

## PCTEST

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## PART 27 MEASUREMENT REPORT

#### **Applicant Name:**

SONY Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan

### Date of Testing: 8/2 – 9/23/2021 Test Site/Location: PCTEST Lab. Columbia, MD, USA Test Report Serial No.: 1M2108040087-05-R1.PY7

## FCC ID:

## PY7-95324M SONY Corporation

## Applicant Name:

Application Type: EUT Type: FCC Classification: FCC Rule Part: Test Procedure(s): Certification Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

Note: This revised Test Report (S/N: 1M2108040087-05-R1.PY7) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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 §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez President



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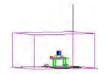


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				EI	EIRP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	20 MHz	QPSK	2506.0 - 2680.0	0.177	22.47	18M0G7D
		16QAM	2506.0 - 2680.0	0.148	21.71	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.187	22.71	13M5G7D
		16QAM	2503.5 - 2682.5	0.139	21.42	13M5W7D
LIE Dand 41(PC3)	LTE Band 41(PC3)	QPSK	2501.0 - 2685.0	0.168	22.26	9M02G7D
	10 MHz	16QAM	2501.0 - 2685.0	0.128	21.07	9M00W7D
		QPSK	2498.5 - 2687.5	0.131	21.17	4M55G7D
	5 MHz	16QAM	2498.5 - 2687.5	0.120	20.80	4M52W7D
		π/2 BPSK	2546.0 - 2640.0	0.140	21.47	96M5G7D
	100 MHz	QPSK	2546.0 - 2640.0	0.136	21.33	97M4G7D
		16QAM	2546.0 - 2640.0	0.117	20.68	97M3W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.144	21.60	86M7G7D
		QPSK	2541.0 - 2645.0	0.132	21.21	87M5G7D
		16QAM	2541.0 - 2645.0	0.145	21.61	87M3W7D
		π/2 BPSK	2536.0 - 2650.0	0.144	21.59	77M0G7D
	80 MHz	QPSK	2536.0 - 2650.0	0.135	21.30	77M7G7D
		16QAM	2536.0 - 2650.0	0.149	21.73	77M6W7D
		π/2 BPSK	2526.0 - 2660.0	0.155	21.91	58M1G7D
	60 MHz	QPSK	2526.0 - 2660.0	0.142	21.51	58M1G7D
NR Band n41		16QAM	2526.0 - 2660.0	0.159	22.01	58M2W7D
		π/2 BPSK	2521.0 - 2665.0	0.155	21.92	45M9G7D
	50 MHz	QPSK	2521.0 - 2665.0	0.143	21.55	47M7G7D
		16QAM	2521.0 - 2665.0	0.162	22.09	47M6W7D
		π/2 BPSK	2516.0 - 2670.0	0.159	22.00	35M8G7D
	40 MHz	QPSK	2516.0 - 2670.0	0.145	21.62	38M0G7D
		16QAM	2516.0 - 2670.0	0.160	22.04	38M0W7D
		π/2 BPSK	2511.0 - 2675.0	0.156	21.93	26M9G7D
	30 MHz	QPSK	2511.0 - 2675.0	0.145	21.62	27M8G7D
		16QAM	2511.0 - 2675.0	0.157	21.97	27M9W7D
		π/2 BPSK	2506.0 - 2680.0	0.151	21.80	18M0G7D
	20 MHz	QPSK	2506.0 - 2680.0	0.142	21.53	18M3G7D
		16QAM	2506.0 - 2680.0	0.157	21.97	18M3W7D

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## **1.0 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 Innovation, Science and Economic Development Canada.

## 1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

### 1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **SONY Portable Handset FCC ID: PY7-95324M**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: 44909, 45088, 00J9M

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900, WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR, 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 3.4 of this test report for a description of the radiated and antenna port conducted emissions tests.

## 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

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### 3.2 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI/TIA-603-E-2016. A halfwave dipole is 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 with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

 $P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi];$ 

where  $P_d$  is the dipole equivalent power,  $P_g$  is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to  $P_{g \text{ [dBm]}}$  – cable loss [dB].

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

 $E_{[dB\mu V/m]}$  = Measured amplitude level<sub>[dBm]</sub> + 107 + Cable Loss<sub>[dB]</sub> + Antenna Factor<sub>[dB/m]</sub> And EIRP<sub>[dBm]</sub> =  $E_{[dB\mu V/m]}$  + 20logD – 104.8; where D is the measurement distance in meters.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-E-2016.

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## 4.0 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 uncertainty shown below 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.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	AP2
-	AP1	EMC Cable and Switch System	3/9/2021	Annual	3/9/2022	AP1
-	ETS	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	ETS
-	LTx4	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx4
-	LTx5	LIcensed Transmitter Cable Set	3/3/2021	Annual	3/3/2022	LTx5
Agilent	E5515C	Wireless Communications Test Set		N/A		GB45360985
Agilent	N9030A	50GHz PXA Signal Analyzer	1/20/2021	Annual	1/20/2022	US51350301
Anritsu	MT8821C	Radio Communication Analyzer N/A			6201525694	
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Espec	ESX-2CA	Environmental Chamber	8/27/2020	Annual	8/27/2022	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020	Biennial	3/12/2022	128337
ETS Lindgren	3816/2NM	LISN	7/9/2020	Biennial	7/9/2022	00114451
Mini-Circuits	SSG-4000HP	-4000HP Synthesized Signal Generator N/A 1			11208010032	
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A		100976	
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A		112347	
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	1/21/2021	Annual	1/21/2022	101716
Rohde & Schwarz	FSW26	2Hz-26.5GHz Signal and Spectrum Analyzer	2/10/2021	Annual	2/10/2022	103187
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107
Sunol	JB6	LB6 Antenna	11/13/2020	Biennial	11/13/2022	A082816

### Table 5-1. Test Equipment

### Notes:

- 1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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## 6.0 SAMPLE CALCULATIONS

## **QPSK Modulation**

### Emission Designator = 8M62G7D

LTE BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

## **QAM Modulation**

### Emission Designator = 8M45W7D

LTE BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

## **Spurious Radiated Emission**

#### Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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#### TEST RESULTS 7.0

#### 7.1 Summary

Company Name:	SONY Corporation
FCC ID:	<u>PY7-95324M</u>
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference			
	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2			
CONDUCTED	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3			
CONDI	Conducted Band Edge / Spurious Emissions (LTE Band 41; NR Band n41)	2.1051, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Sections 7.4, 7.5			
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8			
RADIATED	Equivalent Isotropic Radiated Power (LTE Band 41; NR Band n41)	27.50(h)(2)	≤ 2 Watts max. EIRP	PASS	Section 7.6			
RADI	Radiated Spurious Emissions (LTE Band 41; NR Band n41)	2.1053, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7			
	Table 7-1. Summary of Test Results (FCC)							

### Notes:

- All modes of operation and data rates were investigated. The test results shown in the following sections 1) represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) 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.
- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST EMC Software Tool v1.1.

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## 7.2 Occupied Bandwidth

### **Test Overview**

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

### Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

### **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  $\geq$  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

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-1. Test Instrument & Measurement Setup

### Test Notes

None.

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Keysight Spectrum Analyz										
IXI RL RF	50 Ω DC	CORREC	Cent	SENSE:INT er Freg: 2.5930	00000 GHz	ALIGN AUTO	12:31:53 Pl Radio Std:	M Aug 09, 2021	Trac	e/Detector
			+++ Trig:	Free Run		d: 100/100				
		#IFGain:Lo	w #Atte	en: 36 dB			Radio Dev	ice: BTS		
10 dB/div Ref	40.00 dB	m								
30.0										
20.0									(	Clear Write
10.0			www.	warmer when the second	www.www.					
0.00		/								
-10.0		/				\				Average
-20.0	A MILLION AND	and logon				-	the master way			
-30.0							and the second second	and a support		
-40.0										Max Hole
-50.0										Μάλ Πυι
Center 2.59300 G	Hz			41/D14/ 4 5 D	a.u.,			0.00 MHz		
Res BW 470 kHz				#VBW 1.5 N	/INZ		Swe	ep 1 ms		Min Hold
Occupied Ba	andwid	th		Total F	ower	31.1	dBm			
		7.980	MHz							Detecto
		1.000								Peak
Transmit Freq	Error	-18.8	11 kHz	% of O	BW Pow	ver 99	.00 %		Auto	Mai
x dB Bandwid	lth	19.5	2 MHz	x dB		-26.	00 dB			
MSG						STATUS	6			
5G	1.0									

Plot 7-1. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB)



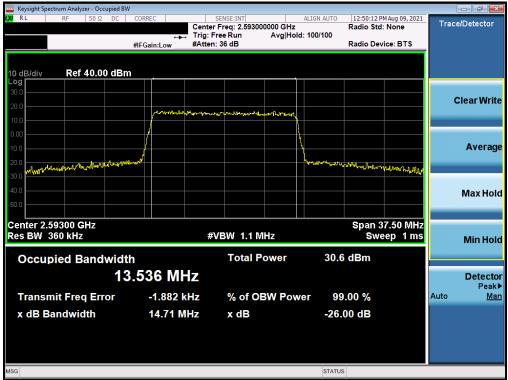
Plot 7-2. Occupied Bandwidth Plot (LTE Band 41(PC3) - 20MHz 16-QAM - Full RB)

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🚾 Keysight Spectrum Analyzer - Occupied B	W						
XI RL RF 50Ω DC	Trig	SENSE:INT nter Freq: 2.593000000 GHz g: Free Run Avg Ho ten: 36 dB	ALIGN AUTO	12:50:08 PM/ Radio Std: N Radio Devic	lone	Trace/D	Detector
10 dB/div Ref 40.00 dB	m						
30.0 20.0 10.0	manna	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Cle	ear Write
20.0			ly	helingiage	Mallorman		Averag
-30.0						Ν	/lax Hole
Center 2.59300 GHz Res BW 360 kHz		#VBW 1.1 MHz		Span 37 Swee	.50 MHz p 1 ms		Vin Hol
Occupied Bandwid		Total Power	31.9	dBm			
	3.518 MHz						Detecto Peak
Transmit Freq Error	-15.960 kHz	% of OBW Po	wer 99	.00 %		Auto	Ma
x dB Bandwidth	14.84 MHz	x dB	-26.	00 dB			
ISG			STATUS	3			





Plot 7-4. Occupied Bandwidth Plot (LTE Band 41(PC3) - 15MHz 16-QAM - Full RB)

