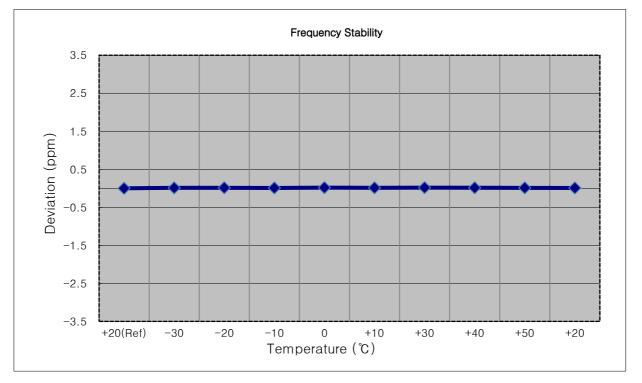
- Plots of the EUT's Band Edge are shown Page 38 ~ 49.



8.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

I MODE:	LTE 13
OPERATING FREQUENCY:	<u>779,500,000 Hz</u>
CHANNEL:	<u>23205 (5 MHz)</u>
REFERENCE VOLTAGE:	<u>3.86 VDC</u>
DEVIATION LIMIT:	Emission must remain in band

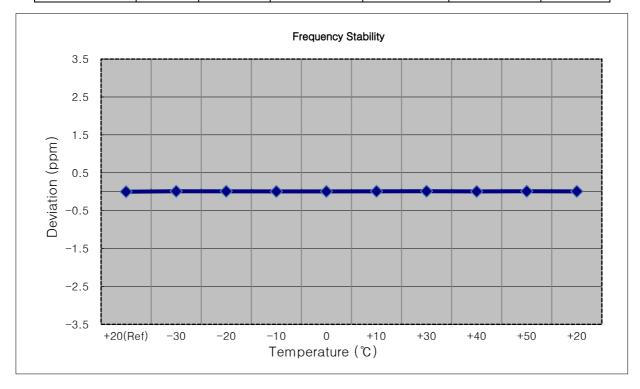
Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	779 500 008	0.00	0.000 000	0.0000
100%		-30	779 500 018	9.70	0.000 001	0.0124
100%	3.860	-20	779 500 018	10.20	0.000 001	0.0131
100%		-10	779 500 016	7.30	0.000 001	0.0094
100%		0	779 500 022	13.90	0.000 002	0.0178
100%		+10	779 500 019	10.60	0.000 001	0.0136
100%		+30	779 500 022	13.60	0.000 002	0.0174
100%		+40	779 500 019	11.10	0.000 001	0.0142
100%		+50	779 500 017	8.80	0.000 001	0.0113
Batt. Endpoint	3.400	+20	779 500 015	7.10	0.000 001	0.0091





■ MODE:	LTE 13
OPERATING FREQUENCY:	<u>782,000,000 Hz</u>
CHANNEL:	<u>23230 (5 MHz)</u>
REFERENCE VOLTAGE:	3.86 VDC
DEVIATION LIMIT:	Emission must remain in band

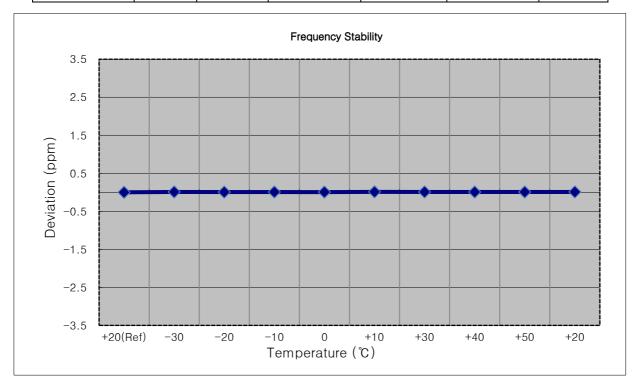
Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	782 000 005	0.00	0.000 000	0.0000
100%		-30	782 000 014	9.00	0.000 001	0.0115
100%		-20	782 000 014	8.60	0.000 001	0.0110
100%		-10	782 000 011	6.00	0.000 001	0.0077
100%	3.860	0	782 000 011	5.80	0.000 001	0.0074
100%		+10	782 000 013	7.90	0.000 001	0.0101
100%		+30	782 000 015	10.20	0.000 001	0.0130
100%	-	+40	782 000 011	5.80	0.000 001	0.0074
100%		+50	782 000 014	9.10	0.000 001	0.0116
Batt. Endpoint	3.400	+20	782 000 012	6.70	0.000 001	0.0086





