

MEASUREMENT REPORT

C2PC

FCC ID : HD5-CK67X1N

APPLICANT : Honeywell International Inc

Application Type : Certification

Product : Mobile Computer

Model No. : CK67X1N

Brand Name : Honeywell

FCC Classification : Citizens Band End User Devices (CBE)

FCC Rule Part(s) : Part2, Part96

Test Procedure(s) : ANSI C63.26 2015

Received Date : August 5, 2024

Test Date : January 6, 2025~ January 14, 2025

Tested By : Wenlee

(Wen Lee)

Reviewed By : Palli Chan

(Paddy Chen)

Approved By : *Amber*

(Chenz Ker)

(Chenz Ker)



Testing Laboratory

3261

The test results only relate to the tested sample.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2501TW0104-U2	1.0	Original Report	2025-01-24	

Note:

1. This time, added LTE band 42: 3550~3600MHz and the LTE Band 42 Power Class 3 function is enabled, so the FCC C2PC is executed, original report Grant Date: 01/24/2025, FCC ID: HD5-CK67X1N.
2. Based on original report number: 2408TW0104-U15, since the frequency turned on is covered by band 48 ,so verify Transmitter Output Power & Transmitter unwanted emissions.

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General Information

Applicant	Honeywell International Inc
Applicant Address	9680 Old Bailes Rd. Fort Mill, SC 29707 United States
Manufacturer	Honeywell International Inc
Manufacturer Address	9680 Old Bailes Rd. Fort Mill, SC 29707 United States
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Canada, EU and TELEC Rules.

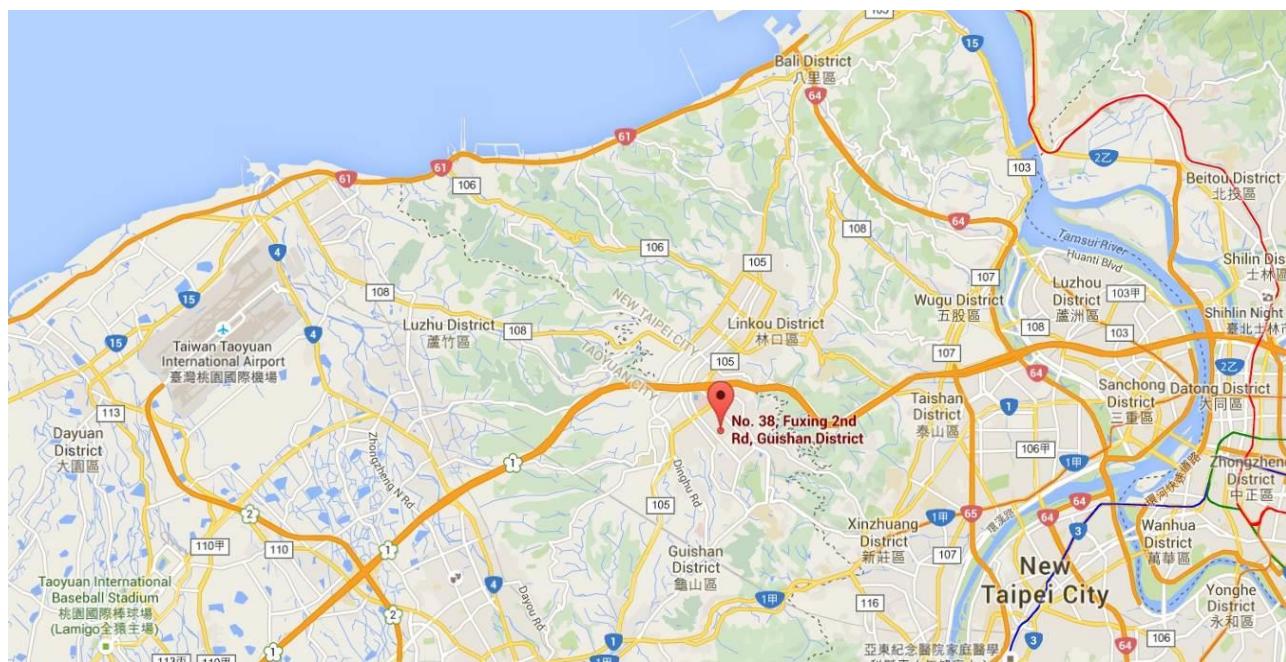
1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



1.3. Product Information

Product Name	Mobile Computer
Model No.	CK67X1N
Brand Name	Honeywell
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	Main BT/BLE : V5.3 dual mode + 2 nd BLE: V5.3 Single mode
NFC Specification	13.56MHz
WWAN Specification	4G-LTE: Band 2,4,5,7,12,13,14,17,25,26,30,38,41,42,43,48,66,71 5G-NR: n 2,5,7,12,13,14,25,26,30,38,41,48,66,71,77,78
CA Intra-Band	5B; 7C; 38C; 41C; 66B; 66C
EUT Identification No.:	#24295D8051, #24295D80CF (Conducted) #24295D8059 (Radiated)
Operating Temperature Range	-20~50 °C
Supply Voltage Rating	DC 3.6V
Accessory	
Battery	Brand: Honeywell MODEL:CK65-BTSC Rating: 3.6Vdc, 7000mAh, 25.2Wh
Remark:	The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.

Note:

1. For other features of this EUT, test report will be issued separately.
2. This product has 3 scanners, 5 keypads, can refer as below:

Scanner	S0703	S0803FR	S0803	--	--
Keypad	Alpha Numeric	Numeric	Large Numeric	53keys Alpha Numeric	42keys Numeric

3. This report selected S0803FR with Alpha Numeric as the main test.

1.4. Radio Specification under Testing

E-UTRA Specification	
TDD TX & RX Frequency Range	LTE Band 42 (Part 96): 3550 ~ 3600 MHz;
HUPE Band (Power Class 2)	LTE Band 42
Support Bandwidth	LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz
Type of Modulation	UL up to 256QAM, DL up to 256QAM

3.5G Support Band	Part96 (3550-3600MHz)
LTE Band 42	PC3

1.5. Description of Available Antennas

Antenna Type		LDS				
Technology	Frequency Range (MHz)		Max Peak Gain (dBi)			
	TX	RX	ANT3	ANT4	ANT5	ANT6
LTE Band 42	3550 ~ 3600		--	--	-1.50	-1.51

Note

1: All antenna information (Antenna type and Peak Gain) is provided by the manufacturer.

2: The typical antennas used to calculate the ERP (EIRP).

