

FCC LTE REPORT

FCC Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.**Date of Issue:**
June 30, 2017**Location:****Address:**
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Rep. of KoreaHCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA**Report No.:** HCT-R-1706-F099
HCT FRN: 0005866421**FCC ID:** A3LSMJ330KOR**APPLICANT:** SAMSUNG Electronics Co., Ltd.**FCC Model(s):** SM-J330L
EUT Type: Mobile Phone
FCC Classification: Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s): §27, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band17 (5)	706.5 – 713.5	4M50G7D	QPSK	0.023	13.65
		4M49W7D	16QAM	0.017	12.40
LTE – Band17 (10)	709.0 – 711.0	8M93G7D	QPSK	0.020	13.06
		8M96W7D	16QAM	0.015	11.67

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)



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Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1706-F099	June 30, 2017	- First Approval Report

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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: A3LSMJ330KOR

Application Type: Certification

FCC Classification: Licensed Portable Transmitter Held to Ear (PCE)

FCC Rule Part(s): §27, §2

EUT Type: Mobile Phone

FCC Model(s): SM-J330L

Tx Frequency: 706.5 MHz – 713.5 MHz (LTE – Band 17 (5 MHz))
709.0 MHz – 711.0 MHz (LTE – Band 17 (10 MHz))

Max. RF Output Power:

Band 17 (5 MHz) :	0.023 W (QPSK) (13.65 dBm)
	0.017 W (16-QAM) (12.40 dBm)
Band 17 (10 MHz) :	0.020 W (QPSK) (13.06 dBm)
	0.015 W (16-QAM) (11.67 dBm)

Emission Designator(s):

Band 17 (5 MHz) :	4M50G7D (QPSK) / 4M49W7D (16-QAM)
Band 17 (10 MHz) :	8M93G7D (QPSK) / 8M96W7D (16-QAM)

Date(s) of Tests: June 01, 2017 ~ June 29, 2017

2. INTRODUCTION

2.1. EUT DESCRIPTION

The SAMSUNG Electronics Co., Ltd. SM-J330L Mobile Phone consists of LTE 17.

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 ERP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS

Note: ERP(Effective Radiated Power)

Test Procedure

Radiated emission measurements 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-D-2010 Clause 2.2.17. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a RMS detector.

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;

$$P_{d(dBm)} = P_{g(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

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

Radiated spurious emissions

: Frequency Range : 9 kHz ~ 10th Harmonics of highest channel fundamental frequency.

3.2 BLOCK B FREQUENCY RANGE (704 – 710 and 734 – 740 MHz, 777 – 792 MHz)

§27.5(c)

698-746 MHz Band. The following frequencies are available for licensing pursuant to this part in the 698–746 MHz band: (1) Three paired channel blocks of 12 MHz each are available for assignment as follows :

Block A : 698 – 704 MHz and 728 – 734 MHz ;

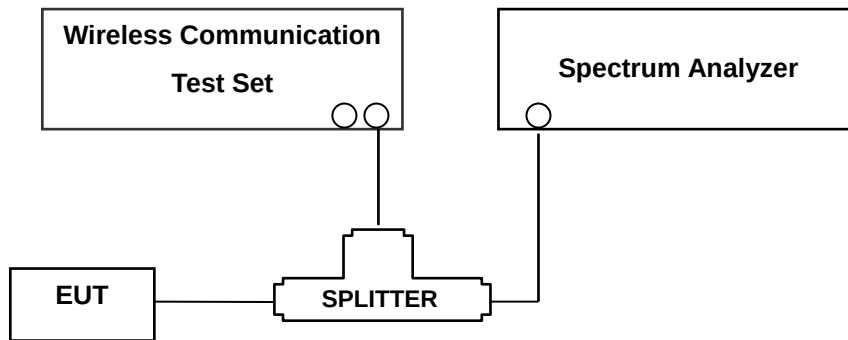
Block B : 704 – 710 MHz and 734 – 740 MHz ; and

Block C : 710 – 716 MHz and 740 – 746 MHz.

The EUT is only being authorized for operation in Blocks B and C.

3.3 OCCUPIED BANDWIDTH.

Test set-up



(Configuration of conducted Emission measurement)

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.

Test Procedure

OBW is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r02, October 17, 2014, Section 4.2.

The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels(low, middle and high operational range.)

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

3.4 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

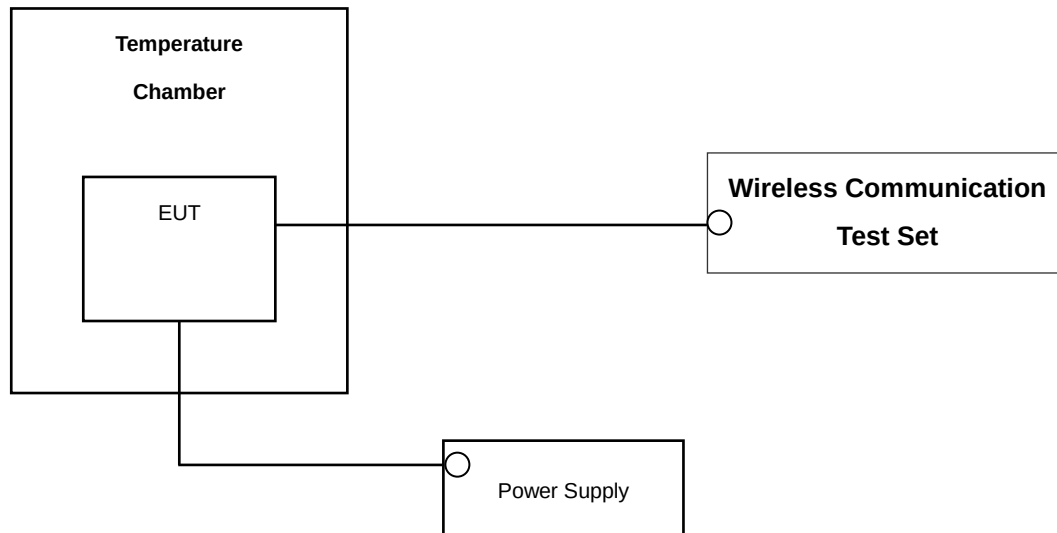
Spurious and harmonic emissions at antenna terminal is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r02, October 17, 2014, Section 6.0.

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. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30kHz bandwidth may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency

3.5 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



* Nominal Operating Voltage

Test Procedure

Frequency stability is tested in accordance with ANSI/TIA-603-D-2010 section 2.2.2

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from the end point to 100 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).

1. The equipment is turned on in a "standby" condition for one minute 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.
2. 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.

NOTE: The EUT is tested down to the battery endpoint.