MODE:	<u>LTE 13</u>
OPERATING FREQUENCY:	<u>784,500,000 Hz</u>
CHANNEL:	<u>23255 (5 MHz)</u>
REFERENCE VOLTAGE:	<u>3.86 VDC</u>
DEVIATION LIMIT:	Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	784 500 003	0.00	0.000 000	0.0000
100%		-30	784 500 010	7.20	0.000 001	0.0092
100%		-20	784 500 008	5.20	0.000 001	0.0066
100%		-10	784 500 009	5.50	0.000 001	0.0070
100%	3.860	0	784 500 008	4.40	0.000 001	0.0056
100%		+10	784 500 012	8.80	0.000 001	0.0112
100%		+30	784 500 010	7.00	0.000 001	0.0089
100%		+40	784 500 010	6.80	0.000 001	0.0087
100%		+50	784 500 010	6.80	0.000 001	0.0087
Batt. Endpoint	3.400	+20	784 500 011	7.50	0.000 001	0.0096

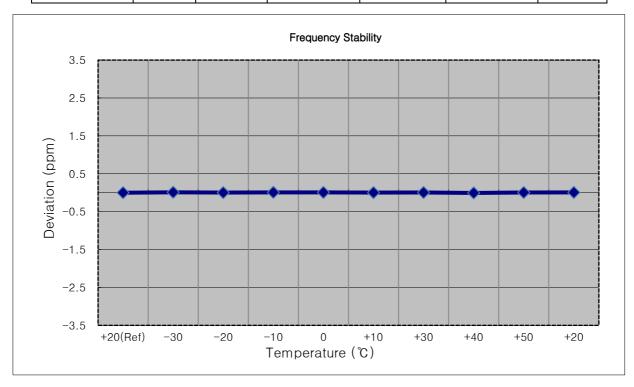




Report No.: HCT-RF-2102-FC017

I MODE:	LTE 13
OPERATING FREQUENCY:	<u>782,000,000 Hz</u>
CHANNEL:	<u>23230 (10 MHz)</u>
REFERENCE VOLTAGE:	<u>3.86 VDC</u>
DEVIATION LIMIT:	Emission must remain in band

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°C)	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	782 000 007	0.00	0.000 000	0.0000
100%		-30	782 000 015	8.10	0.000 001	0.0104
100%		-20	782 000 009	2.50	0.000 000	0.0032
100%		-10	782 000 013	6.40	0.000 001	0.0082
100%	3.860	0	782 000 013	6.00	0.000 001	0.0077
100%		+10	782 000 009	2.40	0.000 000	0.0031
100%		+30	782 000 010	3.80	0.000 000	0.0049
100%		+40	782 000 001	-5.10	-0.000 001	-0.0065
100%		+50	782 000 011	4.30	0.000 001	0.0055
Batt. Endpoint	3.400	+20	782 000 012	5.80	0.000 001	0.0074