3. Ant3 support SRS functions and its signal is switched from Ant5.

4. Ant4 support SRS functions and its signal is switched from Ant6.

5. Ant6 support TX functions for UHB (3300MHz-3800MHz).

1.6. Test Methodology

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 96
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r02: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP

2. DESCRIPTION OF TEST

2.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Test Result
2.1049	Occupied Bandwidth	Conducted	N/A
2.1055	Frequency Stability		N/A
2.1046, 96.41 (b)	Transmitter Output Power		Pass
2.1051, 96.41 (e)	Transmitter unwanted emissions (band-edge)		Pass
2.1051, 96.41 (e)	Transmitter unwanted emissions (spurious)		
2.1053, 96.41 (e)	Transmitter Spurious Emissions	Radiated	N/A

Notes: The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

- 1) All supported modulation types were evaluated. The worst-case emission of modulation was selected. Therefore, the Frequency Stability, Transmitter unwanted emissions (band-edge), Transmitter unwanted emissions (spurious), Radiated Spurious Emissions were presented worst-case in the test report.
- 2) For radiated emission tests, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

LTE Test Items	Bandwidth	Modulation	RB Combination	Test Channel
Occupied Bandwidth	All BW	All Modulation	Full	Low/Middle/High
Frequency Stability	Maximum BW	QPSK	Full	Middle
Transmitter Output Power	All BW	All Modulation	1RB/Half/Full	Low/Middle/High
Peak to Average Ratio	Maximum BW	All Modulation	Full	Middle
Band Edge	All BW	QPSK	1RB/Half/Full	Low/High
Conducted Emissions	All BW	All Modulation	1RB	Low/Middle/High
Radiated Emissions	Minimum BW	QPSK	1RB	Low/Middle/High

Note:

1. All modes of operation and data rates were investigated. The test results shown in the above part represent the worst case emissions.
2. All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

NR Test Items	Bandwidth	Modulation	RB Combination	Test Channel
Occupied Bandwidth	All BW	All DFT Modulation	Outer full RB	Low/Middle/High
Frequency Stability	Maximum BW	DFT_BPSK	Outer full RB	Middle
Transmitter Output Power	All BW	All DFT Modulation and CP_QPSK Modulation	Edge_1RB Inner_1RB Inner Full RB Outer full RB	Low/Middle/High
Peak to Average Ratio	Maximum BW	All DFT Modulation	Outer full RB	Middle
Band Edge	All BW	DFT_BPSK	Edge_1RB Outer full RB	Low/High
Conducted Emissions	All BW	All DFT Modulation	Inner_1RB	Low/Middle/High
Radiated Emissions	Minimum BW	DFT_BPSK	Inner_1RB	Low/Middle/High

Note:

1. All modes of operation and data rates were investigated. The test results shown in the above part represent the worst case emissions.
2. All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.

2.2. Occupied Bandwidth

According to FCC Part 2.1049

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

2.3. Frequency Stability / Temperature Variation

According to FCC Part 2.1055

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

Time Period and Procedure:

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.

2.4. Conducted Output Power Measurement

According to FCC Part 2.1046, 96.41

According to KDB 412172 D01 Section 1.2 Power Approach

$EIRP = PT + GT - LC = ERP + 2.15 \text{ dB}$, $ERP = EIRP - 2.15 \text{ dB}$

PT = transmitter output power in dBm

GT = gain of the transmitting antenna in dBi

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB.

Technology	EIRP Power Limit
LTE Band 42	23dBm/10MHz

2.5. Peak-Average Ratio

According to FCC Part 96.41

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

2.6. Spurious and Harmonic Emissions at Antenna Terminal

According to FCC Part 2.1051, 96.41

For 96.41(e)(1)(2)

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz . Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz , and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz .

2.7. Conducted and Radiated Spurious Emissions

According to FCC Part 2.1051, 2.1053, 96.41

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.

For 96.41(e)(1)(2)

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

3. TEST EQUIPMENT CALIBRATION DATE

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Acitive Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2025/5/7
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00086	1 year	2025/11/5
Broadband Hornantenna	RFSPIN	DRH18-E	MRTTWA00087	1 year	2025/5/20
Broadband Preamplifier	EMC Instruments corporation	EMC118A45SE	MRTTWA00088	1 year	2025/5/14
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2025/3/26
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2025/3/21
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2025/3/5
Signal Analyzer	R&S	FSVA3044	MRTTWA00092	1 year	2025/6/20
Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2025/6/14
Cable	Rosnol	K1K50-UP0264-K1K50-4M	MRTTWE00012	1 year	2025/6/14

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2025/9/24
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2025/8/12
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2025/3/12
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00084	1 year	2025/10/23
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MRTTWA00089	1 year	2025/5/30

Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software

4. Decision Rules and Measurement Uncertainty

4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2.

(Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Radiated Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~30MHz: $\pm 3.92\text{dB}$ 30MHz~1GHz: $\pm 4.25\text{dB}$ 1GHz~18GHz: $\pm 4.40\text{dB}$ 18GHz~40GHz: $\pm 4.45\text{dB}$
Frequency Error
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 78.4\text{Hz}$
Conducted Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.84\text{dB}$
Conducted Spurious Emission
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 2.65\text{ dB}$
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 3.3\%$
Temp. / Humidity
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.82^\circ\text{C} / \pm 3\%$
DC Voltage
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): $\pm 0.3\%$

Note:

Determining compliance is based on the test results met the regulation limits or requirements declared by clients, and the test results don't take into account the value of measurement uncertainty.