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
REOHDE & SCHWARZ	SCU 18 / AMPLIFIER	10094	04/24/2017	Annual	04/24/2018
Wainwright	WHK1.2/15G-10EF/H.P.F	4	04/10/2017	Annual	04/10/2018
Wainwright	WHK3.3/18G-10EF/H.P.F	2	04/10/2017	Annual	04/10/2018
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	05/04/2017	Annual	05/04/2018
Agilent	E3632A/DC Power Supply	KR75303243	07/12/2016	Annual	07/12/2017
Schwarzbeck	UHAP/ Dipole Antenna	557	03/31/2017	Biennial	03/31/2019
Schwarzbeck	UHAP/ Dipole Antenna	558	03/31/2017	Biennial	03/31/2019
ESPEC	SU-642 / Chamber	0093008124	03/31/2017	Annual	03/31/2018
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	09/09/2016	Biennial	09/09/2018
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	1298	10/14/2016	Biennial	10/14/2018
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/25/2017	Biennial	04/25/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	04/25/2017	Biennial	04/25/2019
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY52090906	06/01/2017	Annual	06/01/2018
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/22/2017	Annual	06/22/2018
REOHDE & SCHWARZ	FSV40-N/Spectrum Analyzer	101068-SZ	09/23/2016	Annual	09/23/2017
Agilent	8960 (E5515C)/ Base Station	MY48360800	10/19/2016	Annual	10/19/2017
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	04/06/2017	Biennial	04/06/2019
Schwarzbeck	VULB9160/ Bilog Antenna	3150	09/30/2016	Biennial	09/30/2018
Schwarzbeck	VULB9160/ Bilog Antenna	3368	10/14/2016	Biennial	10/14/2018
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6200863156	02/15/2017	Annual	02/15/2018
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	02/13/2017	Annual	02/13/2018
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/18/2016	Annual	07/18/2017

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 ($\pm$ 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)	6.07

6. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS
2.1051, 27.53(g)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	$< 43 + 10 \log_{10} (P[\text{Watts}])$ at Band Edge and for all-of-band emissions		PASS
2.1046	*Conducted Output Power	N/A		PASS
2.1055, 27.54	Frequency stability / variation of ambient temperature	Emission must remain in band		PASS
27.50(c)(10)	Effective Radiated Power	< 3 Watts max. ERP	RADIATED	PASS
2.1053, 27.53(g)	Undesirable Out-of-Band Emissions	$< 43 + 10 \log_{10} (P[\text{Watts}])$ for all out-of-band emissions		PASS

*: See SAR Report

7. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured Level(dBm)	Substitute LEVEL(dBm)	Ant. Gain (dBd)	C.L	Pol.	Limit	ERP	
	channel	Freq.(MHz)						W	W	dBm
LTE Band 17	23790	710.0	-32.09	28.83	-10.21	0.81	V	< 3.00	0.060	17.81

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

- 1) The EUT mounted on a wooden tripod is 2.5 meter above test site ground level.
- 2) During the test , the turn table is rotated and the antenna height 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 (**ERP**).

B. Emission Designator

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

16QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = main carrier modulated in a combination of two

or more of the following modes;

amplitude, angle, pulse

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 EFFECTIVE RADIATED POWER (Band 17)

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
706.5	5 MHz	QPSK	-37.24	24.22	-10.20	1.21	H	< 3.00	0.019	12.81
		16-QAM	-38.50	22.96	-10.20	1.21	H		0.014	11.55
710.0		QPSK	-36.61	24.80	-10.22	1.22	H		0.022	13.36
		16-QAM	-37.82	23.59	-10.22	1.22	H		0.016	12.15
713.5		QPSK	-36.12	25.11	-10.24	1.22	H		0.023	13.65
		16-QAM	-37.37	23.86	-10.24	1.22	H		0.017	12.40

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
709.0	10 MHz	QPSK	-37.23	24.20	-10.22	1.21	H	< 3.00	0.019	12.77
		16-QAM	-38.55	22.88	-10.22	1.21	H		0.014	11.45
710.0		QPSK	-37.03	24.38	-10.22	1.22	H		0.020	12.94
		16-QAM	-38.42	22.99	-10.22	1.22	H		0.014	11.55
711.0		QPSK	-36.88	24.51	-10.23	1.22	H		0.020	13.06
		16-QAM	-38.27	23.12	-10.23	1.22	H		0.015	11.67

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

NOTES:Effective Radiated Power Output Measurements by Substitution Methodaccording to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW $\geq 3 \times$ RBW, Detector = RMS. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

8.2 RADIATED SPURIOUS EMISSIONS

8.2.1 RADIATED SPURIOUS EMISSIONS (5 MHz Band 17 LTE)

- ☐ OPERATING FREQUENCY: 713.50 MHz
☐ MEASURED OUTPUT POWER: 13.65 dBm = 0.023 W
☐ MODULATION SIGNAL: 5 MHz QPSK
☐ DISTANCE: 3 meters
☐ LIMIT: $43 + 10 \log_{10} (W) =$ 26.65 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitute Level (dBm)	C.L	Pol	ERP (dBm)	dBc
23755 (706.50)	1,413.00	-56.09	8.03	-66.22	1.74	V	-59.93	73.58
	2,119.50	-42.70	10.44	-51.92	2.15	V	-43.63	57.28
	2,826.00	-55.83	11.18	-63.89	2.52	V	-55.23	68.88
23790 (710.00)	1,420.00	-56.45	8.09	-66.61	1.74	V	-60.27	73.92
	2,130.00	-48.97	10.47	-57.89	2.16	V	-49.57	63.22
	2,840.00	-55.86	11.19	-63.76	2.53	H	-55.09	68.74
23825 (713.50)	1,427.00	-56.63	8.09	-66.79	1.74	V	-60.45	74.10
	2,140.50	-49.33	10.49	-57.74	2.17	V	-49.42	63.07
	2,854.00	-55.57	11.20	-63.50	2.52	H	-54.82	68.47

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
 - 2 We are performed all frequency to 10th harmonics from 9 kHz. Measurements above 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.
 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
 4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
 5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

8.2.2 RADIATED SPURIOUS EMISSIONS (10 MHz Band 17 LTE)

- OPERATING FREQUENCY: 711.00 MHz
- MEASURED OUTPUT POWER: 13.06 dBm = 0.020 W
- MODULATION SIGNAL: 10 MHz QPSK
- DISTANCE: 3 meters
- LIMIT: $43 + 10 \log_{10}(W) =$ 26.06 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitute Level (dBm)	C.L	Pol	ERP (dBm)	dBc
23780 (709.00)	1,418.00	-55.80	8.03	-65.91	1.74	V	-59.62	72.68
	2,127.00	-42.40	10.46	-51.35	2.15	H	-43.04	56.10
	2,836.00	-56.31	11.19	-64.25	2.53	V	-55.59	68.65
23790 (710.00)	1,420.00	-55.84	8.09	-66.00	1.74	H	-59.66	72.72
	2,130.00	-45.63	10.47	-54.55	2.16	V	-46.23	59.29
	2,840.00	-56.15	11.19	-64.05	2.53	H	-55.38	68.44
23800 (711.00)	1,422.00	-55.46	8.10	-65.69	1.74	H	-59.33	72.39
	2,133.00	-46.22	10.47	-54.97	2.16	V	-46.66	59.72
	2,844.00	-56.44	11.19	-64.34	2.53	H	-55.68	68.74

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
 2. We are performed all frequency to 10th harmonics from 9 kHz. Measurements above 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.
 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
 4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
 5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

8.3 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
17	5 MHz	710.0	QPSK	25	0	4.4997
			16-QAM	25	0	4.4927
	10 MHz		QPSK	50	0	8.9281
			16-QAM	50	0	8.9578

- Plots of the EUT's Occupied Bandwidth are shown Page 23 ~ 24.

8.4 CONDUCTED SPURIOUS EMISSIONS

■ FACTORS FOR FREQUENCY

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

NOTES:

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

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
17	5	706.5	3.7144	27.976	-67.144	-39.168	-13.00
		710.0	3.7099	27.976	-67.252	-39.276	
		713.5	3.7099	27.976	-67.321	-39.345	
	10	709.0	3.7084	27.976	-66.672	-38.696	
		710.0	3.7109	27.976	-67.162	-39.186	
		711.0	3.6760	27.976	-67.138	-39.162	

NOTES:

1. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
3. Plots of the EUT's Conducted Spurious Emissions are shown Page 31 ~ 33.