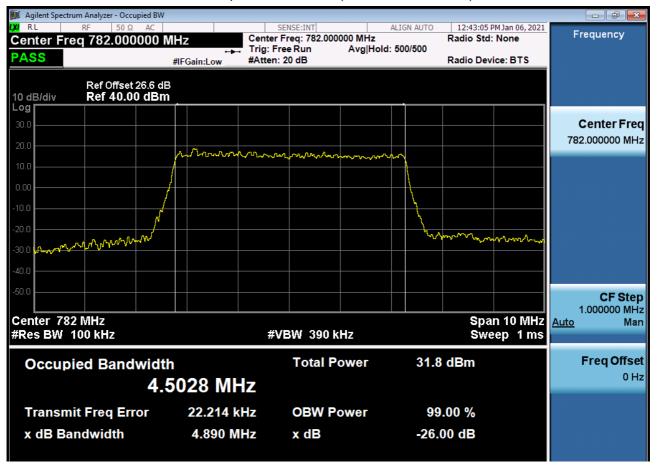




FCC ID: A3LSMA326U

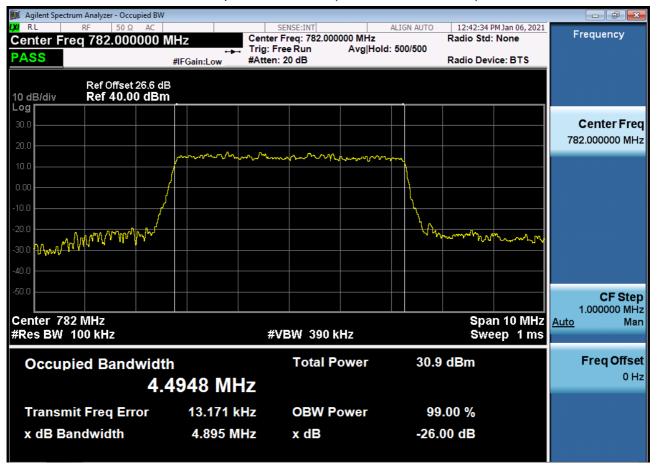
9. TEST PLOTS





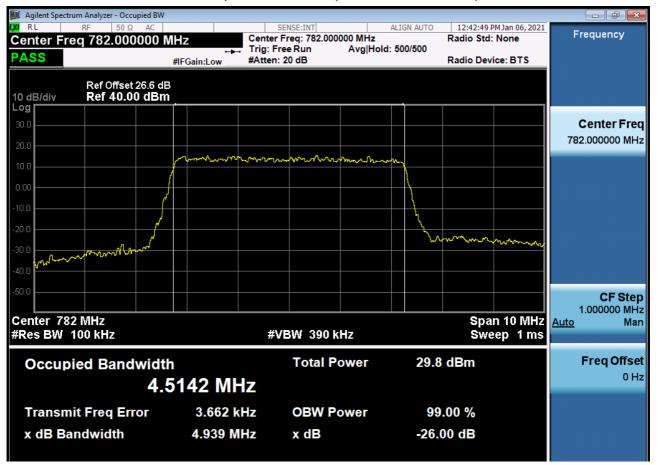
BAND 13. Occupied Bandwidth Plot (Ch.23230 QPSK RB 25) 5 MHz





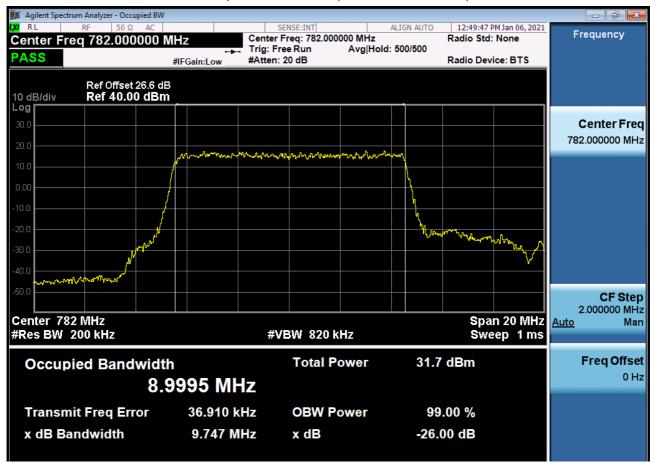
BAND 13. Occupied Bandwidth Plot (Ch.23230 16-QAM RB 25) 5 MHz





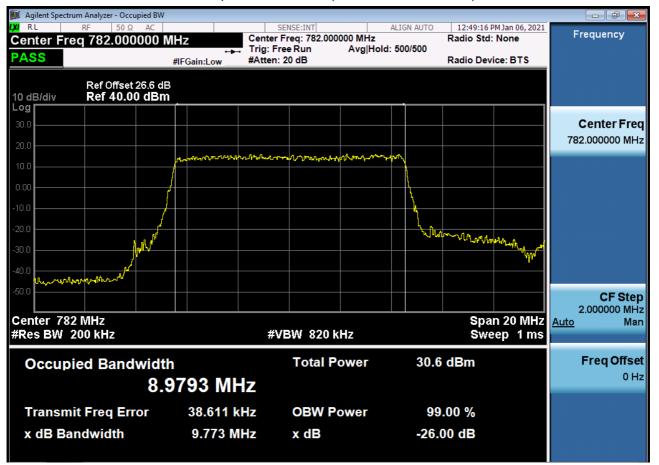
BAND 13. Occupied Bandwidth Plot (Ch.23230 64-QAM RB 25) 5 MHz