5. TEST RESULT

5.1. Summary

Maximum Conducted Power and ERP/EIRP Power

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively.
(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

$$\text{ERP} = \text{EIRP} - 2.15$$

LTE Band		Band42	Antenna Gain (dBi)		-1.51
BW	Modulation	Conducted Peak Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	EIRP Limit
5MHz	QPSK	24.26	22.75	0.188	23dBm/10MHz
	16QAM	23.18	21.67	0.147	23dBm/10MHz
	64QAM	22.29	20.78	0.120	23dBm/10MHz
	256QAM	19.33	17.82	0.061	23dBm/10MHz
10MHz	QPSK	24.42	22.91	0.195	23dBm/10MHz
	16QAM	23.30	21.79	0.151	23dBm/10MHz
	64QAM	22.03	20.52	0.113	23dBm/10MHz
	256QAM	19.36	17.85	0.061	23dBm/10MHz
15MHz	QPSK	23.93	22.42	0.175	23dBm/10MHz
	16QAM	22.84	21.33	0.136	23dBm/10MHz
	64QAM	21.86	20.35	0.108	23dBm/10MHz
	256QAM	19.17	17.66	0.058	23dBm/10MHz
20MHz	QPSK	23.78	22.27	0.169	23dBm/10MHz
	16QAM	23.05	21.54	0.143	23dBm/10MHz
	64QAM	22.16	20.65	0.116	23dBm/10MHz
	256QAM	19.07	17.56	0.057	23dBm/10MHz

5.2. Occupied Bandwidth

5.2.1 Test Limit

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

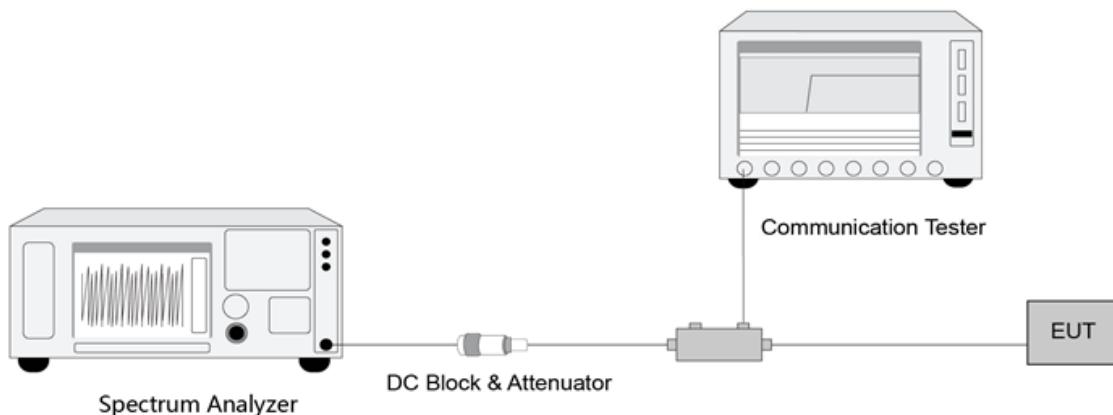
5.2.2 Test Procedure used

ANSI C63.26-2015 - Section 5.4.4

5.2.3 Test Setting

1. Set center frequency to the nominal EUT channel center frequency
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

5.2.4 Test Setup



5.2.5 Test Result

Refer to Appendix A.1

5.3. Frequency Stability Under Temperature & Voltage Variations

5.3.1 Test Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

5.3.2 Test Procedure

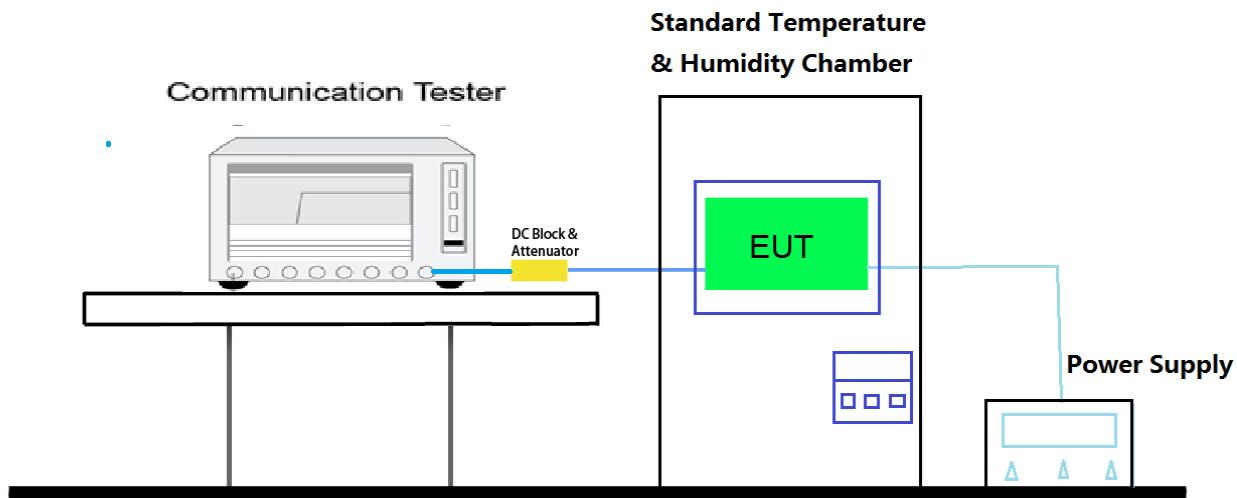
ANSI C63.26-2015 - Section 5.6

5.3.3 Frequency Stability Under Voltage Variations

Set chamber temperature to 20°C . Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum

5.3.4 Test Setup



5.3.5 Test Result

Refer to Appendix A.2

5.4. Transmitter Output Power Measurement

5.4.1 Test Limit

Technology	EIRP Power Limit
LTE Band 42	23dBm/10MHz
CBSD frequency range 3550MHz ~ 3700MHz.	

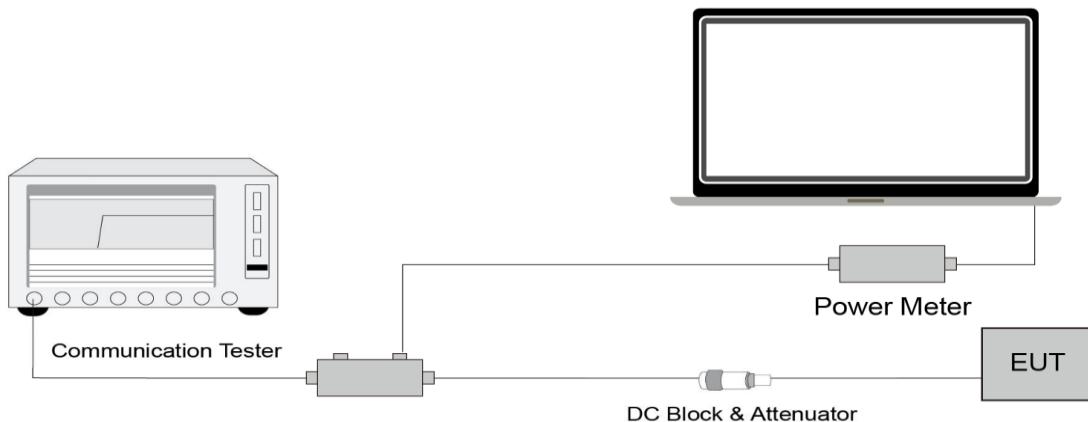
5.4.2 Test Procedure

ANSI C63.26-2015 - Section 5.2.4.2

5.4.3 Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

5.4.4 Test Setup



5.4.5 Test Result

Refer to Appendix A.3

5.5. Peak-Average Ratio

5.5.1 Test Limit

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

The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure.