FCC ID: PY7-95324M	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occup					
<mark>(X)</mark> RL RF 50Ω I	DC CORREC	SENSE:INT Center Freq: 2.59300	ALIGN AUTO	01:00:32 PM Aug 09, 2021 Radio Std: None	Trace/Detector
	<b>↔</b>	Talas France Dava	Avg Hold: 100/100	Radio Device: BTS	
	#IFGain:Low	#Atten: 36 dB		Radio Device: B I S	
10 dB/div Ref 40.00 (	dBm				
30.0					
20.0	Vapo Marine	what a for the second			Clear Write
10.0					
0.00	/		<u> </u>		
-10.0					Average
-20.0	Mangahan/		Harry Autor	mon man pression the	
-30.0				11.00 Mar 1/m	
-40.0					Max Hold
-50.0					
				0	
Center 2.59300 GHz Res BW 240 kHz		#VBW 750 k	(H7	Span 25.00 MHz Sweep 1 ms	
				oncep This	Min Hold
Occupied Bandw	idth	Total P	ower 31.3	3 dBm	
	9.0163 MH	7			Detector
					Peak►
Transmit Freq Error	r -1.285 k	Hz % of O	BW Power 99	0.00 %	Auto <u>Man</u>
x dB Bandwidth	9.920 M	Hz x dB	-26.	00 dB	
MSG			STATU	S	

Plot 7-5. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB)



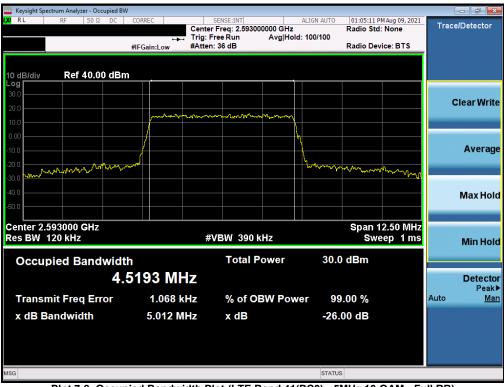
Plot 7-6. Occupied Bandwidth Plot (LTE Band 41(PC3) - 10MHz 16-QAM - Full RB)

FCC ID: PY7-95324M	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupier						
<mark>(X)</mark> RL RF 50 Ω DC	CORREC	SENSE:INT Center Freq: 2.59300	ALIGN AUTO	01:05:06 PM A Radio Std: N		Trace/Detector
		Trig: Free Run	Avg Hold: 100/100			
	#IFGain:Low	#Atten: 36 dB		Radio Device	e: BTS	
10 dB/div Ref 40.00 d	Bm					
Log 30.0						
20.0						Clear Write
10.0	m	www.	mannen			
0.00	/					
-10.0	, (Y					Average
	, (1		ach an			Averuge
-20.0 william White month			and a second second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mon	
-30.0						
-40.0						Max Hold
-50.0						
Center 2.593000 GHz				Span 12.	50 MHz	
Res BW 120 kHz		#VBW 390 k	Hz		p 1 ms	Min Hold
Occupied Bandwi		Total P	ower 31.1	dBm		
4	4.5477 M⊦	IZ				Detector
Turner it Eners Erner	40.040	0/ -f OI	D	00.0/		Peak∎ Auto Mar
Transmit Freq Error	-13.312 k			0.00 %		Auto <u>Mar</u>
x dB Bandwidth	5.101 M	Hz x dB	-26.	00 dB		
MSG			STATUS	5		

Plot 7-7. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz QPSK - Full RB)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 41(PC3) - 5MHz 16-QAM - Full RB)

FCC ID: PY7-95324M	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager		
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RL + Ough Aub		Atten 36 dB	Trig. Free Run Gate: Off #IF Gain Low	Center Fre Avg Hold Radio Std		Center Frequency 2.593000000 GHz	Settings
f Graph 🔹	11 L. 11					Span 250.00 MHz	
Scale/Div 10.0 dB Log 300 20 0 10.0	-	Ref Value 40.00	dBm			CF Step 25.000000 MHz Auto Man	
0.00 10.0 20.0 20.0 20.0 40.0	••••••			Imme	- and the state of	Freq Offset 0 Hz	
20 0 Center 2.5930 GHz Res BW 2.4000 MHz		Video BW 8.000	0 MHz	l s	Span 250 M weep 1.00 ms (1001 p		
2 Metrics 🔹 🔻							
Occupied Bandw	vidth 96.496 MHz		Total Power		28.3 dBm		
Transmit Freq Er x dB Bandwidth	rror -436.82 kł 102.4 Mł		% of OBW Pow x dB	ver	99.00 %		

Plot 7-9. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB)

1 Graph v Scale/Div 10.0 dB Log 30 0	Ref Value 40			Span	
.og	Ref Value 40			250.00 MHz	
20 0 (0, 0)		0.00 dBm		CF Step 25.000000 MHz Auto Man	
			hine interesting	Freq Offset 0 Hz	
enter 2.5930 GHz es BW 2.4000 MHz	↓ #Video BW 8.	0000 MHz	Span 250 N Sweep 1.00 ms (1001 p		
Metrics V					
Occupied Bandwidth 97.38	8 MHz	Total Power	26.4 dBm		
Transmit Freq Error x dB Bandwidth	-50.979 kHz 103.5 MHz	% of OBW Pow x dB	ver 99.00 % -26.00 dB		

Plot 7-10. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB)

FCC ID: PY7-95324M	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager	
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RL + Coupling A		Corr tef Int (S)	Trig, Free Run Gate: Off #IF Gain Low	Center Freq Avg Hold_1 Radio Std_N		łż.		Frequency 00000 GHz	Settings
l Graph 🔻							Span 250.00	MHz	
Scale/Div 10.0 dB		Ref Value 40.					CF Step 25.000 Au Ma	000 MHz Io	
0.00 10/0 20.0 20.0 40.0	ففيستعصب				and the second second second	un antra straige	Freq Of 0 Hz	fset	
-20 0 Center 2.5930 GHz Res BW 2.4000 MHz		#Video BW 8.0	000 MHz	Sw	Span weep 1.00 ms (1	250 MHz 001 pts)			
2 Metrics. ¥									
Occupied Bandy	vidth 97.326 MHz		Total Power		26.5 dBm				
Transmit Freq E x dB Bandwidth	rror	-72.501 kHz 103.3 MHz	% of OBW Pov x dB	wer	99.00 % -26.00 dB				
100	2 Sep	01, 2021 9:15 PM				M			

Plot 7-11. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB)



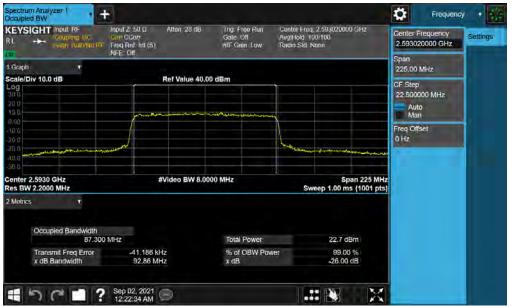
Plot 7-12. Occupied Bandwidth Plot (NR Band n41 - 90MHz π/2 BPSK - Full RB)

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Plot 7-13. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB)



Plot 7-14. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB)

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Gouping DG G	put Z 50 Ω Atten 36 dB em CCon req Ref. Int (S) FE: Off	Trig, Free Run Gate: Off HIF Gain: Low	Center Freq: 2.593020000 GHz Avgil-told: 100/100 Radio Sid: None	Center Frequency 2.593020000 GHz	Settings
Graph Y				Span 200.00 MHz	
cale/Div 10.0 dB .0g .000 .000 .000	Ref Value 4	0.00 dBm		CF Step 20.000000 MHz Auto Man	
9.00 10.0 20.0 10.0 10.0 10.0				Freq Offset 0 Hz	
enter 2.5930 GHz es BW 1.8000 MHz	#Video BW 6	.0000 MHz	Span 200   Sweep 1.00 ms (1001		
Metrics v Occupied Bandwidth 77.040 Mi	<del>1</del> 2	Total Power	24.0 dBm		
Transmit Freq Error x dB Bandwidth	-249.73 kHz 81.55 MHz	% of OBW Pov x dB			

Plot 7-15. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB)

	oupling, DC Con agr Automo RF Fre	ut Z 50 Q Atten 36 d • CCorr q Ref. Int (S) E Off	B Trig. Free Run Gate: Off #IF Gain Low	Radio Sid Non		Center Frequency 2.593020000 GHz	Setting
Graph	*	- 0.00	and the second			Span 200.00 MHz	
cale/Div 10.0 dl	B	Ref Value	40.00 dBm			CF Step 20.000000 MHz Auto Man	
1.00 10.0 10.0 10.0 10.0	ىلىچې بىرىنىيى مەرەپ يېرىيى بىرى			l		Freq Offset 0 Hz	
enter 2.5930 GH		#Video BW	6.0000 MHz	Swee	Span 200 MH p 1.00 ms (1001 pt		
Metrics							
Occupie	d Bandwidth 77,726 MHz		Total Power		24.5 dBm		
Transmi x dB Bar	Freq Error	-185.73 kHz 81.92 MHz	% of OBW Por x dB	wer	99.00 % -26.00 dB		

Plot 7-16. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB)

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1 Graph Scale/Div 10.0 dB Ref Value 40.00 dBm Log 30 0 20 0 2	Coupling DG 10	nput Z 50 Ω Atten 36 dB per CCorr req Ref. Int (S) IFE: Off	Trig. Free Run Gate: Off #IF Gain Low	Center Freq AvgiHold: 10 Radio Sid: N		Genter Frequency 2.593020000 GHz	Settings
Org         CF Step         20 000000 MHz           Auto         Auto         Auto           Auto         Man         Nan           Auto         Man         Freq Offset           0         Grad         Span 200 MHz           400         Wolnes         Span 200 MHz           600         Man         Freq Offset           0         Grad         Span 200 MHz           Sweep 1.00 ms (1001 pts)         Man           Metrics         r           Occupied Bandwidth         Total Power         24.5 dBm           Transmit Freq Error         -263.39 KHz         % of OBW Power         99.00 %	Graph T					Span 200.00 MHz	
In Solution       Freq Offset         In Solution       Freq Offset         In Solution       Freq Offset         In Solution       Freq Offset         In Solution       Span 200 MHz         Sweep 1.00 mis (1001 pts)       Sweep 1.00 mis (1001 pts)         Metrics       r         Occupied Bandwidth       Total Power       24.5 dBm         Transmit Freq Error       -263.39 kHz       % of OBW Power       99.00 %	00 30 0 20 0 10 0					20.000000 MHz	1
enter 2.5930 GHz #Video BW 6.0000 MHz Span 200 MHz es BW 1.8000 MHz Sweep 1.00 ms (1001 pts) Metrics v Occupied Bandwidth 77.613 MHz Total Power 24.5 dBm Transmit Freq Error -263.39 kHz % of OBW Power 99.00 %	1878 20.0 10.0 10.0			Linon		0 Hz	
Occupied Bandwidth 77.613 MHz Total Power 24.5 dBm Transmit Freq Error -263.39 kHz % of OBW Power 99.00 %	Center 2.5930 GHz	#Video BW 6.	0000 MHz	Swe			
Transmit Freq Error -263.39 kHz % of OBW Power 99.00 %	Occupied Bandwidth		Total Dawar		24.5 dBm		
x dB Bandwidth 81.94 MHz x dB -26.00 dB				wer			

Plot 7-17. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB)