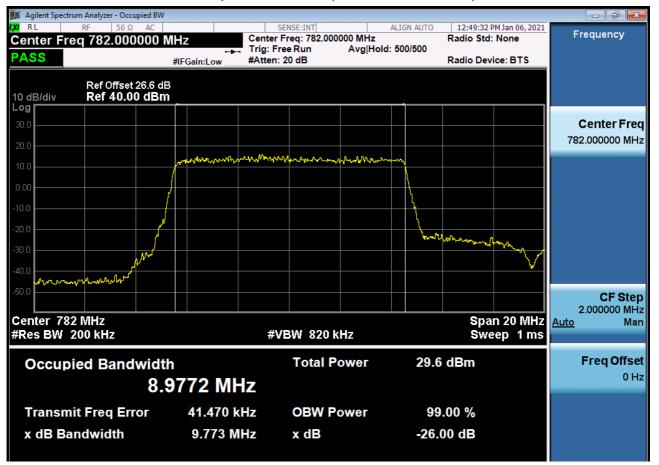
BAND 13. Occupied Bandwidth Plot (Ch.23230 QPSK RB 50) 10 MHz





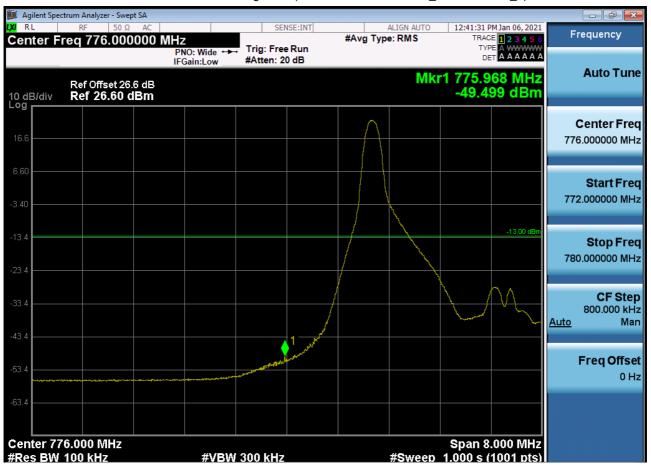
BAND 13. Occupied Bandwidth Plot (Ch.23230 16-QAM RB 50) 10 MHz





BAND 13. Occupied Bandwidth Plot (Ch.23230 64-QAM RB 50) 10 MHz





Band 13 Lower Band Edge Plot (5M BW Ch.23205 QPSK RB1 OFFSET 0)



	ctrum Analyzer - Swept SA					
LXI RL	RF 50 Ω AC		ENSE:INT	ALIGN AUT #Avg Type: RMS	0 12:40:45 PM Jan 06, 2021 TRACE 1 2 3 4 5 6	
Center F	req 776.000000 I	PNO: Wide +++ Trig: Fre IFGain:Low #Atten: :	e Run	Avg Type. King		
10 dB/div Log	Ref Offset 26.6 dB Ref 26.60 dBm			N	lkr1 776.000 MHz -45.301 dBm	Auto Tune
16.6						Center Freq 776.000000 MHz
6.60						Start Freq 772.000000 MHz
-13.4					-13.00 dBm	Stop Freq 780.000000 MHz
-23.4			/			CF Step 800.000 kHz
-43.4			1			Auto Man Freq Offset
-53.4						0 Hz
	6.000 MHz				Span 8.000 MHz	
#Res BW		#VBW 300 kH;	2	#Swe	span 8.000 minz ep 1.000 s (1001 pts)	