8.4.1 BAND EDGE

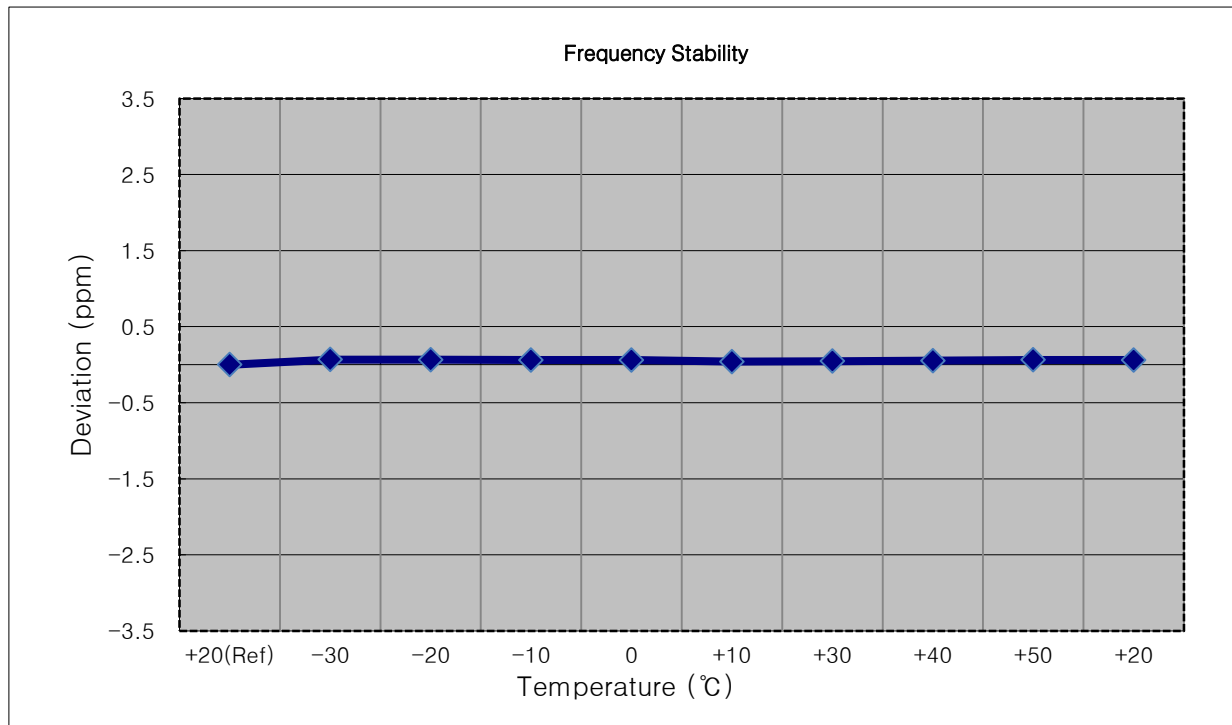
- Plots of the EUT's Band Edge are shown Page 25 ~ 30.

8.5 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

8.5.1 FREQUENCY STABILITY (5 MHz Band 17 LTE)

- OPERATING FREQUENCY: 710,000,000 Hz
- CHANNEL: 23790 (5 MHz)
- REFERENCE VOLTAGE: 3.85 VDC
- DEVIATION LIMIT: Emission must remain in band

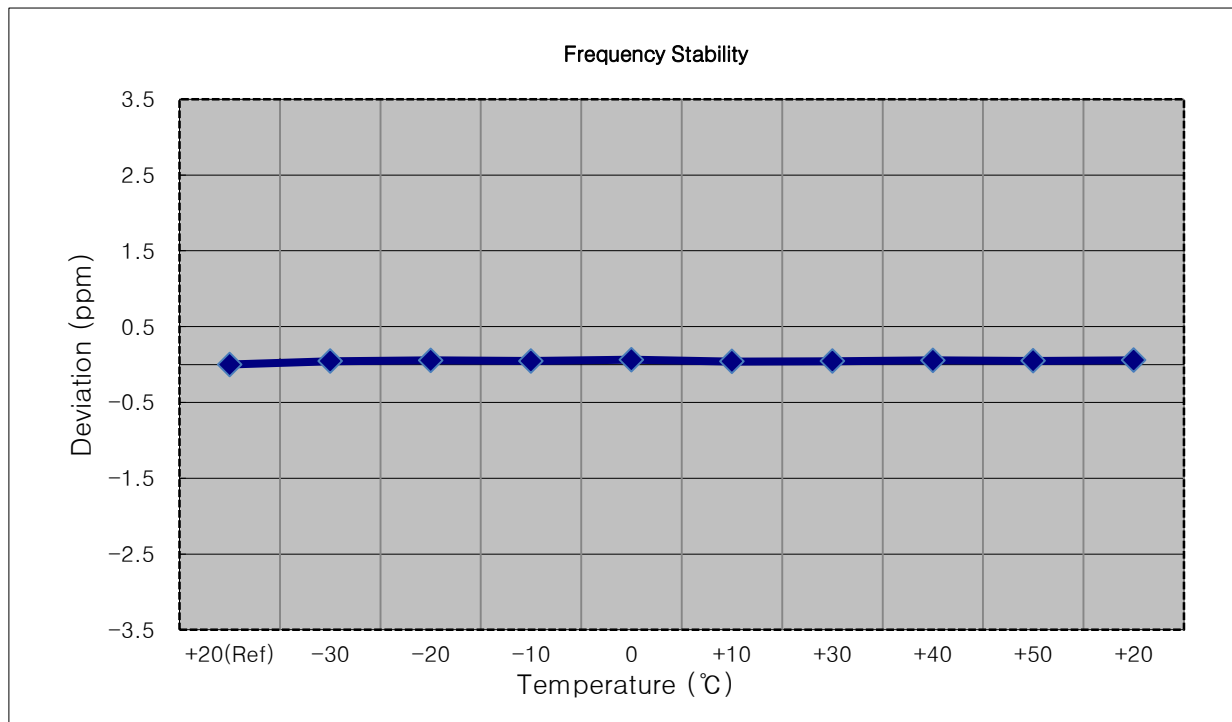
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.850	+20(Ref)	710 000 047	0.0	0.000 000	0.0000
100%		-30	710 000 096	48.3	0.000 007	0.0680
100%		-20	710 000 093	46.1	0.000 006	0.0649
100%		-10	710 000 091	43.9	0.000 006	0.0618
100%		0	710 000 090	42.9	0.000 006	0.0604
100%		+10	710 000 076	28.8	0.000 004	0.0406
100%		+30	710 000 080	32.2	0.000 005	0.0454
100%		+40	710 000 084	36.8	0.000 005	0.0518
100%		+50	710 000 092	45.1	0.000 006	0.0635
Batt. Endpoint	3.465	+20	710 000 091	43.4	0.000 006	0.0611