1 Graph     T       Scale/Div 10.0 dB     Ref Value 40,00 dBm       Log     CF Step       100     15.000 MHz       200     Auto       100     Man       100     Freq Offset       00     Hz       200     Span 150 MHz       200     Freq Offset       00     Hz       200     Span 150 MHz       201     Sweep 1.00 ms (1001 pts)	-	Input RF Gaupima DC Gaupima RF	Input Z 50 0 Corr CCorr Freq Ref. Int (S) NFE: Off	Atten 36 dB	Trig. Free Run Gate: Off #IF Gain Low	Center Fre AvgiHold 1 Radio Std		GHZ		Frequency 20000 GHz	Setting
OC         CF Step           30 0         100           100 <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>and the second se</td> <td>MHz</td> <td></td>		*							and the second se	MHz	
18.0 20.0 48.0 48.0 49.0 49.0 49.0 49.0 40.0	9 0 0 0	dB				1			15.000 Au	000 MHz 10	
enter 2.59302 GHz #Video BW 5.0000 MHz Span 150 MHz tes BW 1.5000 MHz Sweep 1.00 ms (1001 pts) 2 Metrics v Occupied Bandwidth	0 0 0 0	and the second sec	~			human	warmer Mar		and the second second	lset	
2 Metrics	ter 2.59302			#Video BW 5.000	00 MHz						
	etrics	- ŧ									
	Occup		MHz		Total Power		24.2 dBr	n			
Transmit Freq Error         -228.78 kHz         % of OBW Power         99.00 %           x dB Bandwidth         61.60 MHz         x dB         -26.00 dB						ver					

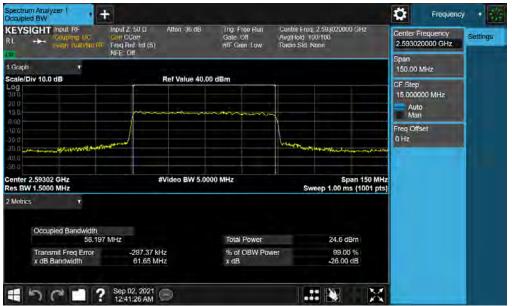
Plot 7-18. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB)

FCC ID: PY7-95324M	PCTEST* Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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	Coupling DG Con	Ref. Int (S)	Trig. Free Run Gate: Off #IF Gain Low	Center Freq: 2,593020000 GHz Avgil fold: 100/100 Radio Sid: None	Center Frequency 2.593020000 GHz
1 Graph	*				Span 150.00 MHz
Scale/Div 10.0 1 Log 20 0 10.0	dB	Ref Value 40.0	0 dBm		CF Step 15.000000 MHz Auto Man
0.00 10:0 20:0 30:0 40:0	alan and a start and a start and a start and a start a				Freq Offset 0 Hz
Center 2.59302 Res BW 1.5000		#Video BW 5.00	00 MHz	Span 150 / Sweep 1.00 ms (1001	
2 Metrics Occupi	¥ ied Bandwidth 58,086 MHz		Total Power	24.4 dBm	
	nit Freq Error andwidth	-190.74 kHz 61.67 MHz	% of OBW Pov x dB		
15	a 1 ? Sep	02, 2021			

Plot 7-19. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB)



Plot 7-20. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB)

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Line .	3Corr Ref. Int (S)	Gate: Off #IF Gain Low	Avg Hold>100/100 Radio Sid None	Center Frequency 2.593020000 GHz	Setting
Graph Y				Span 125.00 MHz	
cale/Div 10.0 dB .0g .00 0 .00 0 .00 0 .00 0	Ref Value 40.00	dBm		CF Step 12.500000 MHz Auto Man	
9.00 10.0 20.0 10.0 10.0 10.0			and down the second and a second s	Freq Offset 0 Hz	
enter 2,59302 GHz es BW 1,2000 MHz	#Video BW 4.000	0 MHz	Span 125 MF Sweep 1.00 ms (1001 pt		
Metrics <b>Y</b> Occupied Bandwidth 45.924 MHz		Total Power	23.9 dBm		
Transmit Freq Error x dB Bandwidth	-1.0283 MHz 48.65 MHz	% of OBW Pow x dB	ver 99.00 % -26.00 dB		

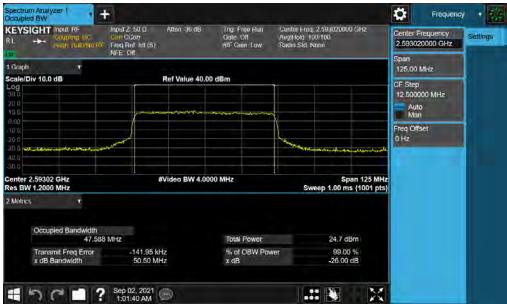
Plot 7-21. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB)

No. Care	Souping DG	Input Z: 50 Ω Gen CCorr Freq Ref: Int (S) NFE: Off	Atten 36 dB	Trig. Free Run Gate: Off #IF Gain: Low	Center Fre Avg   fold > Radio Sid			Center Frequency 2.593020000 GHz	Settings
t Graph		NFE UN						Span 125.00 MHz	
cale/Div 10.0	dB	-	Ref Value 40.00	dBm				CF Step 12.500000 MHz Auto Man	1
		~			an marine			Freq Offset D Hz	
Center 2.59302 Res BW 1.2000		#	Video BW 4.000	00 MHz	s	Span 1: weep 1.00 ms (10			
2 Metrics	Ŧ								
Occup	pied Bandwidth 47,696 N	1Hz		Total Power		24.8 dBm			
	mit Freq Error Bandwidth	-170.39 kH 50.79 MH		% of OBW Pov x dB	ver	99.00 % -26.00 dB			
15	2 1 2	Sep 02, 2021 1:01:30 AM			U		X		

Plot 7-22. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB)

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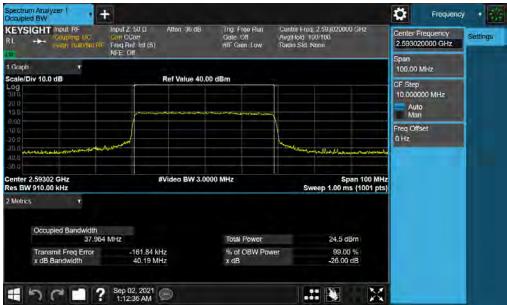
Plot 7-23. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB)

1 Graph       *         Scale/Div 10.0 dB       Ref Value 40.00 dBm         Log       00.00 MHz         Value       0.00 MHz         Span       0.00 MHz	11	Input RF Coupling, DC Iolan, Automo RF	Input Z: 50 0 Gen CCon Freq Ref: Int (S) NEE: Off	Atten 36 dB	Trig. Free Run Gate: Off #IF Gain Low	Avgitte	Freq 2. old 100/ Sid Non		10 GHz		Frequency 20000 GHz	Setting
CF Step 10.000000 MHz 200 10.00000 MHz 200 200 200 200 200 200 200 20			NFE VA								MHz	
10:0       10:0	-og 30 0 20 0 10 0	IdB		Ref Value 40.00						10.000 Aut	000 MHz 0	
20.0 Denter 2.59302 GHz #Video BW 3.0000 MHz Span 100 MHz Res BW 910.00 kHz Sweep 1.00 ms (1001 pts) 2 Metrics v Occupied Bandwidth 35.831 MHz Total Power 23.9 dBm Transmit Freq Error -1.1598 MHz % of OBW Power 99.00 %	10-0 20.0 30.0		water det			L		Marchanton	monalis		lset	
Occupied Bandwidth 35.831 MHz Total Power 23.9 dBm Transmit Freq Error -1.1598 MHz % of OBW Power 99.00 %	59 0 Center 2.59302			Video BW 3.000	00 MHz		Swee					
35.831 MHz Total Power 23.9 dBm Transmit Freq Error -1.1598 MHz % of OBW Power 99.00 %												
			MHz		Total Power			23.9 d	Bm			
						wer						

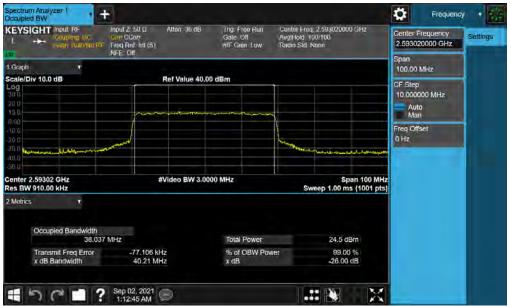
Plot 7-24. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB)

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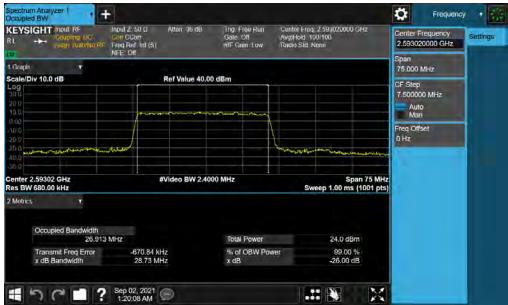
Plot 7-25. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB)



Plot 7-26. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB)

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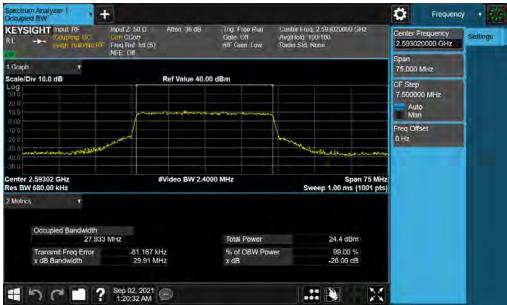
Plot 7-27. Occupied Bandwidth Plot (NR Band n41 - 30MHz π/2 BPSK - Full RB)



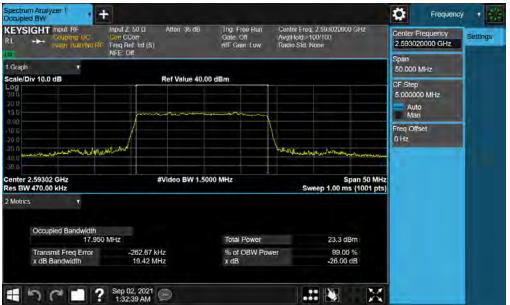
Plot 7-28. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB)

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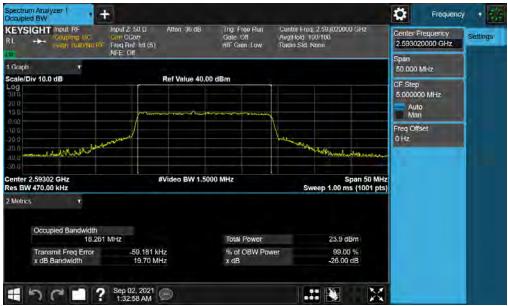
Plot 7-29. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB)



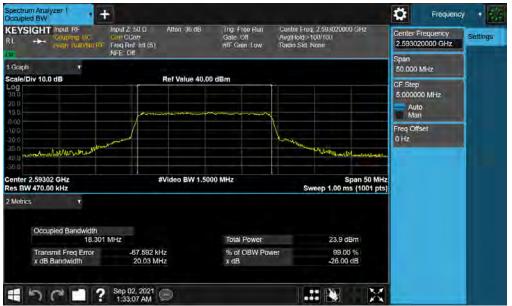
Plot 7-30. Occupied Bandwidth Plot (NR Band n41 - 20MHz π/2 BPSK - Full RB)

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Plot 7-31. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB)



Plot 7-32. Occupied Bandwidth Plot (NR Band n41 - 20MHz 16-QAM - Full RB)

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## 7.3 Spurious and Harmonic Emissions at Antenna Terminal

### **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 10<sup>th</sup> 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 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.