Band 13 Lower Band Edge Plot (5M BW Ch.23205 QPSK_RB_25_0)-1



							um Analyzer - Swe	
Frequency	12:41:05 PM Jan 06, 2021 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	ALIGN AUTO e: RMS	#Avg Ty	SENSE:INT	. wide	PNO	RF 50 Ω 9 q 769.00	enter Fr
Auto Tu	1 774.892 MHz -64.213 dBm	Mkr		en. 20 dB	in:Low#Att	.6 dB	Ref Offset 26 Ref -10.00	dB/div
Center Fr 769.000000 M								
Start Fr 763.000000 M	-35.00 dBm							o —— o ——
Stop Fr 775.000000 M	1							
CF St 1.200000 M <u>Auto</u> M	anderson and a second	*เม _{็าส} ะป _า คุณรา-มะมาสารีป	ahtypintanjigatyk	u-fr	K-ghipg-aterioring-fig-5gB/9mones	ੑੑੑ ₩₩₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	-ghtracellan an taget an orange	
Freq Offs 0								
	Stop 775 000 Mile							
	Stop 775.000 MHz 1.000 s (1001 pts)	#Sween		Hz	#VBW 30 k			art 763. les BW

Band 13 Lower Emission Mask (763 MHz ~ 775 MHz) Plot (5M BW Ch.23205 QPSK_RB25_0)-2



Frequency	MJan 06, 2021 E <mark>1 2 3 4 5 6</mark> E A WWWW T A A A A A A	TRAC TYP	ALIGN AUTO e: RMS	#Avg Typ			IHz PNO: Wide ↔ IFGain:Low	Analyzer - Swept SA F 50 Ω AC 776.000000	XI RL
Auto Tune	00 MHz 39 dBm	1 776.0 -48.5	Mkr				II GUILLOW	f Offset 26.6 dB ef 26.60 dBm	10 dB/div
Center Fred 776.000000 MH;									16.6
Start Fred 772.000000 MH;									6.60 -3.40
Stop Fred 780.000000 MH:	-13.00 dBm	~							-13.4
CF Step 800.000 kH <u>Auto</u> Mar	RMS				1.				43.4
Freq Offse 0 H:					how				53.4
	.000 MHz 1001 pts)	Span 8.	# C uuc on			300 kHz	#\/p\\		-63.4 Center 77 #Res BW

Band 13 Lower Band Edge Plot (10M BW Ch.23230 QPSK_RB1 OFFSET_0)



	12:48:06 PM Jan 06, 2021		ALI		SE:INT	SEN		ept SA	Analyzer - Swe		A D
Frequency	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A		g Type: F	#Avg	Run		PNO: Wide ↔→ IFGain:Low		776.00	nter Fr	Cer
Auto Tur	776.000 MHz -44.681 dBm	Mkr1						6.6 dB dBm	ef Offset 26 ef 26.60	B/div	10 d Log
Center Fre											16.6
776.000000 MH											
Start Fre	RIMS		~~~								6.60
772.000000 MH										\vdash	3.40
Stop Fre	-13.00 dBm										13.4
780.000000 MH											23.4
CF Ste 800.000 k⊦			r -	- <i>, , , , , , , , , ,</i>							33.4
<u>Auto</u> Ma				aran a	1						13.4
Freq Offs						- A CONTRACT					53.4
01							an a		a		
											63.4
	Span 8.000 MHz 000 s (1001 pts)	S				300 kHz	<i>#</i>) (D)		00 MHz	Ler 770 s BW 1	

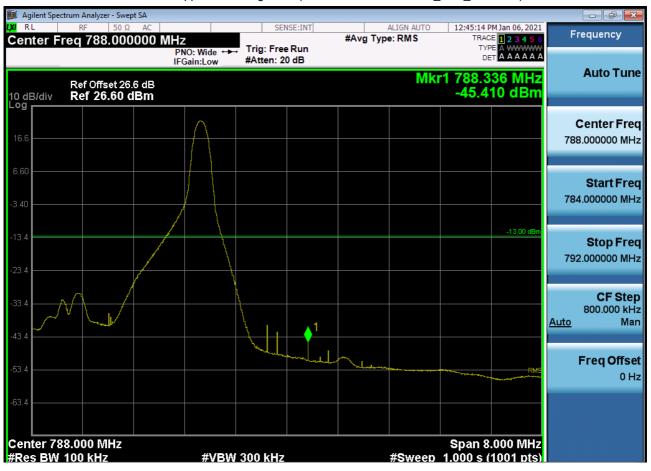
BAND 13. Lower & Upper Band Edge Plot (10M BW Ch.23230 QPSK RB_50_0)-1