8.5.2 FREQUENCY STABILITY (10 MHz Band 17 LTE)

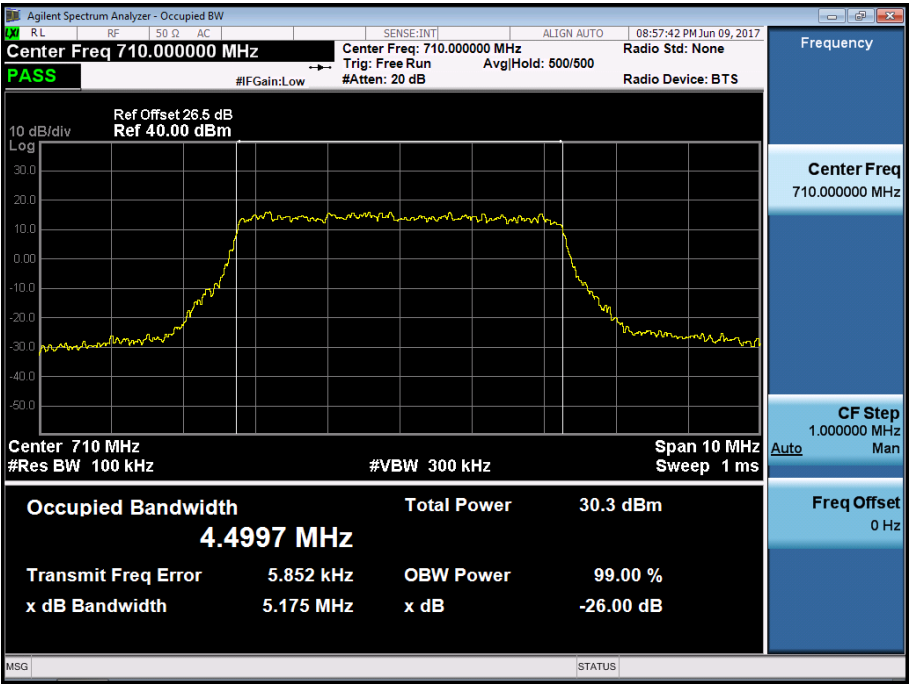
- OPERATING FREQUENCY: 710,000,000 Hz
- CHANNEL: 23790 (10 MHz)
- REFERENCE VOLTAGE: 3.85 VDC
- DEVIATION LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.850	+20(Ref)	710 000 042	0.0	0.000 000	0.0000
100%		-30	710 000 073	30.8	0.000 004	0.0434
100%		-20	710 000 080	38.2	0.000 005	0.0538
100%		-10	710 000 074	31.9	0.000 004	0.0449
100%		0	710 000 087	44.5	0.000 006	0.0627
100%		+10	710 000 070	27.5	0.000 004	0.0387
100%		+30	710 000 073	30.9	0.000 004	0.0435
100%		+40	710 000 080	38.3	0.000 005	0.0539
100%		+50	710 000 076	33.8	0.000 005	0.0476
Batt. Endpoint	3.465	+20	710 000 082	40.0	0.000 006	0.0563

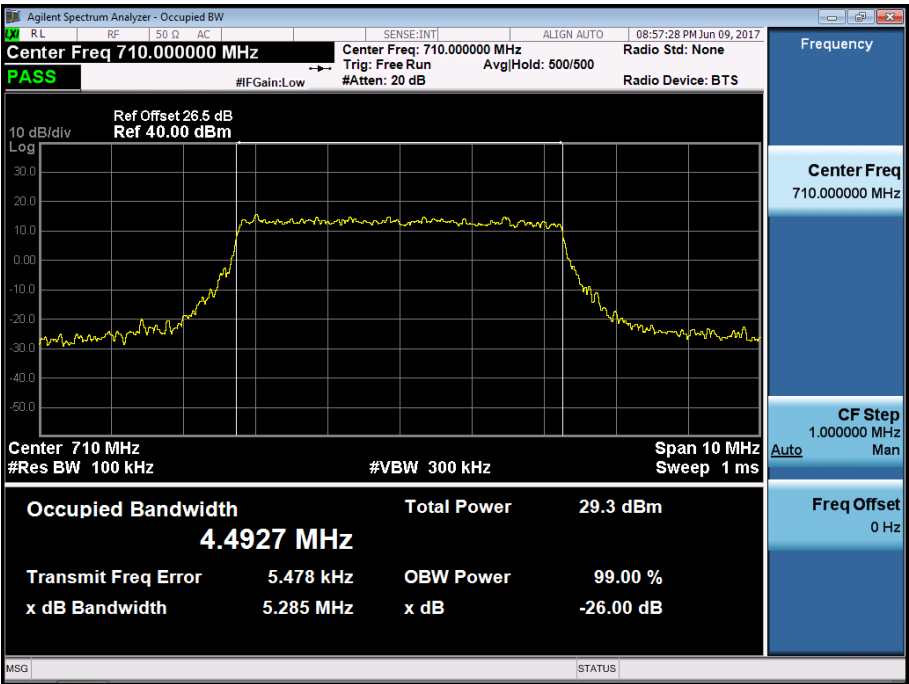


9. TEST PLOTS

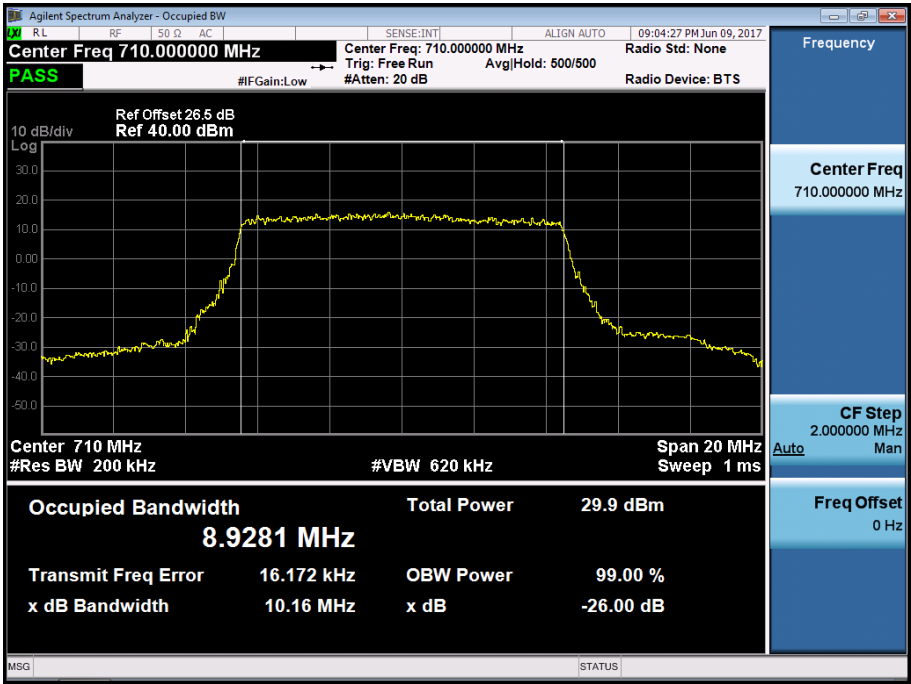
BAND 17. Occupied Bandwidth Plot (5M BW Ch.23790 QPSK RB 25)