# The minimum permissible attenuation level of any spurious emission is $43 + 10 \log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts.

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + 10log<sub>10</sub>(P<sub>[Watts]</sub>).

### Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

### **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-2. Test Instrument & Measurement Setup

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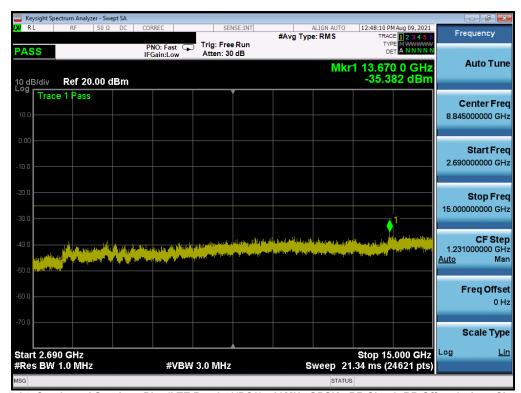
- 1. Per Part 27, RSS-195 and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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 emission are attenuated at least 26 dB below the transmitter power.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

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	pectrum Analyze										7 <b>×</b>
X/RL	RF	50 Ω DC	CORREC		E:INT	#Avg Type	ALIGN AUTO e: RMS	TRAC	Aug 09, 2021 E 1 2 3 4 5 6 E M WWWW	Frequenc	су
PASS			PNO: Fast 😱 IFGain:Low	Trig: Free F Atten: 30 c				DE	ANNNN		
							M	(r1 2.45	3 5 GHz	Auto	Tun
10 dB/div	Ref 20.	00 dBm						-42.8	19 dBm		
Tra	ce 1 Pass			Ĭ						Center	Fre
10.0										1.25250000	0 Gł
0.00										Start	Fre
-10.0										30.00000	0 MI
-20.0										Stop	Fre
-30.0										2.47500000	0 G
.30.0											
-40.0									\	CF 244.50000	
			an maan beer sim bet besa an	. at the late	lan maka an I		فيطفقون والمراولين	(). Interneting a		244.50000 Auto	M
50.0 internet					فلطامر إهبا مساطر	Rantes Balanchalf dillion	المغاطفين فيتخافهم				
-60.0										FreqC	Offs
00.0											0
-70.0											
										Scale	Ту
Start 0.0	30 GHz			A				Stop 2	.475 GHz	Log	L
	V 1.0 MHz		#VBW	3.0 MHz			Sweep 3	.260 ms (	4891 pts)		
ISG							STATUS	5			

Plot 7-33. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-34. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

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RL	RF	50 Ω	DC CO	RREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		Aug 09, 2021	Frequency
ASS			P	NO:Fast G Gain:Low	Trig: Free Atten: 10		mong typ		TYP		
0 dB/div	Ref 0.	00 dBr	n					Mkr	1 26.664 -50.09	5 GHz 97 dBm	Auto Tur
10.0	ace 1 Pass										<b>Center Fr</b> 21.000000000 Gi
80.0											<b>Start Fr</b> 15.00000000 G
40.0							Jaco <sup>n</sup> weathed w <sup>edde</sup> transfigter	data. Nil stalt	. No. Tab. I. canthla		<b>Stop Fr</b> 27.000000000 G
50.0 <mark>100404) </mark>	filleningen (filmenen slæstifter(filmenenenenenenenenenenenenenenenenenenen	e e stig og død død Varkensleveret død	ارون الارون المراوي مصادر معرود معرود معرو	L <sub>earlin</sub> Eist Transfer	a kanangahi kana kan ng kanangahi kanangah ng kanangahi kanangah	an () ye - Childred () (	n film an sea na fin gan an san gan gan gan gan gan gan gan gan gan g	a gang and a sing and	مارش شروینده بدونشور . ا		<b>CF St</b> 1.20000000 G <u>Auto</u> M
0.0											Freq Offs 0
90.0 <b>-</b>									Oton 27		Scale Ty
	.000 GHz N 1.0 MH:			#VBV	V 3.0 MHz		s	weep 20	Stop 27. .80 ms (2	000 GHz 4001 pts)	

Plot 7-35. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



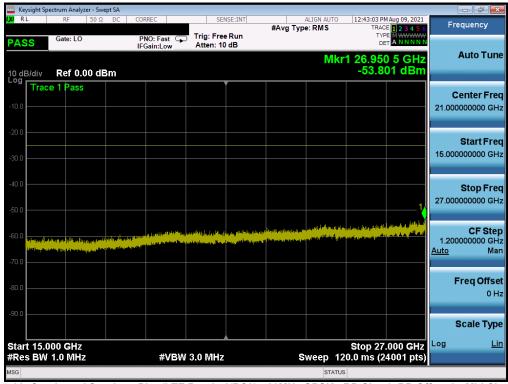
Plot 7-36. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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RL	RF	malyzer - Swe 50 Ω	•	ORREC	SEI	NSE:INT	#Avg Typ			1 Aug 09, 2021 E <b>1 2 3 4 5</b> 6	Frequency
ASS	Gate:	LO		PNO: Fast 🕞 FGain:Low	Trig: Free Atten: 30		#/18 I JP		TYF		
0 dB/di	v Ref	20.00 d	Bm					Mkr	1 14.20 -39.5	6 0 GHz 71 dBm	Auto Tu
og Tr 10.0	race 1 Pa	ass									Center Fi 8.845000000 G
10.0											Start Fi 2.690000000 G
20.0											Stop Fr 15.000000000 G
40.0	and being a state of the		Malana		and a start of the second start	ang lang gang bi	a shekerikerikeri	le <sup>la</sup> rgeten Gergense			CF St 1.231000000 G <u>Auto</u> M
50.0	adiaga <sub>a</sub>										Freq Off 0
70.0											Scale Ty
	.690 GH W 1.0 N			#VBW	/ 3.0 MHz		s	weep 12	Stop 15 3.1 ms (2	.000 GHz 4621 pts)	Log

Plot 7-37. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



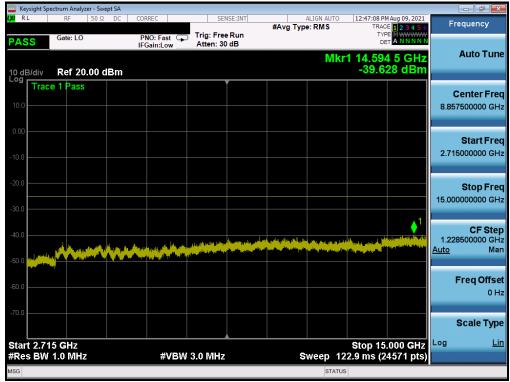
Plot 7-38. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: PY7-95324M	PCTEST Proud to be part of @element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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RL	ectrum Analyzer - Swept RF 50 Ω		SENSE:INT	ALIGN AU	TO 12:46:00 PM Aug 09, 2021	
PASS	Gate: LO	PNO: Fast 🖵	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE MWWWW DET A N N N N N	Frequency
0 dB/div	Ref 20.00 dB				Mkr1 2.470 5 GHz -47.353 dBm	Auto Tur
.og Trac	e 1 Pass					<b>Center Fr</b> 1.263000000 G
10.00						Start Fr 30.000000 M
20.0						<b>Stop Fr</b> 2.496000000 G
40.0						CF St 246.600000 M <u>Auto</u> M
	er yezhoù fer fer ivezhoù alle e d		la lege processing of the profile of the profile of the pro-			Freq Offs 0
70.0					Stop 2.496 GHz	Scale Ty
Res BW	1.0 MHz	#VBW	3.0 MHz		24.66 ms (4933 pts)	

Plot 7-39. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-40. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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	pectrum Analyzer - S										×
L <mark>XI</mark> RL	RF 50	Ω DC (	CORREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Aug 09, 2021	Frequency	
PASS	Gate: LO		PNO: Fast 🖵 IFGain:Low	Trig: Free Atten: 10		• //		TYF		Auto Tu	
10 dB/div	Ref 0.00	dBm					Mki	1 26.65 -54.0	4 5 GHz 64 dBm	Autori	Jule
Log Trac	e 1 Pass									Center F 21.000000000 (	
-20.0										Start Fi 15.000000000 (	
-40.0									1	Stop Fr 27.000000000 0	
-60.0	eri adareti dynterna antara Artanolis nita mina ata d	italia alfasticationada	- باللاسطىب			n (na standa (na standa a standa a standa (na standa (na standa (na standa (na standa (na standa (na standa (n Na standa (na	an a	elegi konseren en elegi na hereko desa disektik		CF St 1.200000000 C Auto M	
-80.0										Freq Off 0	f <b>se</b> 0 H:
-90.0										Scale Ty	
Start 15.0 #Res BW			#VBW	3.0 MHz		s	weep 12	Stop 27 20.0 ms (2	.000 GHz 4001 pts)		Lin
MSG							STATU				

Plot 7-41. Conducted Spurious Plot (LTE Band 41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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RL Coupling DC Augn Auto/No.RF	Input Z 50 Ω Atten: 32 dB Con CCon Freq Ref. Int (S) NFE: Off	PNO Fast Gate Off IF Gam Low Sig Track Off	#Avg Type: Pov Trig. Free Run	VOT (RMS 1 2 3 4 MWW W A N N N	WW 1.25000000 GHz
Spectrum v cale/Div 10 dB	Ref Level 20.00	dBm	Mkr	1 2.289 4 G -39.65 di	2.44GGGGGGGGGGGG
Trace 1 Pass					Full Span
					Start Freq 30.000000 MHz
					Stop Freq 2.470000000 GHz
				1	AUTO TUNE
40.0 50.0 <del>mi. http://www.in.164.edu/a</del>	والمحادية والمعادية	المحج الأرابية الإور والاستشاري	البابير معدنات إعاليه	Second planter	CF Step 244.000000 MHz
50.0					Auto Man
					Freq Offset 0 Hz
itart 0.030 GHz Res BW 1.0 MHz	#Video BW 3.0	MHz	Swee	Stop 2.470 p 3.26 ms (4891	
501?	Sep 01, 2021				

Plot 7-42. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel Ant1)



Plot 7-43. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel Ant1)

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Coupling, DC Con C	tel int (S)	PNO: Fast Gate: Off IF Cain Low Sig Track: Off		WWWW 21.000000000 GHz	Setting
t Spectrum	Ref Level 0.0	0 dBm	Mkr1 19.136 0 -47.57	Tation of the set in	
Trace 1 Pass				Full Span	
20.0				Start Freq 15.000000000 GHz	
40.0	A1			Stop Freq 27.000000000 GHz	
				AUTO TUNE	
co.o utilizado de una es patience de actividad				CF Step 1.200000000 GHz	
				Auto Man	
				Freq Offset 0 Hz	
Start 15.000 GHz Res BW 1.0 MHz	#Video BW 3	0 MHz	Stop 27.0 Sweep ~16.8 ms (240		