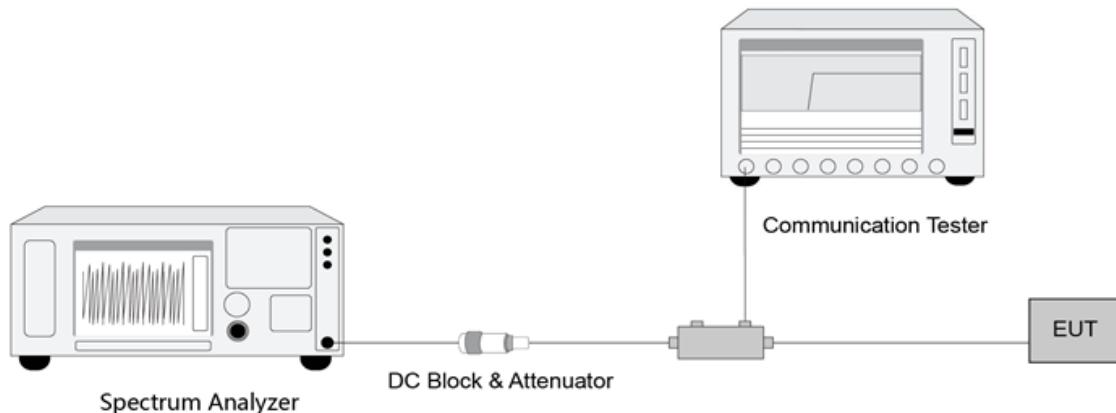
5.5.2 Test Procedure

ANSI C63.26-2015 - Section 5.2.3.4 (CCDF).

5.5.3 Test Setting

1. Set the resolution / measurement bandwidth \geq signal's occupied bandwidth
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Record the maximum PARR level associated with a probability of 0.1%

5.5.4 Test Setup



5.5.5 Test Result

Refer to Appendix A.4

5.6. Transmitter unwanted emissions (band-edge) Measurement

5.6.1 Test Limit

For 96.41(e)(1)(2)

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz .

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz , and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz .

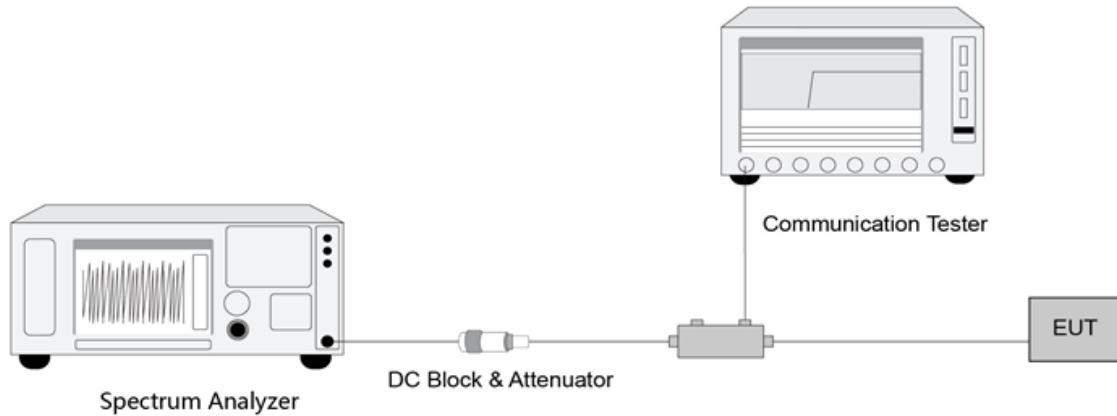
5.6.2 Test Procedure

ANSI C63.26-2015 - Section 5.7.

5.6.3 Test Setting

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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). 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, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.6.4 Test Setup



5.6.4 Test Result

Refer to Appendix A.5

5.7. Transmitter unwanted emissions (spurious) Measurement

5.7.1 Test Limit

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. The emission limit equal to -13dBm.

For For 96.41(e)(2)

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

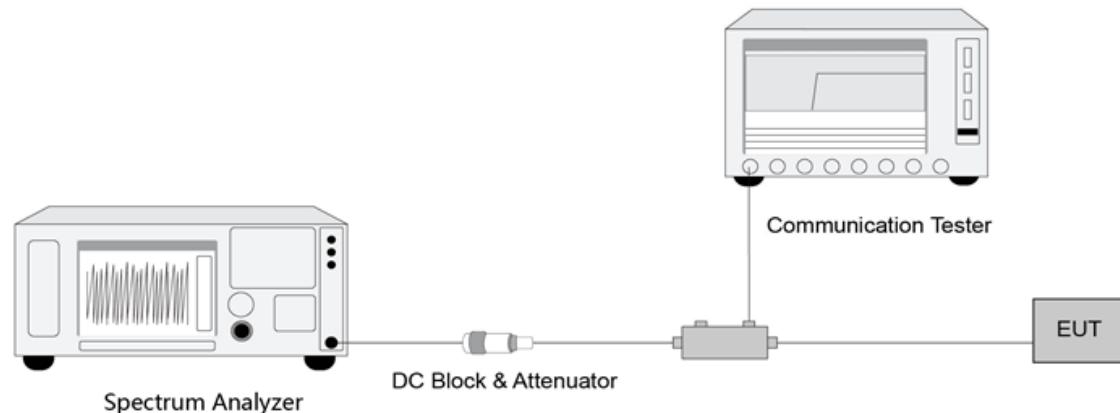
5.7.2 Test Procedure

ANSI C63.26-2015 - Section 5.7

5.7.3 Test Setting

1. Set the analyzer frequency to low, Mid or high channel.
2. RBW = specified resolution bandwidth of 100 kHz is at or below 1GHz and 1MHz is above 1GHz
3. VBW $\geq 3 \times$ RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.
7. Use the peak marker function to determine the maximum amplitude level.

5.7.4 Test Setup



5.7.5 Test Result

Refer to Appendix A.6

5.8. Radiated Spurious Emissions Measurement

5.8.1 Test Limit

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. The emission limit equal to -13dBm.