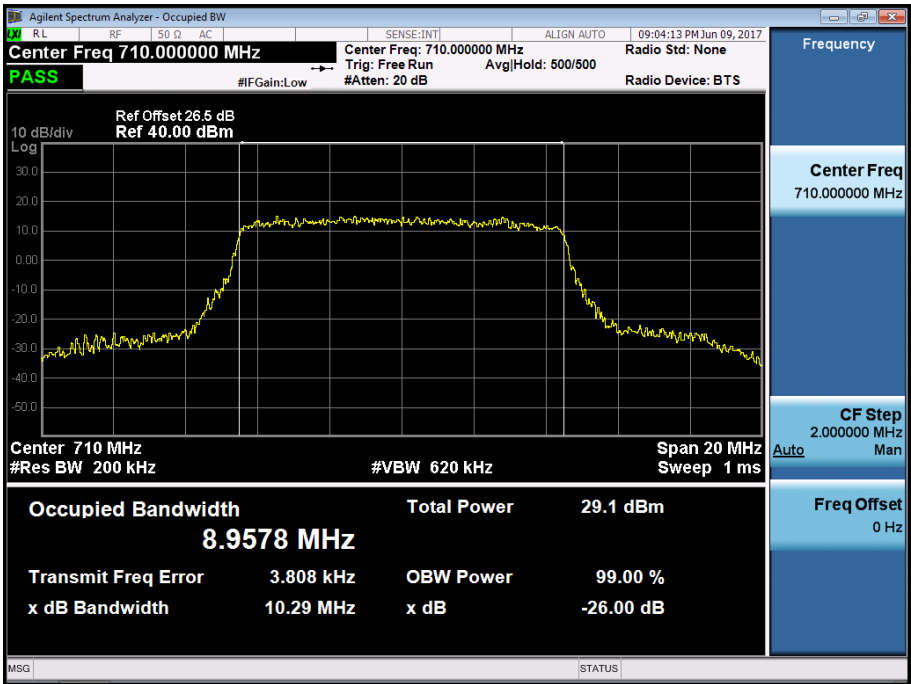
BAND 17. Occupied Bandwidth Plot (5M BW Ch.23790 16QAM RB 25)



BAND 17. Occupied Bandwidth Plot (10M BW Ch.23790 QPSK RB 50)



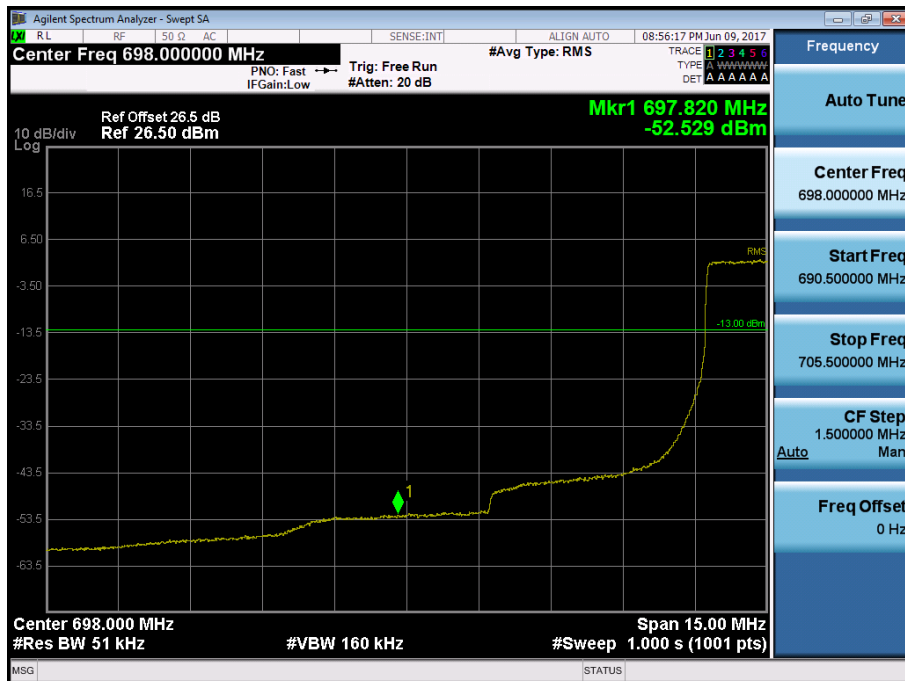
BAND 17. Occupied Bandwidth Plot (10M BW Ch.23790 16QAMRB 50)



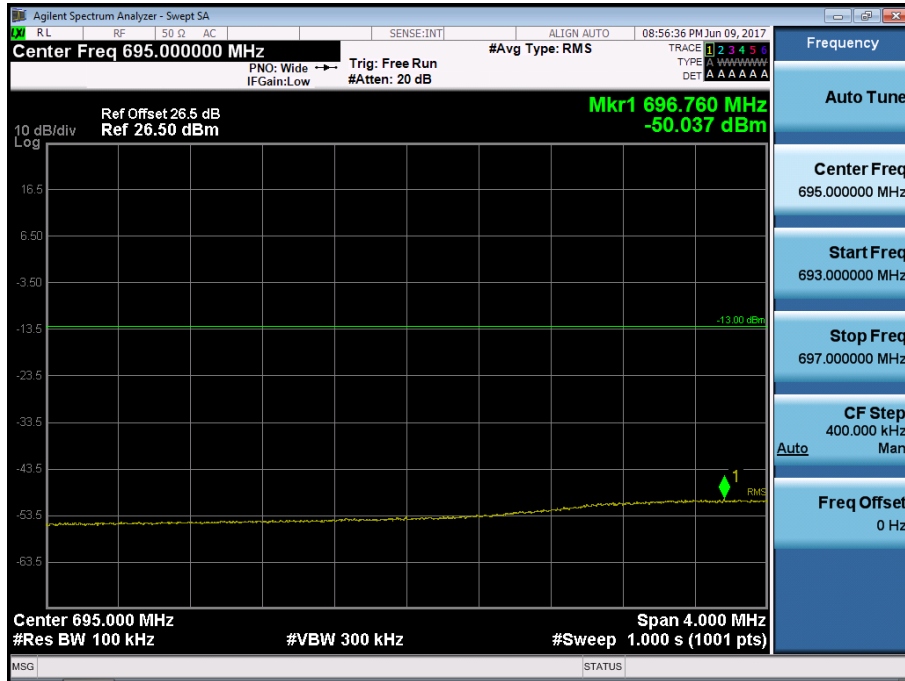
BAND 17. Lower Band Edge Plot (5M BW Ch.23755 QPSK RB 1, Offset 0) -1



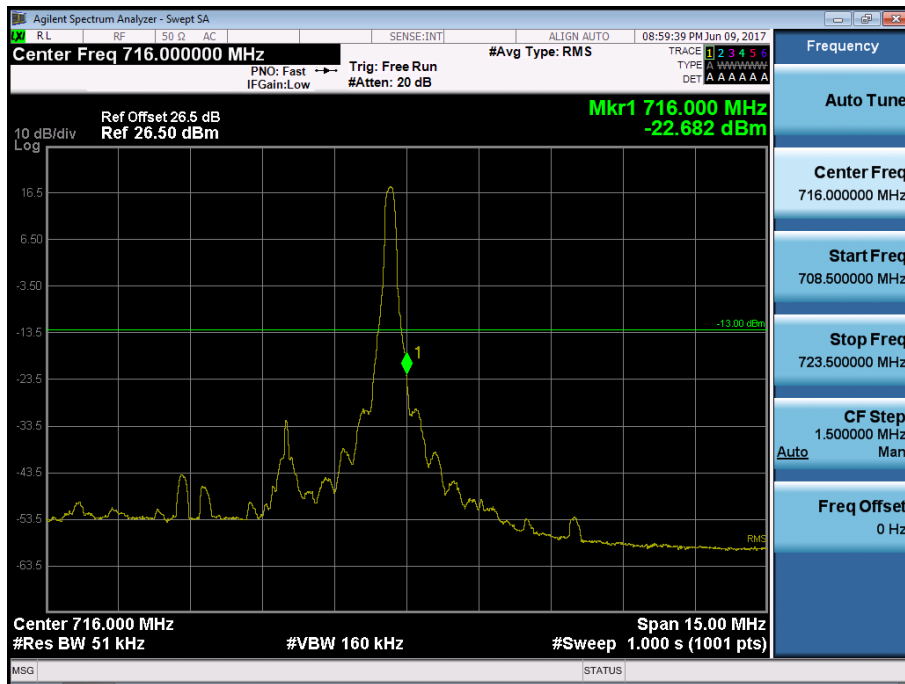
BAND 17. Lower Band Edge Plot (5M BW Ch.23755 QPSK RB 25) -2