Plot 7-44. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel Ant1)



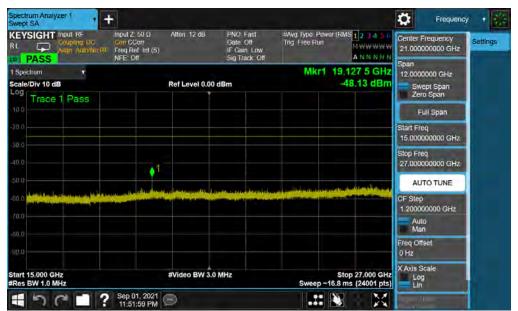
Plot 7-45. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel Ant1)

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RL Coupling DC Coupling DC Coupling	ul 2:50 Ω Atten: 32 dB # CCorr 4 Ref. Int (S) E: Off	PNO:Fast Gate:Off IF Cain:Low Sig Track:Off		123458 MWWWWW ANNNN	Center Frequency 8.845000000 GHz Span	Settings
Spectrum v Scale/Div 10 dB	Ref Level 20.00	) dBm	Mkr1 14.6	59 0 GHz .38 dBm	12.3100000 GHz Swept Span Zero Span	
Trace 1 Pass					Full Span	
					Start Freq 2.69000000 GHz	
					Stop Freq 15.000000000 GH2	
				1	AUTO TUNE	
40 0 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				a pana da Arra	CF Step 1.231000000 GHz Auto Man	
					Freq Offset 0 Hz	
start 2.690 GHz Res BW 1.0 MHz	#Video BW 3.0	) MHz	Stop Sweep ~17.5 ms	15.000 GHz	X Axis Scale Log	

Plot 7-46. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel Ant1)



Plot 7-47. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel Ant1)

FCC ID: PY7-95324M	Poud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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REVSIGHT Input RF Coupling, DC Augn AutorNo RF W PASS	Input Z: 50 Ω Atten: 32 dB Con CCorr Freq Ref: Int (S) NFE: Off	FNO: Fast Gate: Off IF Gain Low Sig Track: Off	#Avg Type: Pov Trig. Free Run	VOT (RMS 1 2 3 4 5 6 MWW WW W A N N N N N	Center Frequency 1.263000000 GHz Span	Settings
Spectrum v Scale/Div 10 dB	Ref Level 20.0	0 dBm	Mkr	1 2.437 5 GHz -39.90 dBm	2.46600000 GHz Swept Span Zero Span	
Trace 1 Pass					Full Span	
					Start Freq 30.000000 MHz	1
20.0					Stop Freq 2.496000000 GHz	
				A L	AUTO TUNE	
40.0 50.0	والمعادية والمعاد المقار والمعاد والمقاركة فالمتها والمعاد	in a second s		المتبعنة بماريم وذاره طرابهم	CF Step 246.600000 MHz	
50.0					Auto Man	
					Freq Offset 0 Hz	
Start 0.030 GHz Res BW 1.0 MHz	#Video BW 3.	0 MHz	Swee	Stop 2,496 GHz p 3.29 ms (4933 pts)	X Axis Scale Log	
	Sep 02, 2021		Swee	p 3.29 ms (4933 pts)	Lin	

Plot 7-48. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel Ant1)



Plot 7-49. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel Ant1)

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EYSIGHT Input RF Coupling OC Augn AutoNi PASS	Input Z, 50 Ω Gen GCon CRF Freq Ref. Int (S) NFE: Off	Atten 12 dB	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: F Trig. Free Ri	Power (RMS 1 2 3 4 5 6 m M WWWWW A N N N N N	Center Frequency 21.000000000 GHz	Settings
Spectrum + cale/Div 10 dB		Ref Level 0.00		Mk	r1 25.896 0 GHz -51.79 dBm	Span 12.0000000 GHz Swept Span Zero Span	
and a state i Pass						Full Span	
0.0						Start Freq 15.00000000 GHz	
10.0						Stop Freq 27.000000000 GHz	
	للمواجزة والمراجع والمراجع		ويتعادد وأقر		A	AUTO TUNE	
0.0			Contraction of the local diversion of the local diversion of the local diversion of the local diversion of the			CF Step 1.200000000 GHz	
						Auto Man	
						Freq Offset 0 Hz	
tart 15.000 GHz Res BW 1.0 MHz		#Video BW 3.0	MHz	Sweet	Stop 27.000 GHz ~16.8 ms (24001 pts)	X Axis Scale Log	

Plot 7-50. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel Ant1)

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# 7.4 Band Edge Emissions at Antenna Terminal

#### **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 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.

# The minimum permissible attenuation level for band 41 is as noted in the Test Notes on the following page.

#### Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

#### 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  $\geq$  1% of the emission bandwidth
- 4. VBW  $\geq$  3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

#### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-3. Test Instrument & Measurement Setup

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- Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

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Plot 7-51. Lower ACP Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB)



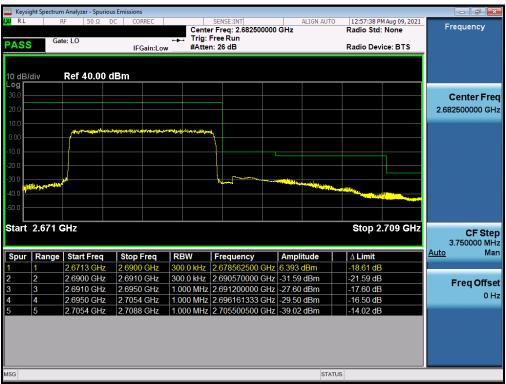
Plot 7-52. Upper ACP Plot (LTE Band 41(PC3) - 20MHz QPSK - Full RB)

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Align: Atalo	Input 2:50 Ω Gen CCon Freq Rel. Int (S) NFE: Off	Atten 26 dB	Trig. Free Run Gate: LO IF Gam. Low	Center Freq: Radio Std: N		GHZ	Center Fi 2.50350	requericy 0000 GHz	Settings
All Range Graph v cale/Div 10.0 dB		ef Value 40.00	dBm				CF Step 517.200 Auto	000 MHz	
.0g							Man Man		
20.0							Freq Offs 0 Hz	et	1
0.00			and the fact and	Laterial description	Makelandette		-	_	
10.9									
4D Q	Contraction of the second second					-instant			
tart 2.477 GHz					Stop	2.515 GHz			
All Range Table 🔹 🕈									
			Measure Tra Trace Type		Trace Averag	Trace 1 ge (Active)			
	art Freq Stop Freq	RBW	Frequency	Amplitude	ALimit				
	773 GHz 2,4905 GHz 905 GHz 2,4950 GHz		.490389583 GHz .495000000 GHz	-34.64 dBm	-9.641				
3 3 2.4	950 GHz 2.4960 GHz	300.0 kHz 2	495671667 GHz	-33.89 dBm	-20,89	dB			
4 4 2.4	960 GHz 2.5148 GHz	300.0 kHz 2	.499750000 GHz	1.138 dBm	-23,86	dB			

Plot 7-53. Lower ACP Plot (LTE Band 41(PC3) - 15MHz QPSK - Full RB)



Plot 7-54. Upper ACP Plot (LTE Band 41(PC3) - 15MHz QPSK - Full RB)

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ALIGN AUTO 01:03:53 PM Aug 09, 2021 Padia Std: None Frequency	SENSE:INT			n Analyzer - Spurious RF 50 Ω D		🖌 Keys 🚺 R L
000 GHz Radio Std: None Frequency Radio Device: BTS	r Freq: 2.50100000 Free Run 1: 28 dB	+++ Trig:	IFGain:Lov	te: LO	Gat	PAS
			Bm	Ref 40.00 d	3/div	I0 dB
Center Fr						.og 30.0
2.501000000 G						20.0
in hijkitersini deleventersen per set skiljester	ality attended to the					10.0 0.00
						10.0
						20.0
	-1					30.0
				andre and a state of the second		10.0
						50.0 -
Stop 2.509 GHz CF St				GHz	2.484 0	⊥ Start
2.500000 M						
Amplitude 🛛 🛆 Limit Auto M	Frequency	RBW	Stop Freq	Start Freq	Range	Spur
	2.490441667 GHz		2.4905 GHz	2.4835 GHz		
	2.494475000 GHz		2.4950 GHz	2.4905 GHz	2	
			2.4960 GHz	2.4950 GHz	3	
Hz -31.00 dBm -18.00 dB	2.495596667 GHz 2.501395833 GHz		2.5085 GHz	2.4960 GHz	4	

Plot 7-55. Lower ACP Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB)



Plot 7-56. Upper ACP Plot (LTE Band 41(PC3) - 10MHz QPSK - Full RB)

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KEYSIGHT	Input RF Coupling Align Auto	DC Con	LZ 50 Ω CCorr Ref: Int (S)	Atten 26 dB	Trig. Free R Gate: LO IF Gam. Lov		Center Freq: 2 Radio Std: No	2.498500000 GHz ne		Contraction of the local division of the loc	requency 00000 GHz	Settings
All Range Gra cale/Div 10.0		011		Ref Value 40.	00 dBm					CF Step 517.200 Aut	0000 MHz	
.og										Ma		
										Freq Off 0 Hz	set	1
0.00					PAN ADVICTION AND A	Wild-M				-	_	
10.9												
30.0				/								
4D 0				warment /			<u></u>					
68.0							mappinet	Antentinary	where the			
start 2.485 GH	z							Stop 2.50	B GHz			
4 All Range Tabl	o <b>v</b>											
					Measure Trace Ty		т	Tra race Average (Ac	ice 1 tive)			
Spur	Range	Start Freq	Stop Freq 2,4905 GHz	RBW 1.000 MHz	Frequency 2.489900000 G		mplitude 2.93 dBm	ΔLimit				
2			2.4905 GHz 2.4950 GHz		2.494947500 G		4.28 dBm	-17.93 dB				
3	3	2.4950 GHz	2.4960 GHz	110.0 kHz	2.496000000 G	Hz -2	2.19 dBm	-9.190 dB				
4	4	2.4960 GHz	2.5075 GHz	110.0 kHz	2.499200833 G	Hz 2	.760 dBm	-22.24 dB				

Plot 7-57. Lower ACP Plot (LTE Band 41(PC3) - 5MHz QPSK - Full RB)



Plot 7-58. Upper ACP Plot (LTE Band 41(PC3) - 5MHz QPSK – Full RB)