For For 96.41(e)(2)

The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

5.8.2 Test Procedure

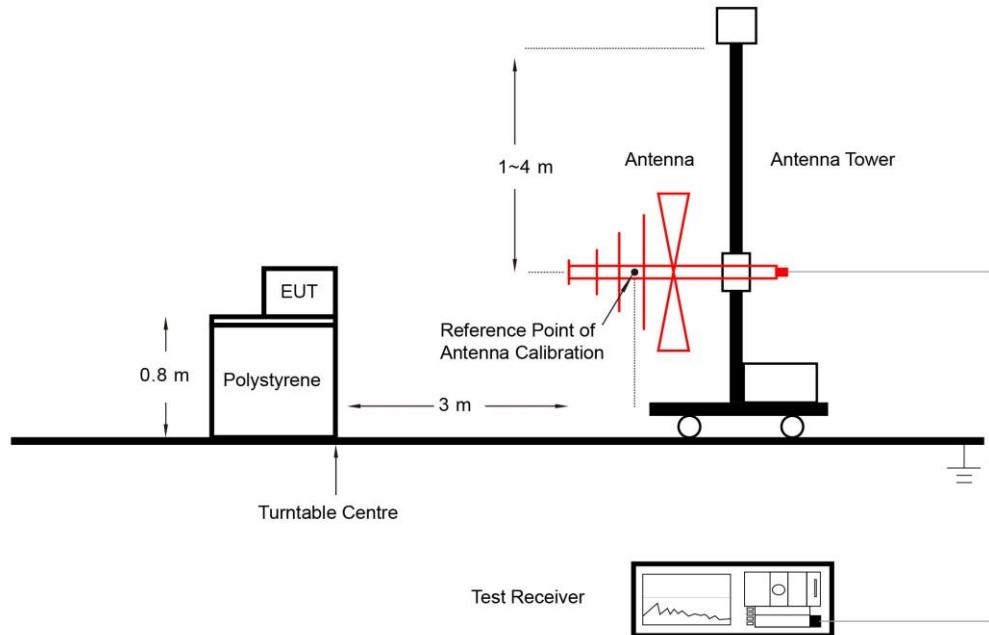
ANSI C63.26-2015 - Section 5.7

5.8.3 Test Setting

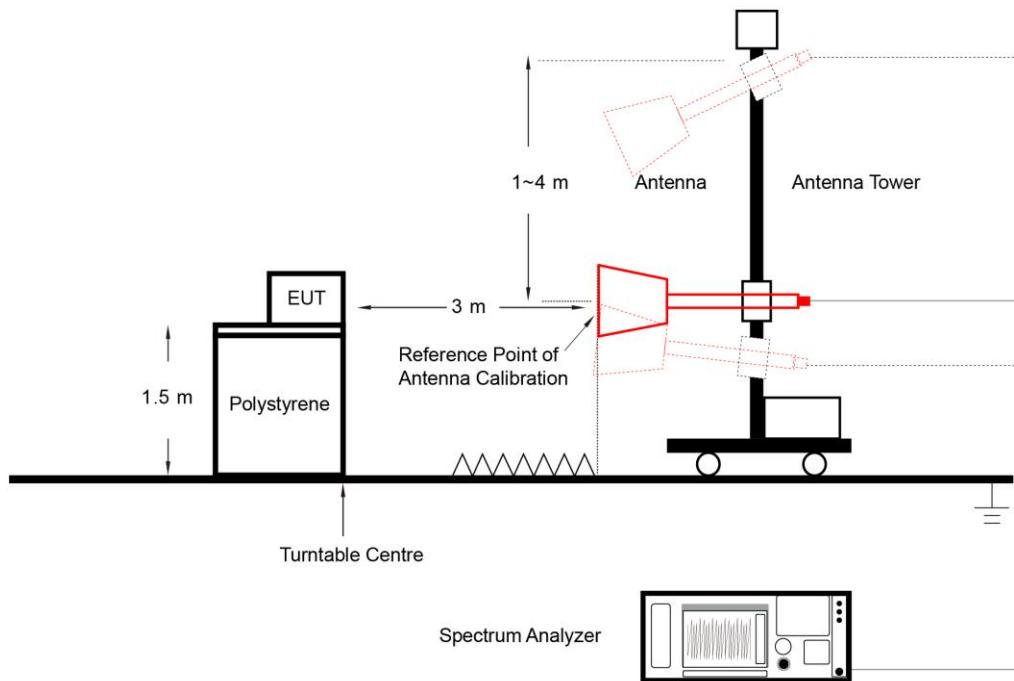
1. RBW = 120kHz or 1MHz
2. VBW $\geq 3^*RBW$
3. Sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})$
4. Detector = CISPR quasi-peak / average detector (Below 1 GHz, compliance with the limits shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth. Above 1 GHz, compliance with the limits shall be demonstrated using a linear average detector with a minimum resolution bandwidth of 1 MHz.)
5. The trace was allowed to stabilize

5.8.4 Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.8.5 Test Result

Refer to Appendix A.7.

Appendix A : TEST RESULT DATA

A1. Occupied Bandwidth Test Result

A1.1 LTE B42

Please refer to the original report Grant Date: 01/24/2025, FCC ID: HD5-CK67X1N.

A2. Frequency Stability Test Result

A2.1 LTE Band 42

Please refer to the original report Grant Date: 01/24/2025, FCC ID: HD5-CK67X1N.

A3. Transmitter Output Power Test Result

A3.1 LTE B42 PC3 (3.55G~3.6G)