Frequency	26 PM Jan 06, 2021	12:48:26	ALIGN AUTO		NSE:INT	SE		2 AC	Analyzer - Swe RF 50 Ω	
	RACE 1 2 3 4 5 6 TYPE A WWWW DET A A A A A A	TR/ T	be: RMS	#Avg Ty		. Trig: Fre #Atten: 2	Z NO: Wide ↔ Gain:Low		769.000	ter Fre
Auto Tui	.304 MHz 850 dBm	r1 774. -64.8	Mk					5.6 dB dBm	ef Offset 26 ef -10.00	3/div
Center Fro										
769.000000 MI										
Start Fre	-35.00 dBm									
763.000000 MI										
Stop Fre										
775.000000 MI	1									
CF Ste	RMS	an and and a second	เ _ร าะ _{ได้สมั} ระทุได้ได้-เองสมุรไ	Mrrhadlangerta	hter and the second	ֈֈֈՠֈՠֈՠֈՠֈՠ	here and a strategy of the	เราะรับรูประวงมนุษาคม	an a	ለ፦^ֈ ማስተካከ
1.200000 MI <u>Auto</u> Mi										
Erog Offe										
Freq Offs 01										
		Oton 77								760 0
	75.000 MHz 5 (1001 pts)	1.000 773	#Sween			30 kHz	#VRM		LINIEZ KHZ	: 763.0 : BW 1

Band 13 Lower Emission Mask (763 MHz ~ 775 MHz) Plot (10M BW Ch.23230 QPSK_RB50_0)-2





Band 13 Upper Band Edge Plot (5M BW Ch.23255 QPSK RB1 Offset 24)





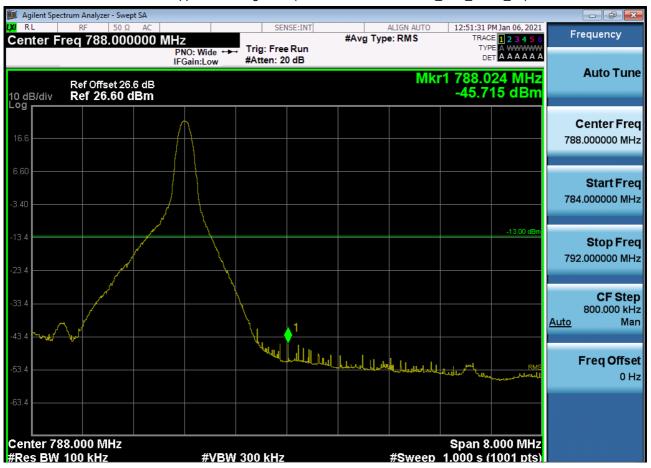
Band 13 Upper Band Edge Plot (5M BW Ch.23255 QPSK_RB_25_0)-1



		_							Analyzer - Swer		_
Frequency	M Jan 06, 2021 1 2 3 4 5 6	TRAC	ALIGN AUTO e: RMS	#Avg Typ	ISE:INT		<u>z</u>	AC 0000 MH2	⊧ 50 Ω 799.000		Cen
A		DE				Trig: Free #Atten: 2	NO: Wide ↔ Gain:Low	Р			
Auto Tune	12 MHz 19 dBm	1 793.0 -61.1	Mkı						f Offset 26 f -10.00		10 dE Log I
Center Free											
799.000000 MH;											-20.0
Start Fred	-35.00 dBm										-30.0
793.000000 MH;											-40.0
Stop Fred											-50.0
805.000000 MH;										1	-60.0
CF Step	RMS	elsh-physikaeugagek	(Manylangedrafilysy	เปณะเกาะการ	∽¥°¶∿™₽'IUI¶°Þ«Þr	رومور مورور رومور مورور رومور مرور مورور مورور مورور مورو مورور	erent-Tur ⁴⁴ #4/176pr	with more was	, the second sec	W-Chilled Madel and	
1.200000 MHz Auto Mar											-70.0
											-80.0
Freq Offse 0 Hz											-90.0
011											-100
	000 MHz	Stop 805. <u>1.000 s (</u> '	#Sween			30 kHz	#VRM			t 793.00 s BW 10	

Band 13 Upper Emission Mask (793 MHz ~805 MHz) Plot (5M BW Ch.23255 QPSK_RB25_0)-2