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EYSIGHT	Input: RF Coupling, ID Alight: Autor	65 (Gon	LZ 50 Ω CCorr Ref. Int (S) Off	Atten 26 dB	Trig. Free Rui Gate: Off IF Gam Low		Freq: 2,506020000 Gi Sid: None	4z	2.50602	Frequency 20000 GHz	Settings
All Range Grap cale/Div 10.0 (				Ref Value 40.	00 dBm				CF Step 517.20 Aut Ma	4000 MHz o	
0 0 0 0									Freq Off 0 Hz	n	
00 0.0 0.0											
0 û â û						<u></u>					
art 2.396 GHz All Range Table	-						Stop 2.	696 GHz			
w range table					Measure Trace Typ		Trace Average	Trace 1 (Active)			
Spur		Start Freq	Stop Freq 2.4905 GHz	RBW 1.000 MHz	Frequency 2.489997340 GF	Amplitud					
23	2 2	.4905 GHz .4950 GHz	2.4950 GHz 2.4960 GHz	1.000 MHz	2.494865000 GH 2.496000000 GH	z -45.79 d	Bm -32.79 dB				
4		4960 GHz	2.5960 GHz	1.000 MHz 1.000 MHz	2.561326633 GH 2.596000000 GH						

Plot 7-59. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB)

PASS	106. Gon	CCorr Ref. Int (S)	Atten 26 dB	Trig. Free Run Gate: Off IF Gam Low	Centor Freq. Radio Std. N	2,670990000 GHz one	Center Frequency 2.679990000 GHz	Settings
a line of the line							CF Step 551,998000 MHz	
cale/Div 10.0 dB		1	el Value 40.0	00 dBm			Auto	
og							Man	
							Freq Offset 0 Hz	
							-	
0.0								
00								
sp.a.								
10.0								
tart 2.490 GHz						Stop 2.790 GHz		
All Range Table	1							
				Measure Tra Trace Type		Trace 1 Trace Average (Active)		
Spur Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ALImit		
1 1	2.4900 GHz	2.4920 GHz	1.000 MHz	2.491920000 GHz	-54.56 dBm	-29.56 dB		
	2.4920 GHz			2.585000000 GHz	-42.47 dBm	-29.47 dB		
3 3	2.5850 GHz			2.59000000 GHz	-32.65 dBm	-22.65 dE -29.47 dB		
4 4 5 5		2.6900 GHz 2.6950 GHz		2.675929648 GHz 2.69000000 GHz	-4.466 dBm -35.42 dBm	-25.42 dB		

Plot 7-60. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB)

FCC ID: PY7-95324M	PCTEST. Proud to be part of @element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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	al RF Ioling OC F Automa RF	Input Z 50 Q Gon CCorr Freq Ref. Int ( NFE: Off	Atten 26 dB S)	Trig. Free Ru Gate: Off IF Gam Low		er Freg. 2 o Sid: Nor	.506020000 ne	GHZ		Frequency 20000 GHz	Settings
All Range Graph cale/Div 10.0 dB	*		Ref Value 40	.00 dBm					CF Step 22.500 Aut	000 MHz	
.og									Ma		
20.0									Freq Of 0 Hz	set	
0.00					-				-		
0.0		T									
								_			
4D û					L						
		1									
All Range Table	÷						Stop	2.675 GHz			
All Kange Table	N.			Measure	Trace			Trace 1			
				Trace Typ	xe.	Tr	ace Averag	e (Active)			
Spur Rai			req RBW GHz 1.000 MHz	Frequency 2,489494048 GH	Amplii		∆Limit -22.29				
2			GHz 1.000 MHz	2.493650000 G			-32.61				
3	3 2.4950						-25.69				
4	4 2.4960			2.561865922 GH			-30.67				

Plot 7-61. Lower ACP Plot (NR Band n41 - 90MHz CP-OFDM-QPSK - Full RB)

EYSIGHT	Angle Angle	LOG. Gon	1 Z 50 Ω CGon Ref. mt (S)	Atten 26 dB	Trig, Free Gate: Off IF Gam L	1	Center Freq Radio Std. N	: 2,679990000 GHz Ione	Protect and and	Frequency 90000 GHz	Settings
All Range Gra	phi 🔻								CF Step	000 MHz	
cale/Div 10.0				Ref Value 40.	00 dBm				22.000 Au		
og									Ma		
30 0 20 0 10 0									Freq Of 0 Hz	lset	1
0.00									-	_	
		-									
ADG											
60,0							1				
start 2.510 GI	iz 🛛							Stop 2.780 GH	z		
All Range Tab	ie i										
					Measu	re Trace		Trace 1			
					Trace	Туре		Trace Average (Active)			
Spar	Range	Start Freq	Stop Freq	RBW	Frequency		nplilude	ALImit			
1		2,5100 GHz			2.511044000		5 15 dBm	-30.15 dB			
2	2		2.5950 GHz		2.594495758		4.54 dBm	-31.54 dB			
3 4	3 4		2.6000 GHz 2.6900 GHz		2.600000000 2.674413408		6.73 dBm 864 dBm	-26.73 dE			
5					2.690000000		8.79 dBm	-28.79 dB			

Plot 7-62. Upper ACP Plot (NR Band n41 - 90MHz CP-OFDM-QPSK - Full RB)

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	in RH Iping DC In Automo R	Input Z 3 Gom CGz Freq Ref NFE: Off	MT Lint (Si)	Atten 26 dB	Trig. Fr Gate: C IF Gam	Dtt	Radio St	reg: 2,50602000 d: None	JGHZ	2.5060	Frequency 20000 GHz	Settings
3 All Range Graph Scale/Div 10.0 dB	*			ef Value 40.0	00 dBm					CF Step 20.000 Au	000 MHz	
30.0										Ma	n	
										Freq Of 0 Hz	fset	
0.00										-		
20.0			F/									
30.0												
4D G 60 0			<u></u>									
start 2.416 GHz								Sto	2.656 GHz			
All Range Table	¥							310	2.000 0112			
and a second						isure Trac ce Type	æ	Trace Avera	Trace 1 ge (Active)			
Spur Ra			op Freq	RBW 1 000 MHz	Frequer 2.4905000		Amplitude					
2		6 GHz 2.4		1.000 MHz	2.4905000		-47.53 dB					
3	3 2.495	0 GHz 2.4	960 GHz	820.0 kHz	2.4960000	00 GHz	-45.62 dB	m -32.62	dB			
4				1.000 MHz 1.000 MHz	2.5704654		-5.307 dB					

Plot 7-63. Lower ACP Plot (NR Band n41 - 80MHz CP-OFDM-QPSK - Full RB)

KEYSIGH	Aught Au	INC CO	out Z 50 Ω m CGon aq Rel: Int (S) Έ: Off	Atten 26 dB	Trig. Free Gate: Off IF Gam, Lo	R	enter Freg adio Std. Ni	2,679990000 GHz one	2.679	Frequency 990000 GHz	Settings
3 All Range G									CF Ste 20.00	2000 MHz	
icale/Div 10	.0 dB			Ref Value 40.	00 dBm				and the second se	uto	
og										an	
30 0 20 0 10 0									Freq C 0 Hz	)ffset	1
0.00				_					-		
						-					
						1					
				_							
ñ0 0							~				
Start 2.530 0	Hz							Stop 2.770 G	Hz		
All Range Ta	11.										
a All Hange Ia	1010										
					Measur Trace 1			Trace Trace Average (Active			
Spu	Range	Start Freq	Stop Freq	RBW	Frequency		plitude	ΔLimit			
	1 1		z 2.5319 GH z 2.6050 GH		2.531900000		82 dBm 82 dBm	-31.92 dB			
	3 3		z 2.6100 GH		2.610000000		82 dBm 99 dBm	-32.82 dB			
	4 4		z 2.6900 GH		2.671383648		24 dBm	-30.02 dB			
	5 5				2.691350000		25 dBm	-33.25 dB			

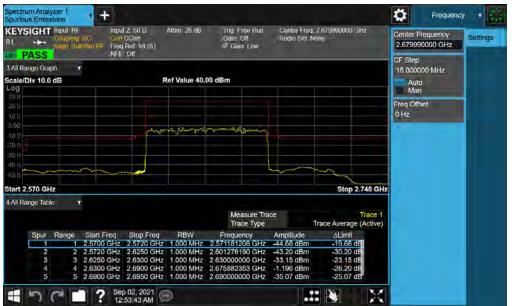
Plot 7-64. Upper ACP Plot (NR Band n41 - 80MHz CP-OFDM-QPSK - Full RB)

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EYSIGHT Ino	iping DG G	put Z 50 0 m CGon eq Ref. Int (S) FE: Off	Atten 26 dB	Trig. Free Run Gate: Off IF Gam Low	Radio Std. 1	1 2.506020000 GF None	12	Genter Frequency 2.506020000 GHz	Settings
All Range Graph cale/Div 10.0 dB	*		tef Value 40.0	0 dBm				CF Step 15.000000 MHz Auto	
000 2000							_	Man Freq Offset 0 Hz	
0.00 10.9 10.0									
εο ο πο ο λύμ									
tart 2.436 GHz						Stop 2.	614 GHz		
All Range Table	π.			Measure Tra Trace Type	ice	Trace Average (	Trace 1 Active)		
Spur Ra	nge Start Freq		RBW	Frequency	Amplitude	ALimit			
2	1 2.4360 GH	z 2.4905 GHz z 2.4950 GHz	1.000 MHz 1.000 MHz	2.485958333 GHz 2.495000000 GHz	-45.44 dBm -45.20 dBm	-20.44 dE -32.20 dE			
3	3 2.4950 GH			2.495870000 GHz	-45.35 dBm	-32.35 dE			
4	4 2.4960 GH	z 2.5560 GHz z 2.5610 GHz		2.541882353 GHz 2.556000000 GHz	-3.507 dBm -33.47 dBm	-28.51 dE			

Plot 7-65. Lower ACP Plot (NR Band n41 - 60MHz CP-OFDM-QPSK - Full RB)



Plot 7-66. Upper ACP Plot (NR Band n41 - 60MHz CP-OFDM-QPSK - Full RB)

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	ul RF Ioing, OC In Automo R	Input Z Con Co Freq Re NFE: C	Sorr el int (Si)	Atten 26 dB	Trig. Fr Gate: O IF Gain	11	Center Freq Radio Std. N	2.50602000 Ione	) GHZ	2.5060	Frequency 20000 GHz	Settings
All Range Graph cale/Div 10.0 dB				ef Value 40.0	00 dBm					CF Ste 12.500 Au	0000 MHz	
og										Ma		
30 0 20 0 10 0										Freq Of 0 Hz	ffset	1
0.00						-				-	_	
20.0												
30.0			m			L.						
60.0	1											
start 2.446 GHz								Stop	2.596 GHz			
All Range Table												
						sure Trac e Type		Trace Avera	Trace 1 ge (Active)			
Spur Rai			Stop Freq	RBW	Frequer		Amplitude	۵Limi				
2				1.000 MHz 1.000 MHz	2.49050000		-37.58 dBm -35.86 dBm	-12.58				
43			4960 GHz		2.49551000		-37.37 dBm	-24.37				
4				1.000 MHz	2.54400000	0 GHz	-2.899 dBm	-27,90	dB			
5	5 2.546	60 GHz 2	.5510 GHz	1.000 MHz	2.54600000	0 GHz	-35.63 dBm	-25.63	dB			

Plot 7-67. Lower ACP Plot (NR Band n41 - 50MHz CP-OFDM-QPSK - Full RB)