LTE Band42				Maximum Conducted Output Power (Channel / Frequency (MHz))											
Modulation	Bandwidth		5MHz			10MHz			15MHz			20MHz			
	RB	RB	43115	43340	43565	43140	43340	43540	43165	43340	43515	43190	43340	43490	
	No.	Offset	3552.5	3575	3597.5	3555	3575	3595	3557.5	3575	3592.5	3560	3575	3590	
QPSK	1	#0	24.12	23.98	23.93	23.66	23.91	23.45	23.42	23.93	23.71	23.75	23.58	23.53	
	1	#Mid	23.88	24.26	23.50	23.95	24.05	23.57	23.57	23.81	23.44	23.78	23.53	23.35	
	1	#High	23.84	23.46	23.72	24.42	24.15	23.64	23.52	23.65	23.63	23.65	23.42	23.70	
	50%	#0	22.73	22.98	22.75	22.90	22.82	22.75	22.75	22.54	22.52	22.80	22.64	22.71	
	50%	#Mid	22.75	23.10	22.75	22.81	22.88	22.71	22.72	22.61	22.71	22.84	22.84	22.51	
	50%	#High	23.00	22.84	22.95	23.01	22.97	22.95	22.61	22.79	22.57	22.62	22.74	22.52	
	100%	#0	22.88	22.80	22.93	22.93	22.79	22.85	22.73	22.82	22.49	22.77	22.76	22.47	
	1	#0	22.91	22.89	22.54	23.19	22.71	22.50	22.11	22.33	22.23	22.52	21.81	23.05	
16QAM	1	#Mid	22.74	23.00	22.71	22.95	23.21	23.19	22.84	22.14	22.63	22.79	22.74	22.73	
	1	#High	22.54	23.18	22.69	23.30	22.67	23.15	22.75	22.52	22.65	22.38	22.74	22.43	
	50%	#0	22.01	21.60	21.92	21.98	21.90	21.81	21.75	21.75	21.49	21.48	21.58	21.78	
	50%	#Mid	21.97	21.80	21.77	21.96	22.09	21.77	21.72	21.64	21.77	21.74	21.85	21.55	
	50%	#High	21.90	21.72	21.87	22.09	21.74	21.86	21.71	21.83	21.80	21.92	21.52	21.84	
	100%	#0	21.80	22.01	21.86	21.94	21.84	21.88	21.78	21.72	21.76	21.49	21.53	21.43	
	1	#0	21.63	22.11	21.36	21.42	21.65	21.79	21.74	21.25	21.86	22.09	22.16	21.71	
	1	#Mid	21.70	22.29	21.91	21.94	21.57	21.93	21.74	21.68	21.32	21.73	21.31	21.70	
64QAM	1	#High	21.55	21.40	22.11	22.03	21.85	21.75	21.33	21.51	21.80	21.97	21.16	21.61	
	50%	#0	20.66	20.92	20.75	20.84	20.79	21.02	20.49	20.47	20.60	20.73	20.59	20.72	
	50%	#Mid	20.92	20.96	21.07	20.98	20.81	20.71	20.56	20.89	20.57	20.54	20.80	20.83	
	50%	#High	20.89	21.24	20.73	20.99	20.82	20.87	20.70	20.63	20.70	20.53	20.63	20.55	
	100%	#0	20.94	21.02	20.84	20.81	20.75	20.84	20.66	20.52	20.57	20.45	20.52	20.57	
	1	#0	18.61	18.68	19.33	19.36	19.26	19.11	18.98	18.63	18.89	18.86	18.88	18.54	
	1	#Mid	18.73	19.09	19.10	18.86	18.97	18.02	18.72	18.99	18.66	19.07	18.63	18.64	
	1	#High	18.72	18.55	19.33	18.64	19.06	18.57	19.17	18.76	18.51	19.04	18.45	18.39	
256QAM	50%	#0	19.00	18.78	18.72	18.86	18.70	18.74	18.66	18.75	18.72	18.65	18.90	18.57	
	50%	#Mid	19.00	18.89	18.89	18.76	19.05	18.93	18.65	18.82	18.77	18.83	18.85	18.69	
	50%	#High	18.97	19.03	18.77	18.94	19.01	18.78	18.77	18.84	18.75	18.91	18.82	18.73	
	100%	#0	18.91	19.16	18.84	18.84	18.87	18.77	18.74	18.80	18.60	18.73	18.70	18.74	