Band 13 Upper Band Edge Plot (10M BW Ch.23230 QPSK RB1 Offset 49)



							n Analyzer - Swept SA	
Frequency	2:50:44 PM Jan 06, 2021 TRACE 1 2 3 4 5 6	0 12	ALIGN AUTO Type: RMS	#	SEN	Hz	RF 50 Ω AC	X/ RL Center F
					Trig: Free #Atten: 20	PNO: Wide ++- IFGain:Low		
Auto Tur	788.320 MHz 33.728 dBm	lkr1 7	MI				ef Offset 26.6 dB ef 26.60 dBm	I0 dB/div _og ┏━━━
Center Fre								
788.000000 MH								16.6
Start Fre								5.60
784.000000 MH						$\langle \rangle$		3.40
	-13.00 dBm							
Stop Fre 792.000000 MH								13.4
792.000000 WF								3.4
CF Ste 800.000 kH				♦ ¹				i3.4
Auto Ma	RMS							
F O ff_								43.4
Freq Offs 0 H								53.4
								63.4
	pan 8.000 MHz 00 s (1001 pts)	Sp	#Swoor		300 kHz	#\/B\M		Center 78 Res BW

Band 13 Upper Band Edge Plot (10M BW Ch.23230 QPSK_ QPSK_RB_50_0)-1



									Analyzer - Swep	•	
Frequency	M Jan 06, 2021 E 1 2 3 4 5 6 E A WWWWW T A A A A A A	TRAC	ALIGN AUTO e: RMS	#Avg Typ			NO:Wide ↔		F 50 Ω 799.000		x/ _{RL} Cent
Auto Tun	36 MHz 08 dBm	1 793.0	Mkı			#Atten: 20	Gain:Low	IFC 6 dB	f Offset 26. f -10.00 (10 dB
Center Fre 799.000000 MH											- og -20.0 -
Start Fre 793.000000 MH	-35,00 dBm										30.0 40.0
Stop Fre 805.000000 MH										1	50.0 - 60.0 -
CF Ste 1.200000 MH <u>Auto</u> Ma	RMS Կութեւուութանիչու	ะ _{มี} ทำให้ขณะประจา	and a summary of the sum of the s	สโข _้ งหรีย่องค _ื นไปกร้าง	પ્ર ક ારન્ટ્ર જાણવાય	^{พร} าชนายายายาย	Yèn,¶Y]มไµ∐ะและจะเ	a margadation of the	الليم، ماليمان المراجعة بالم		70.0 -
Freq Offse											30.0 - 30.0 -
											-100 -
	000 MHz 1001 pts)	Stop 805. 1.000 s (#Sweep			30 kHz	#VBW			793.00 BW 10	

Band 13 Upper Emission Mask (793 MHz ~805 MHz) Plot (10M BW Ch.23230 QPSK_RB50_0)-2



	Spectrum Analyzer	- Swept SA								
LXI RL Contor	_R , Freq 5.01	50 Ω AC	CH2	SE	NSE:INT	#Avg Typ	ALIGN AUTO		PM Jan 06, 2021	Frequency
Center		3000000	PNO: Fast IFGain:Low	++++ Trig: Fre #Atten: 2				TY		
10 dB/di	v Ref 10.	00 dBm					Mk		6 5 GHz 23 dBm	Auto Tune
Log 0.00 -10.0 -20.0	²									Center Freq 5.015000000 GHz
-30.0										Start Freq 30.000000 MHz
-60.0 -70.0 -80.0										Stop Freq 10.000000000 GHz
Start 30 #Res B	0 MHz W 1.0 MHz		#VE	3W 3.0 MHz		S	weep 17	Stop 10 .33 ms (2	.000 GHz 0001 pts)	CF Step 997.000000 MHz Auto Man
1 N 2 N	TRC SCL		696 5 GHz 777.8 MHz	Y -67.523 dl -3.100 dl		FION FUN	ICTION WIDTH	FUNCTI	DN VALUE	
3 4 5									E	Freq Offset 0 Hz
6 7 8 9										
10										