BAND 17. Lower Extended Band Edge Plot (5M BW Ch.23755 QPSK_RB25_0) -3



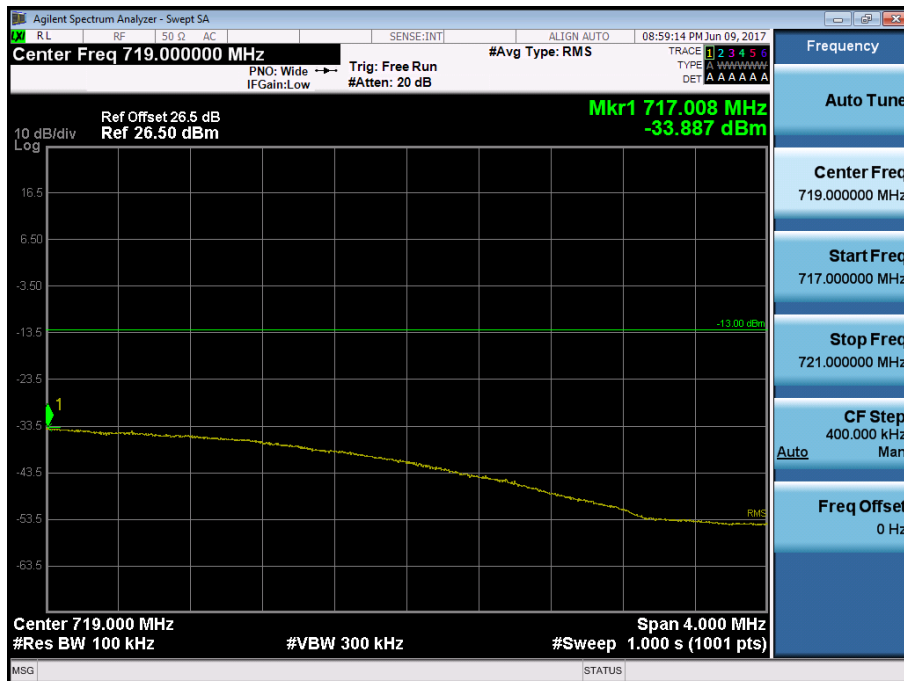
BAND 17. Lower Band Edge Plot (10M BW Ch.23780 QPSK RB 1, Offset 0) -1



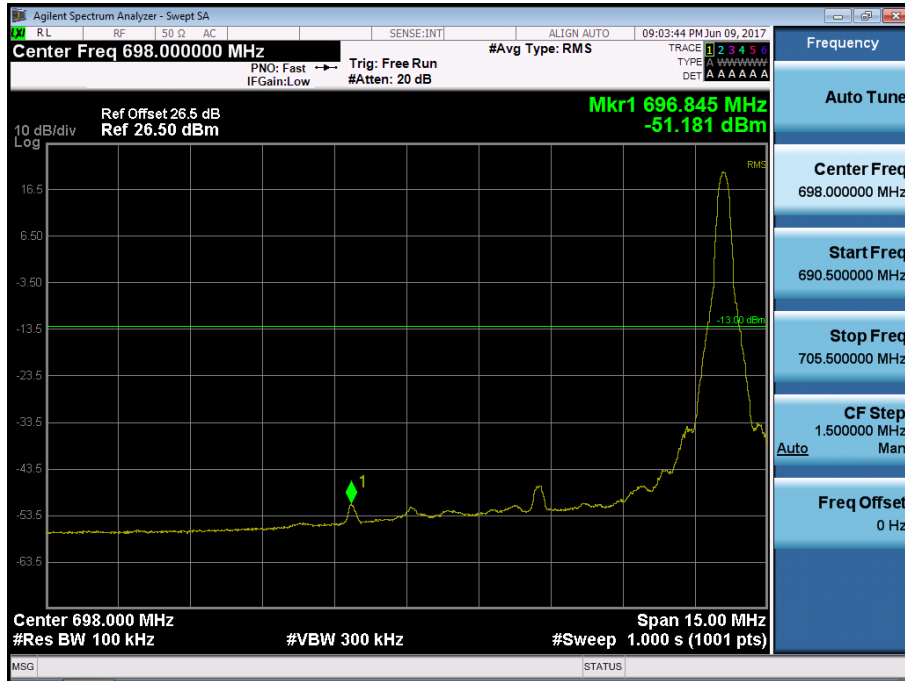
BAND 17. Lower Band Edge Plot (10M BW Ch.23780 QPSK RB 50) -2



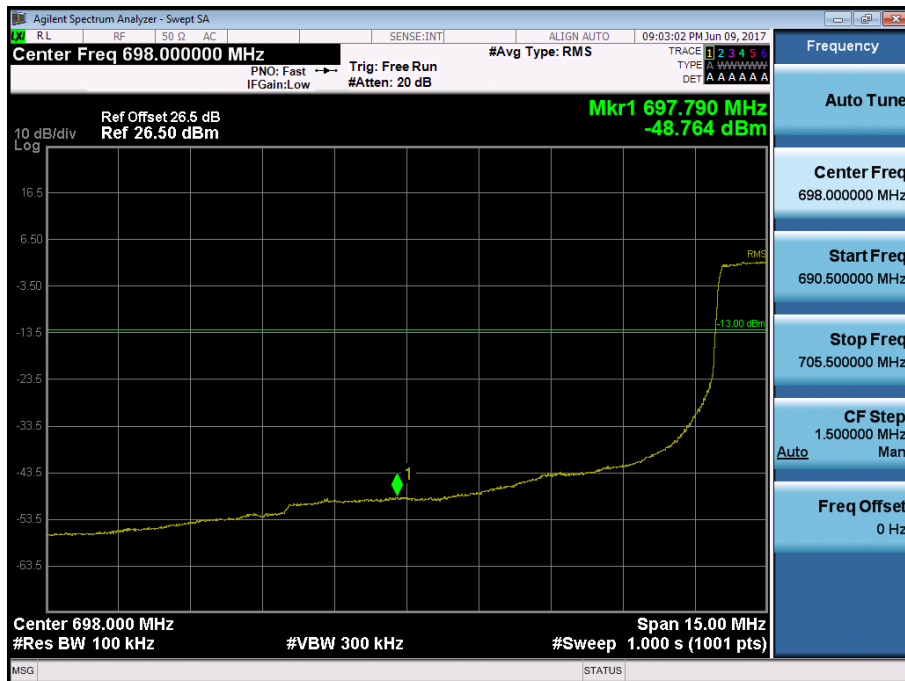
BAND 17. Lower Extended Band Edge Plot (10M BW Ch.23780 QPSK_RB50_0) -3