REYSIG	+ ;	nout RF Jouping Jugn Jug	ing Gor anga RF Fra	tt Z: 50 Ω CCorr a Ref. Int (S) E: Off	Atten 26 dB	Gate	Frée Run Off in Low	Center Fred Radio Std 1	2,67 <u>9990000</u> None	GHz	2.67999	Frequency 90000 GHz	Settings
3 All Range											CF Step	DOO MHz	
cale/Div					Ref Value 40.	00 dBm					Aut		
Log											Mar		
30.0 20.0 10.0											Freq Off 0 Hz	set	1
0.00											-		
							ł						
							1						
60.0													
start 2.59	0 GHz								Stop	2.740 GHz			
All Range	a Tablo												
e ren i taniĝe	1 10010					100	asure Tra			Trace 1			
							asure Tra sce Type	ce	Trace Average				
s	pur f	Range	Start Freq	Stop Freq	RBW	Frequ		Amplitude	ALIMI				
	1			2.5922 GHz		2.592178		-50.06 dBm	-25.06				
	2			2.6350 GHz		2.635000		-45.68 dBm	-32.68				
	3 4	3		2.6400 GHz 2.6900 GHz		2.640000 2.669500		-40.03 dBm -3.137 dBm	-30.03				
	5			2.6950 GHz				-38.36 dBm	-28.36				

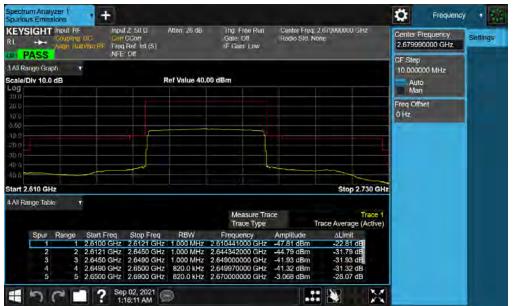
Plot 7-68. Upper ACP Plot (NR Band n41 - 50MHz CP-OFDM-QPSK - Full RB)

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PASS	1 COUD IT O	, DG Gon	CCorr Ref. Int (S)	Atten 26 dB	Trig. Free Gate: Off (F Gain, I		Center Freq Radio Std. N	2,506020000 Ione	GHZ	2.5060	Frequency 20000 GHz	Settings
All Range Gra cale/Div 10.0				ef Value 40.0	00 dBm					CF Ster 10.000 Au	000 MHz	
.og										Ma Ma	n	
0.0										Freq Of 0 Hz	fset	1
0.00										-		
0.0								-				
00						1			L			
10 Q			V			-						
	1											
art 2.456 GI	lz							Stop	2.576 GHz			
All Range Tab	ke i											
					Meas Trace	ure Trac Type		Trace Averag	Trace 1 je (Active)			
Spur	Range	Start Freq	Stop Freq	RBW	Frequenc		Amplitude	ALImit				
2	1		2.4905 GHz 2.4950 GHz	1.000 MHz 1.000 MHz	2.490155000		-34.85 dBm -33.89 dBm	-9.855 -20.89				
3	3	2.4950 GHz		390.0 kHz	2.495720000		-36.20 dBm	-23.20				
4	4	2.4960 GHz		820.0 kHz	2.523600000		-3.250 dBm	-28.25				
5	5	2.5360 GHz	2.5370 GHz	820.0 kHz	2.536010000	GHz	-33.05 dBm	-23.05	dB			

Plot 7-69. Lower ACP Plot (NR Band n41 - 40MHz CP-OFDM-QPSK - Full RB)



Plot 7-70. Upper ACP Plot (NR Band n41 - 40MHz CP-OFDM-QPSK - Full RB)

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REYSIGHT	ut RF uping DC In Automat	Gome	Corr Ref. Int (Si)	Atten 26 dB	Trig. Free Run Gate: Off IF Gam Low	Center Freq Radio Std. N	: 2.506020000 GHz None	2.6	nter Frequency 506020000 GHz	Settings
All Range Graph cale/Div 10.0 dB	*			lef Value 40.0	0 dBm				Step 500000 MHz Auto	
10 0 20 0								Fre	Man of Offset Hz	
0.00 10.9 20.0			-							
юо юс										
tart 2.466 GHz							Stop 2.556	GHz		
All Range Table	*				Measure Tra Trace Type		Trace Trace Average (Act			
Spur Ra		rt Freq	Stop Freq 2,4905 GHz	RBW 1.000 MHz	Frequency 2.490500000 GHz	Amplitude	ALImit			
234	2 2.49 3 2.49	05 GHz 50 GHz	2.4950 GHz 2.4960 GHz 2.5260 GHz	1.000 MHz 300.0 kHz	2.495000000 GHz 2.496000000 GHz 2.512800000 GHz	-40.57 dBm -41.13 dBm -2.819 dBm	-27.57 dB -28.13 dB -27.82 dB			
5	5 2.52	60 GHz	2.5270 GHz	620.0 kHz	2.526030000 GHz	-38.22 dBm	-28.22 dB			

Plot 7-71. Lower ACP Plot (NR Band n41 - 30MHz CP-OFDM-QPSK - Full RB - Ant1)



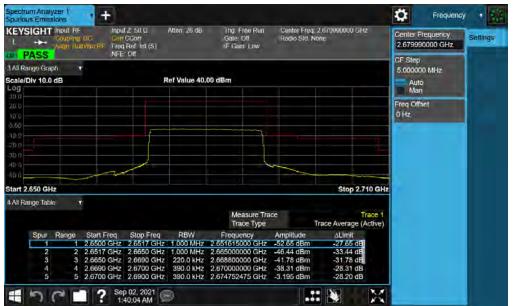
Plot 7-72. Upper ACP Plot (NR Band n41 - 30MHz CP-OFDM-QPSK - Full RB - Ant1)

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	out RF Noima I An Anio	atta (Gon	CCorr Ref. int (S)	Atten 26 dB	Trig. Free Gate: Off (F Gam.)		Center Freq Radio Std: N	2.506020000 Ione	GHz	2.5060	Frequency 20000 GHz	Settings
All Range Graph cale/Div 10.0 dB	•	011 14		ef Value 40.0	00 dBm					CF Ste 5.0000	00 MHz	
.og										Ma		
20.0										Freq OI 0 Hz	lfset	1
0.00										-		
0.0			===lf									
00			f									
100 100												
ha u	-											
tart 2.476 GHz								Stop	2.535 GHz			
All Range Table	Ť											
					Meas Trace	ure Trac Type		Trace Averag	Trace 1 je (Active)			
Spur Ra		Start Freq	Stop Freq	RBW	Frequenc		Amplitude	ALimit				
2			2,4905 GHz 2,4950 GHz	1.000 MHz 1.000 MHz	2.49050000		-46.98 dBm -40.89 dBm	-21.98				
3		2.4950 GHz			2.495975000		-40.19 dBm	-27.19				
4			2.5160 GHz		2.508475248		-2.846 dBm	-27.85				
5	5	2.5160 GHz	2.5170 GHz	390.0 kHz	2.516025000	) GHz	-38.50 dBm	-28,50	dB			

Plot 7-73. Lower ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK - Full RB)



Plot 7-74. Upper ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK - Full RB)

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# 7.5 Radiated Power (EIRP)

#### **Test Overview**

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### Test Procedures Used

KDB 971168 D01 v03r01 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 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. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq$  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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

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The EUT and measurement equipment were set up as shown in the diagram below.

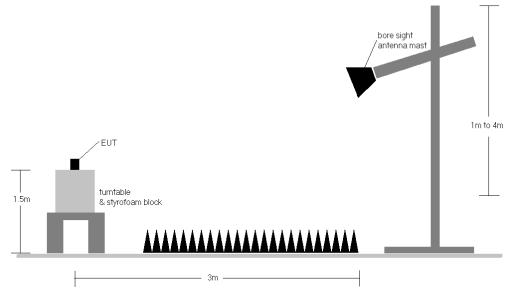


Figure 7-4. Radiated Test Setup >1GHz

#### Test Notes

- 1) The EUT was tested in three orthogonal planes 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 tables below.
- 2) This unit was tested with its standard battery.
- 3) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

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			[H/V]	Height [cm]	Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
N	QPSK	2506.0	н	118	199	9.54	1 / 99	12.93	22.47	0.177	33.01	-10.54
ZHW	QPSK	2593.0	Н	133	200	9.46	1 / 50	12.92	22.38	0.173	33.01	-10.63
20 4	QPSK	2680.0	Н	153	198	9.51	1 / 50	12.12	21.63	0.146	33.01	-11.38
7	16-QAM	2506.0	Н	118	199	9.54	1 / 99	12.17	21.71	0.148	33.01	-11.30
N	QPSK	2503.5	Н	118	199	9.54	1/0	13.16	22.71	0.187	33.01	-10.30
MHz	QPSK	2593.0	Н	133	200	9.46	1 / 74	12.07	21.54	0.142	33.01	-11.47
15 1	QPSK	2682.5	Н	153	198	9.51	1/0	12.25	21.77	0.150	33.01	-11.24
-	16-QAM	2503.5	Н	118	199	9.54	1/0	11.88	21.42	0.139	33.01	-11.59
N	QPSK	2501.0	Н	118	199	9.55	1 / 49	12.72	22.26	0.168	33.01	-10.75
MHz	QPSK	2593.0	Н	133	200	9.46	1 / 49	12.77	22.23	0.167	33.01	-10.78
101	QPSK	2685.0	Н	153	198	9.52	1/0	12.02	21.54	0.142	33.01	-11.47
-	16-QAM	2593.0	Н	133	200	9.46	1/0	11.61	21.07	0.128	33.01	-11.94
N	QPSK	2498.5	Н	118	199	9.53	1 / 12	11.64	21.17	0.131	33.01	-11.84
MHz	QPSK	2593.0	Н	133	200	9.46	1 / 12	11.64	21.10	0.129	33.01	-11.91
2	QPSK	2687.5	Н	153	198	9.52	1/0	10.90	20.43	0.110	33.01	-12.58
47	16-QAM	2498.5	Н	118	199	9.53	1 / 12	11.27	20.80	0.120	33.01	-12.21
20 MHz	Opposite Pol.	2506.0	V	201	166	9.46	1 / 99	10.84	20.30	0.107	33.01	-12.71

Table 7-2. EIRP Data (LTE Band 41(PC3))