BAND 13. Conducted Spurious Plot (23205ch_5MHz_QPSK_RB 1_0)



	ectrum Analyzer - Swept S	A						
LXI RL	RF 50 Ω Freq 5.015000		SENSE:IN		ALIGN AUTO		M Jan 06, 2021 E <mark>1 2 3 4 5 6</mark>	Frequency
Centerr	req 5.015000	PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 20 dB	1 1	j type. Kino	TYP		Auto Time
10 dB/div	Ref 10.00 dB	m			Mk	r1 3.720 -67.3) 4 GHz 50 dBm	Auto Tune
Log 0.00 -10.0 -20.0								Center Freq 5.015000000 GHz
-30.0 -40.0 -50.0								Start Freq 30.000000 MHz
-60.0 -70.0 -80.0							RMS	Stop Freq 10.000000000 GHz
Start 30 #Res BW	MHz / 1.0 MHz	#VBI	N 3.0 MHz		Sweep 17	Stop 10. .33 ms (2	000 GHz 0001 pts)	CF Step 997.000000 MHz Auto Man
MKR MODE T 1 N 2 N 3 4	rrc scl 1 f 1 f	× 3.720 4 GHz 780.2 MHz	Y -67.350 dBm -3.389 dBm	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Freq Offset
5 6 7 8 9 10 11								

BAND 13. Conducted Spurious Plot (23230ch_5MHz_QPSK_RB 1_0)



🎉 Agilent Spectrum Analyzer - Swept SA							
ເ₩ RL RF 50 Ω AC Center Freq 5.015000000	GHZ	SENSE		ALIGN AUT	TRA	PM Jan 06, 2021 DE 1 2 3 4 5 6	Frequency
	PNO: Fast +	Trig: Free R #Atten: 20 d	un	• ,1	TY		
	IFGain:Low	#Atten: 20 d	В				Auto Tune
10 dB/div Ref 10.00 dBm				N	4kr1 3.69 67.5-	3 0 GHz 56 dBm	
							O antes Franc
0.00							Center Freq 5.015000000 GHz
-10.0							5.015000000 GHZ
-20.0							
-30.0							Start Freq
-40.0							30.000000 MHz
-50.0							
-60.0	1						Stop Frog
-70.0	and the second s		-	man and a second		RMS	Stop Freq 10.00000000 GHz
-80.0							10.00000000 8112
					6 4 40		
Start 30 MHz #Res BW 1.0 MHz	#\/B\/(3.0 MHz		Sween	500 10 17.33 ms (2	.000 GHz	CF Step 997.000000 MHz
	<i>**</i> D**		SUNCTION	-			<u>Auto</u> Man
MKR MODE TRC SCL X	.693 0 GHz	Y -67.556 dBm	FUNCTION	FUNCTION WID	TH FUNCTI	ON VALUE	
2 N 1 f	787.2 MHz	-3.288 dBm					Freq Offset
4							0 Hz
5						=	
7							
8							
10							

BAND 13. Conducted Spurious Plot (23255ch_5MHz_QPSK_ RB 1_0)



	ectrum Analyzer - S	wept SA							
X/RL		Ω AC		SENS	SE:INT #A	ALIGN AUTO		M Jan 06, 2021	Frequency
Center F	req 5.015	000000	PNO: Fast ← IFGain:Low	► Trig: Free #Atten: 20	Run	yg Type. Rivis	TYF		
10 dB/div	Ref 10.0	0 dBm				Mł	(r1 3.712 -67.2	2 9 GHz 86 dBm	Auto Tune
Log 0.00 -10.0 -20.0	2 								Center Freq 5.015000000 GHz
-30.0 -40.0 -50.0									Start Freq 30.000000 MHz
-60.0 -70.0 -80.0			~	1				RMS	Stop Freq 10.000000000 GHz
Start 30 #Res BW	MHz / 1.0 MHz		#VB	W 3.0 MHz		Sweep 17	Stop 10 .33 ms (2	.000 GHz 0001 pts)	CF Step 997.000000 MHz Auto Mar
MKR MODE T	RC SCL	X 3	712 9 GHz	۲ -67.286 dB	FUNCTION	FUNCTION WIDTH	FUNCTIO	ON VALUE	Adto Mar
2 N 3 4 5	1 f		778.2 MHz	-2.277 dB					Freq Offset 0 Hz
6 7 8 9									
10									

BAND 13. Conducted Spurious Plot (Ch.23230 10 MHz QPSK RB 1_0)



10. APPENDIX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2102-FC017-P