BAND 17. Upper Band Edge Plot (5M BW Ch.23825 QPSK_RB1_Offset 24) -1



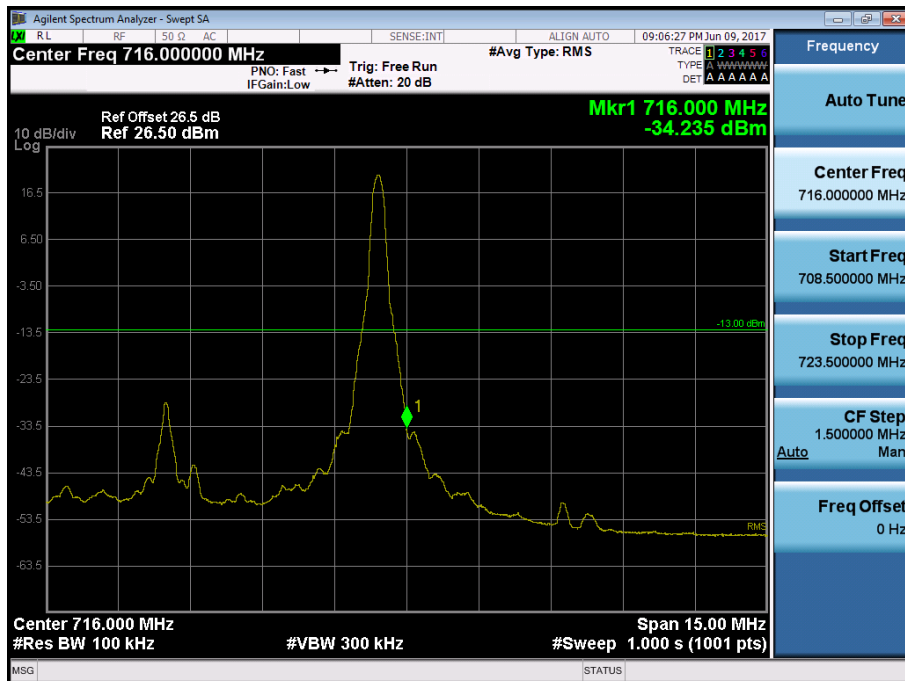
BAND 17. Upper Band Edge Plot (5M BW Ch.23825 QPSK_RB25) -2



BAND 17. Upper Extended Band Edge Plot (5M BW Ch.23825 QPSK_RB25) -3



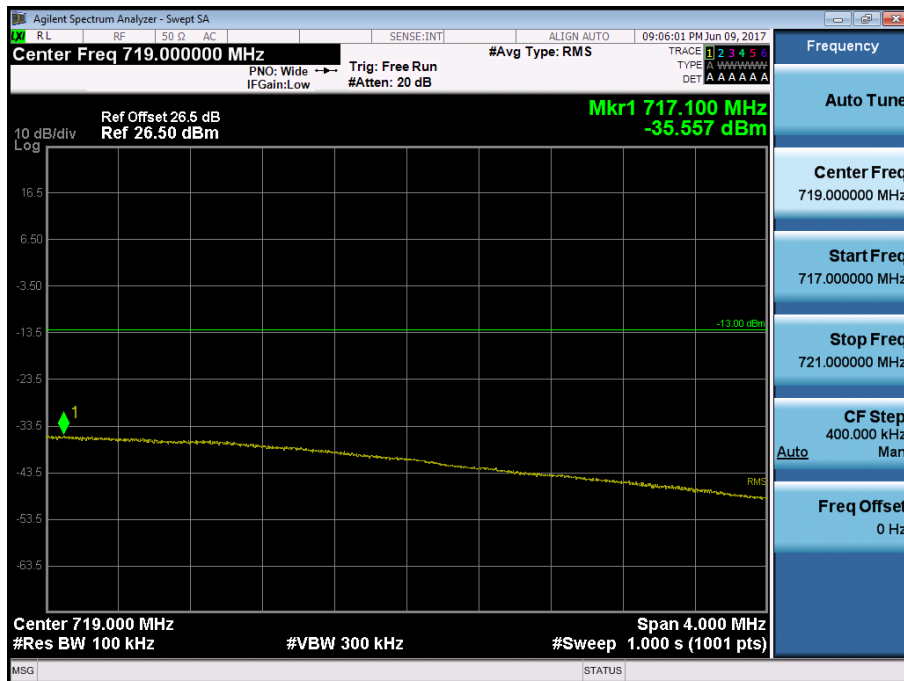
BAND 17. Upper Band Edge Plot (10M BW Ch.23800 QPSK_RB1_Offset 49) -1



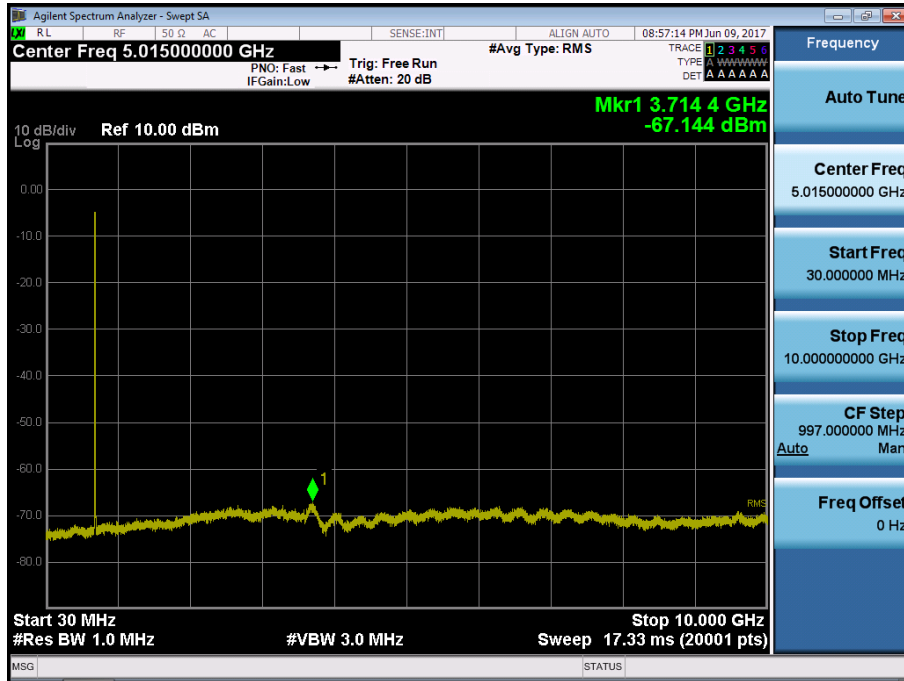
BAND 17. Upper Band Edge Plot (10M BW Ch.23800 QPSK_RB50) -2



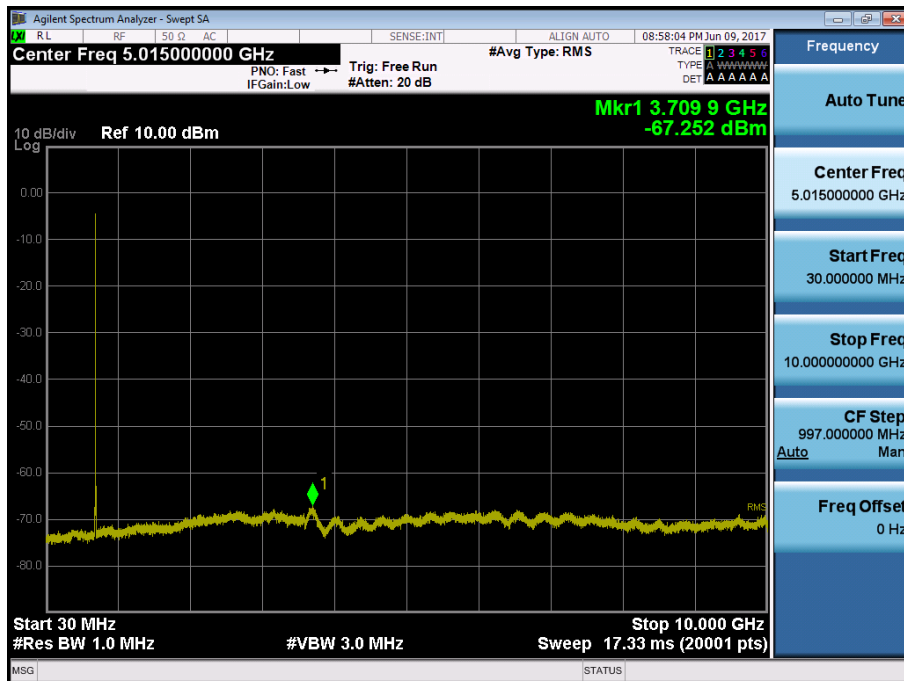
BAND 17. Upper Extended Band Edge Plot (10M BW Ch.23800 QPSK_RB50) -3