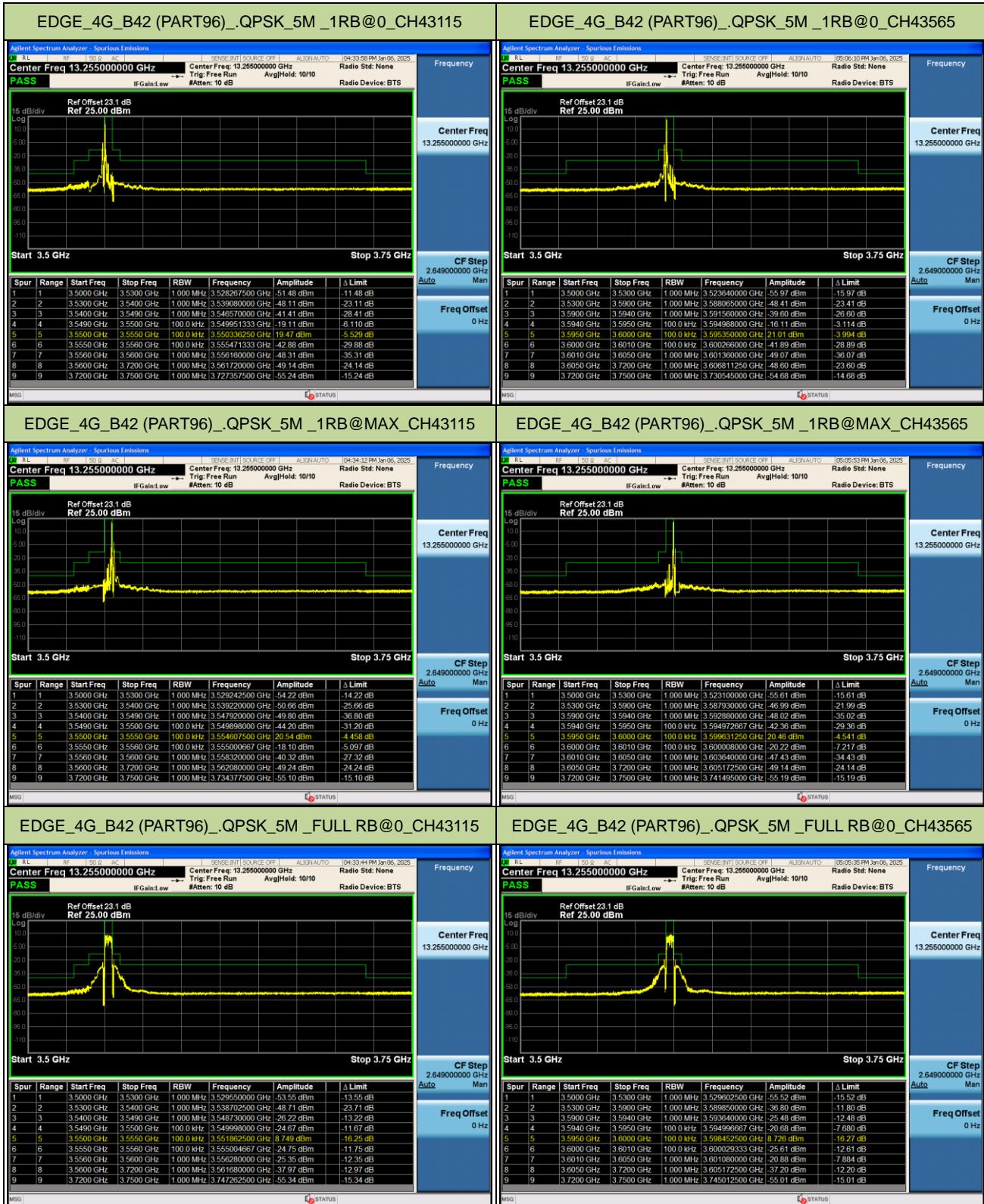
A4. Peak to Average Radio Test Result

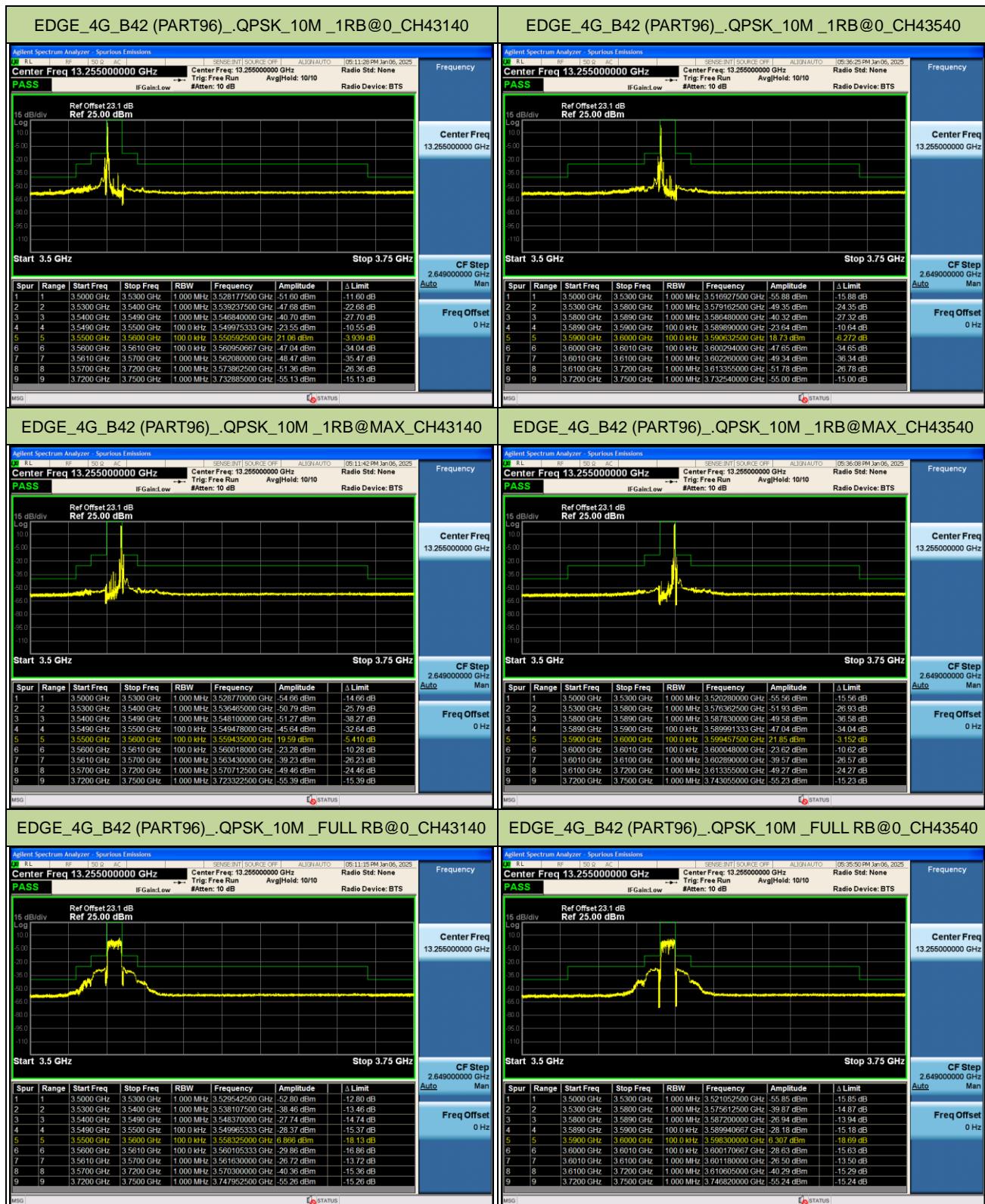
A4.1 LTE Band42

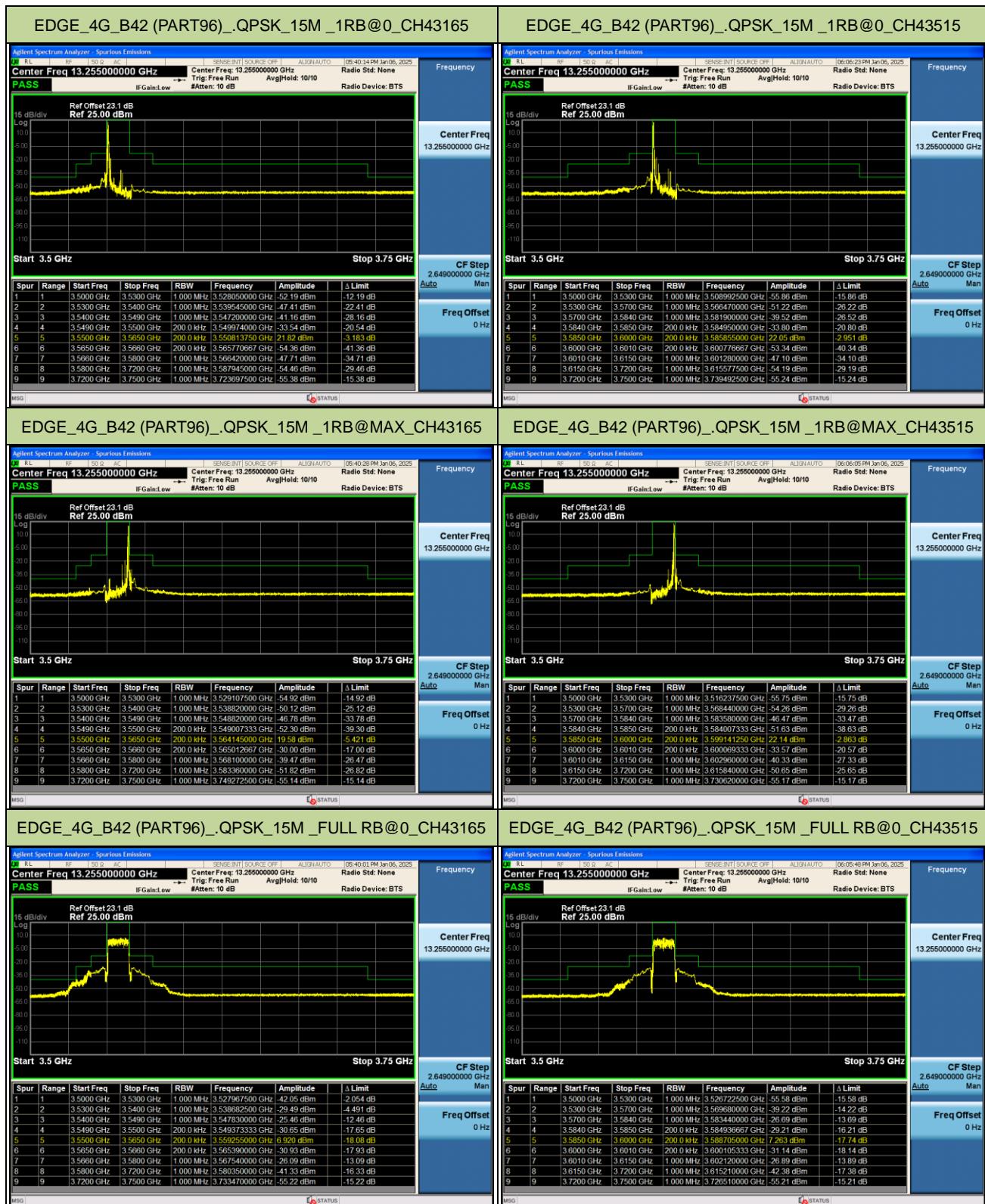
Please refer to the original report Grant Date: 01/24/2025, FCC ID: HD5-CK67X1N.