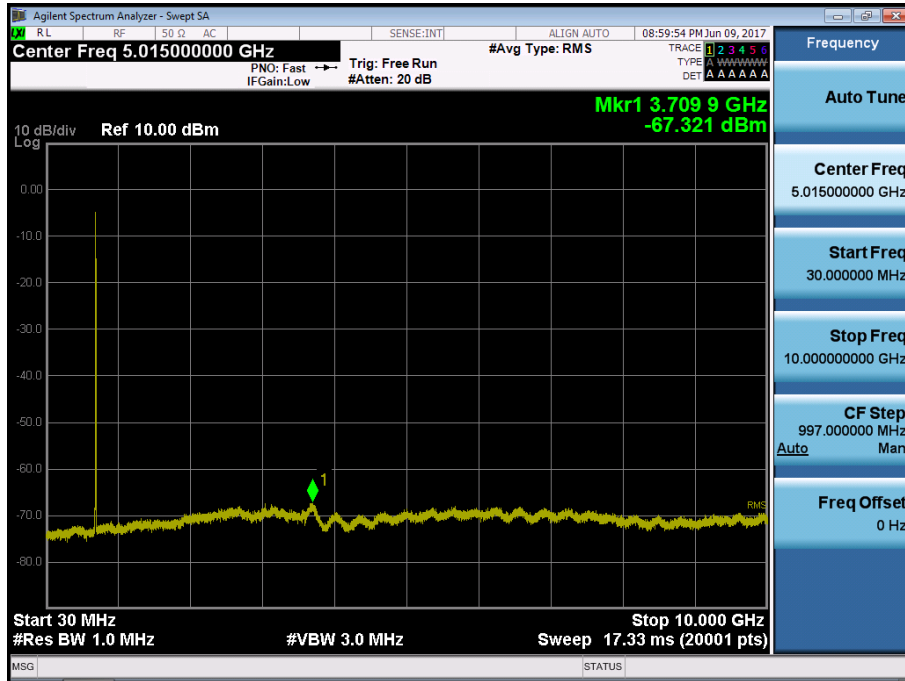
BAND 17. Conducted Spurious Plot_ (23755ch_5MHz_QPSK_RB 1_0)



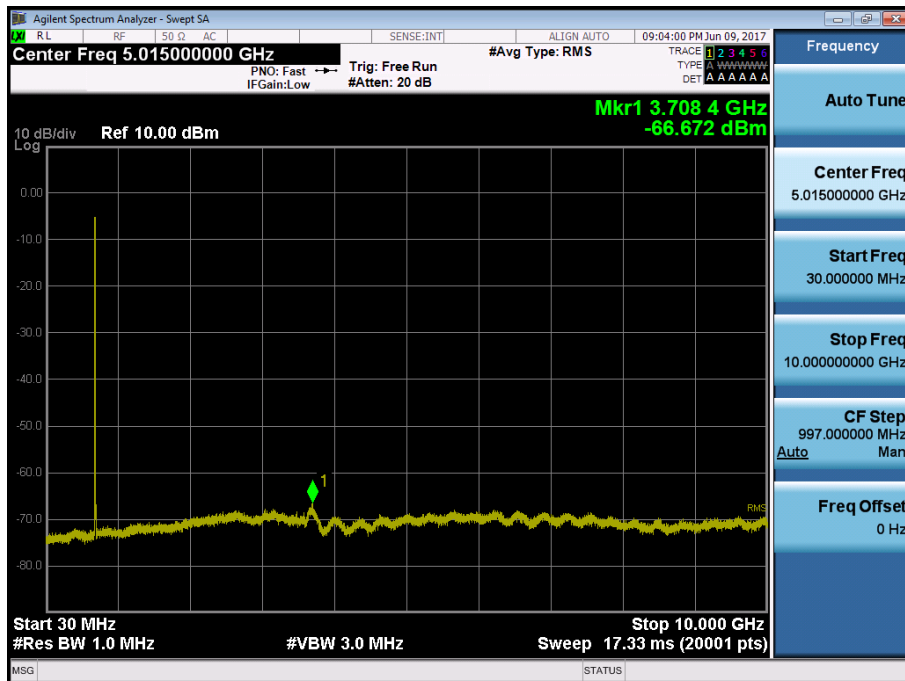
BAND 17. Conducted Spurious Plot_ (23790ch_5MHz_QPSK_RB 1_0)



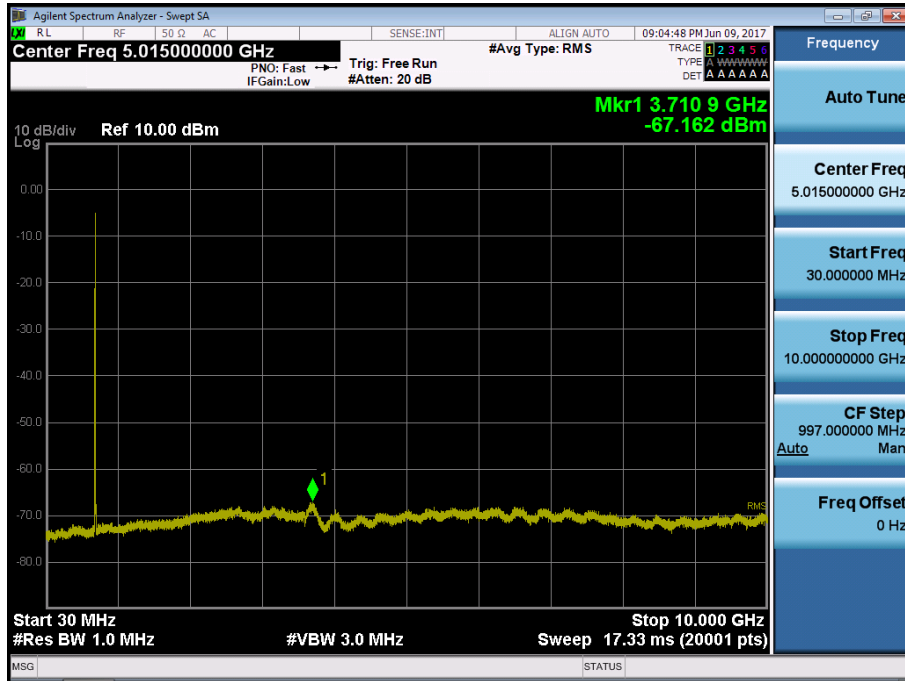
BAND 17. Conducted Spurious Plot_ (23825ch_5MHz_QPSK_RB 1_0)



BAND 17. Conducted Spurious Plot_ (23780ch_10MHz_QPSK_RB 1_0)



BAND 17. Conducted Spurious Plot_ (23790ch_10MHz_QPSK_RB 1_0)



BAND 17. Conducted Spurious Plot_ (23800ch_10MHz_QPSK_RB 1_0)