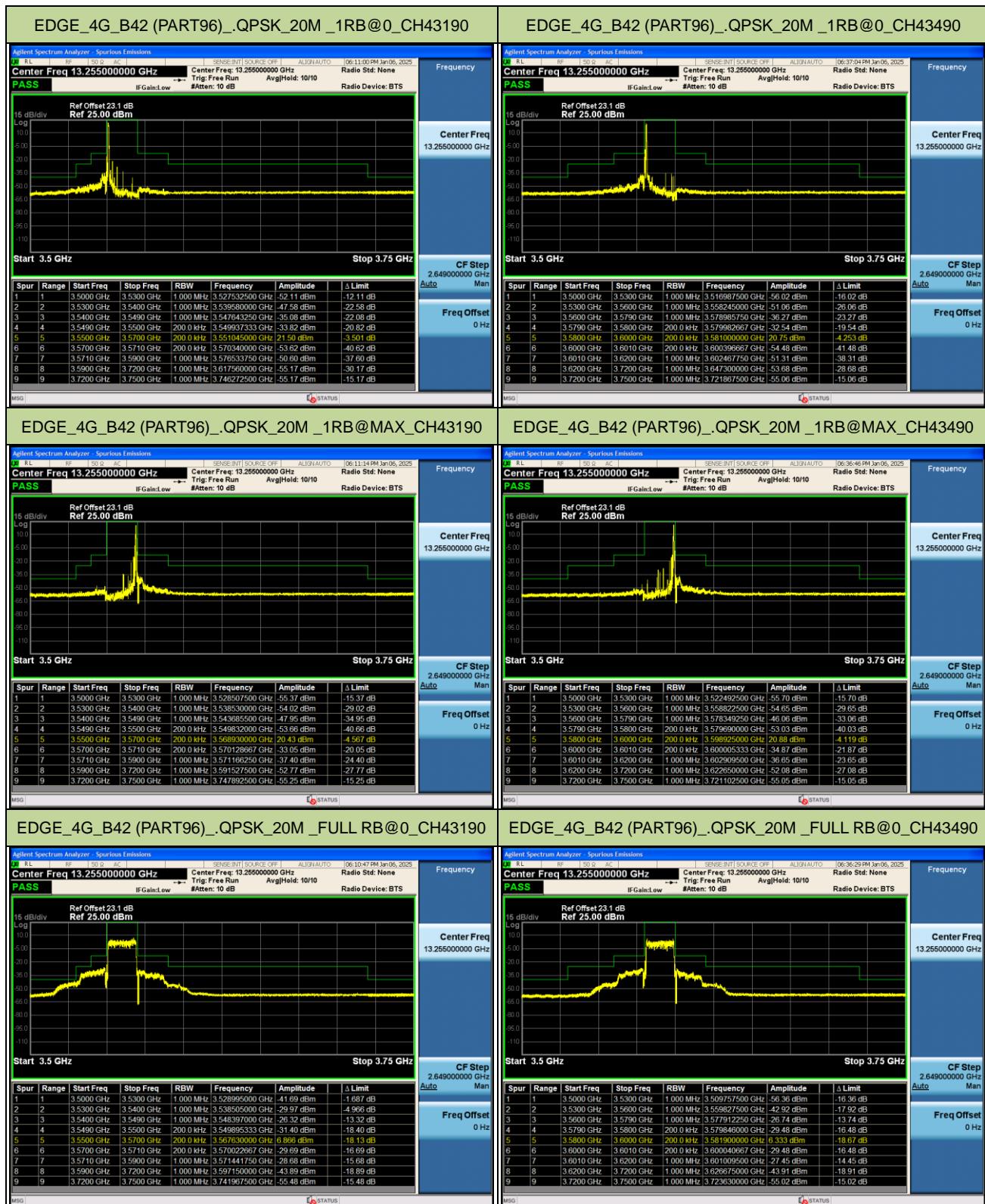
A5. Transmitter unwanted emissions (band-edge) Test Result

A5.1 LTE B42 PC3 (3.55G~3.6G)









A6. Transmitter unwanted emissions (spurious) Test Result

A6.1 LTE B42 PC3 (3.55G~3.6G)