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	2546.0	Н	112	198	9.38	1 / 136	12.09	21.47	0.140	33.01	-11.54
N	π/2 BPSK	2593.0	Н	107	198	9.49	1 / 68	11.78	21.27	0.134	33.01	-11.74
100 MHz	π/2 BPSK	2640.0	Н	104	205	9.89	1 / 68	11.18	21.07	0.128	33.01	-11.94
<b>₩</b> 0	QPSK	2546.0	Н	112	198	9.38	1 / 136	11.95	21.33	0.136	33.01	-11.68
10	QPSK	2593.0	Н	107	198	9.49	1 / 68	11.43	20.92	0.124	33.01	-12.09
	QPSK	2640.0	н	104	205	9.89	1 / 68	11.01	20.90	0.123	33.01	-12.11
	16-QAM	2546.0	Н	112	198	9.38	1 / 136	11.30	20.68	0.117	33.01	-12.33
	π/2 BPSK	2541.0	Н	112	198	9.39	1 / 183	12.21	21.60	0.144	33.01	-11.42
	π/2 BPSK	2593.0	Н	107	198	9.49	1 / 183	11.82	21.31	0.135	33.01	-11.70
IH <sup>2</sup>	π/2 BPSK	2645.0	Н	104	205	9.91	1 / 122	11.28	21.19	0.132	33.01	-11.82
90 MHz	QPSK	2541.0	Н	112	198	9.39	1 / 183	11.83	21.21	0.132	33.01	-11.80
6	QPSK	2593.0	Н	107	198	9.49	1 / 183	11.53	21.02	0.126	33.01	-11.99
	QPSK	2645.0	Н	104	205	9.91	1 / 122	11.12	21.03	0.127	33.01	-11.98
	16-QAM	2541.0	Н	112	198	9.39	1 / 183	12.23	21.61	0.145	33.01	-11.40
	π/2 BPSK	2536.0	Н	112	198	9.40	1 / 162	12.19	21.59	0.144	33.01	-11.42
N	π/2 BPSK	2593.0	н	107	198	9.49	1 / 108	11.88	21.37	0.137	33.01	-11.64
80 MHz	π/2 BPSK	2650.0	н	104	205	9.93	1 / 108	11.32	21.26	0.134	33.01	-11.75
20	QPSK	2536.0	Н	112	198	9.40	1 / 162	11.90	21.30	0.135	33.01	-11.71
õ	QPSK	2593.0	н	107	198	9.49	1 / 108	11.50	20.99	0.126	33.01	-12.02
	QPSK	2650.0	Н	104	205	9.93	1 / 108	11.06	21.00	0.126	33.01	-12.01
	16-QAM	2536.0	Н	112	198	9.40	1 / 162	12.33	21.73	0.149	33.01	-11.28
	π/2 BPSK	2526.0	н	112	198	9.43	1 / 121	12.48	21.91	0.155	33.01	-11.10
N	π/2 BPSK	2593.0	Н	107	198	9.49	1 / 40	12.27	21.76	0.150	33.01	-11.25
IH	π/2 BPSK	2660.0	Н	104	205	9.85	1 / 81	11.64	21.49	0.141	33.01	-11.52
60 MHz	QPSK	2526.0	Н	112	198	9.43	1 / 121	12.08	21.51	0.142	33.01	-11.50
6	QPSK	2593.0	Н	107	198	9.49	1 / 40	11.86	21.35	0.137	33.01	-11.66
	QPSK	2660.0	н	104	205	9.85	1 / 81	11.36	21.21	0.132	33.01	-11.80
	16-QAM	2526.0	Н	112	198	9.43	1 / 121	12.58	22.01	0.159	33.01	-11.00
	π/2 BPSK	2521.0	н	112	198	9.45	1/33	12.41	21.86	0.154	33.01	-11.15
Ν	π/2 BPSK	2593.0	Н	107	198	9.49	1/33	12.42	21.92	0.155	33.01	-11.10
50 MHz	π/2 BPSK	2665.0	Н	104	205	9.84	1/33	11.74	21.58	0.144	33.01	-11.43
<b>∠</b> 0	QPSK	2521.0	Н	112	198	9.45	1/33	12.10	21.55	0.143	33.01	-11.46
5	QPSK	2593.0	Н	107	198	9.49	1/33	11.98	21.47	0.140	33.01	-11.54
	QPSK	2665.0	Н	104	205	9.84	1/33	11.53	21.36	0.137	33.01	-11.65
	16-QAM	2593.0	H H	107	198	9.49	1/33	12.60	22.09	0.162	33.01	-10.92
	T/2 BPSK	2516.0	H	112 107	198 198	9.48	1 / 26 1 / 26	12.47	21.95 22.00	0.157	33.01	-11.07
N	π/2 BPSK	2593.0	н			9.49	1 / 26	12.51	22.00	0.159	33.01	-11.01 -11.20
H	π/2 BPSK QPSK	2670.0 2516.0	H	104 112	205 198	9.82 9.48	1 / 26	11.99 12.15	21.62	0.152	33.01 33.01	-11.39
40 MHz			н Н				1 / 26			0.145	33.01	-11.60
4	QPSK QPSK	2593.0 2670.0	H H	107 104	198 205	9.49 9.82	1 / 79	11.92 11.70	21.41 21.52	0.139	33.01	-11.60
	16-QAM	2516.0	Н	104	198	9.62	1 / 26	12.56	21.52 22.04	0.142	33.01	-10.97
	TI/2 BPSK	2516.0	H	112	198	9.40	1 / 26	12.56	21.93	0.160	33.01	-10.97
	π/2 BPSK	2593.0	Н	107	198	9.49	1 / 19	12.42	21.93	0.150	33.01	-11.15
N	π/2 BPSK	2595.0	H	107	205	9.49	1 / 19	12.30	21.60	0.133	33.01	-11.15
MHz	QPSK	2511.0	Н	112	198	9.50	1 / 58	12.11	21.62	0.145	33.01	-11.39
30 1	QPSK	2593.0	Н	107	198	9.49	1 / 19	11.97	21.46	0.140	33.01	-11.55
	QPSK	2675.0	Н	107	205	9.45	1 / 19	11.46	21.40	0.140	33.01	-11.71
	16-QAM	2511.0	Н	112	198	9.50	1 / 58	12.47	21.97	0.157	33.01	-11.04
	π/2 BPSK	2506.0	н	112	198	9.50	1 / 13	12.30	21.80	0.151	33.01	-11.21
	π/2 BPSK	2593.0	н	107	198	9.49	1 / 13	12.30	21.63	0.146	33.01	-11.38
N	π/2 BPSK	2680.0	н	107	205	9.87	1 / 13	11.47	21.34	0.136	33.01	-11.67
20 MHz	QPSK	2506.0	н	112	198	9.50	1 / 13	12.03	21.53	0.142	33.01	-11.48
50	QPSK	2593.0	н	107	198	9.49	1 / 13	11.90	21.39	0.138	33.01	-11.62
	QPSK	2680.0	н	101	205	9.87	1 / 13	11.34	21.00	0.132	33.01	-11.80
	16-QAM	2506.0	Н	112	198	9.50	1 / 13	12.46	21.97	0.157	33.01	-11.04
	QPSK (CP-OFDM)	2546.0	н	112	198	9.38	1 / 136	10.98	20.36	0.109	33.01	-12.65
100 MHz	QPSK (Opposite Pol.)	2546.0	V	322	300	9.38	1 / 136	11.38	20.76	0.119	33.01	-12.25
	( opposito i 0i.)	2010.0	• •				Band n41)		20.10	0.110	00.01	.2.20

Table 7-3. EIRP Data (NR Band n41)

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# 7.6 Radiated Spurious Emissions Measurements

#### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.8

#### **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 = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

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The EUT and measurement equipment were set up as shown in the diagram below.

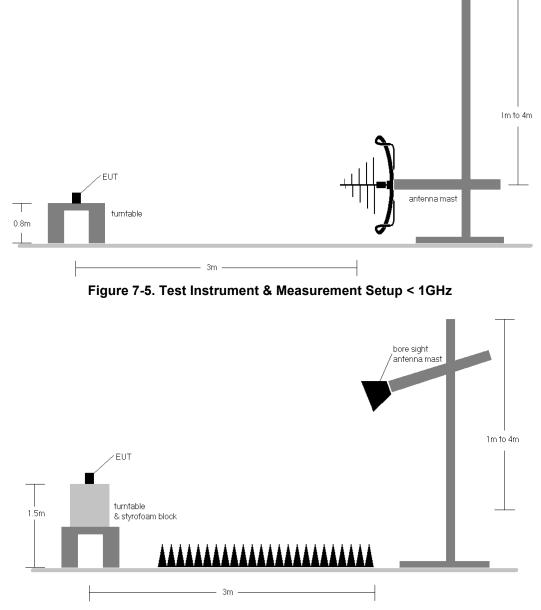


Figure 7-6. Test Instrument & Measurement Setup >1 GHz

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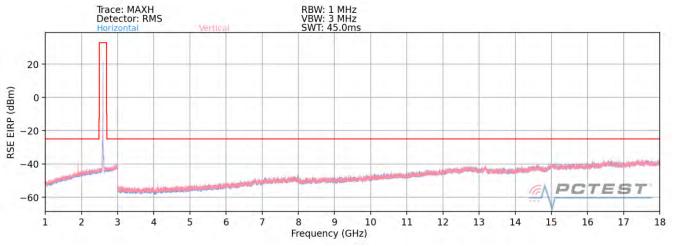


- Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD 104.8; where D is the measurement distance in meters.
- 2) The EUT was tested in three orthogonal planes 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 tables below.
- 3) This unit was tested with its standard battery.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.
- 8) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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# LTE Band 41(PC3)



#### Plot 7-75. Radiated Spurious Plot (LTE Band 41(PC3))

Bandwidth (MHz):	20
Frequency (MHz):	2506.0
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5012.00	Н	-	-	-70.71	7.58	43.87	-51.39	-25.00	-26.39
7518.00	Н	299	26	-70.82	12.54	48.72	-46.53	-25.00	-21.53
10024.00	Н	-	-	-72.51	15.35	49.84	-45.42	-25.00	-20.42
12530.00	Н	-	-	-73.10	19.35	53.25	-42.01	-25.00	-17.01

Table 7-4. Radiated Spurious Data (LTE Band 41(PC3) – Low Channel)

Bandwidth (MHz):		20							
Frequency (MHz):		2593.0							
RB / Offset:		1 / 50							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.00	Н	-	-	-70.71	7.10	43.39	-51.87	-25.00	-26.87
7779.00	Н	346	26	-70.82	12.66	48.84	-46.42	-25.00	-21.42
10372.00	Н	-	-	-72.51	16.05	50.54	-44.72	-25.00	-19.72
12965.00	Н			-73.10	19.52	53.42	-41.84	-25.00	-16.84

Table 7-5. Radiated Spurious Data (LTE Band 41(PC3) – Mid Channel)

FCC ID: PY7-95324M		PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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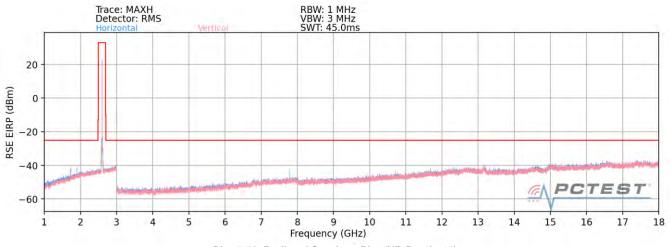
Bandwidth (MHz): Frequency (MHz): RB / Offset:		20 2680.0 1 / 50							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5360.00	Н	-	-	-71.11	8.46	44.35	-50.91	-25.00	-25.91
8040.00	Н	333	19	-70.41	12.71	49.30	-45.95	-25.00	-20.95
10720.00	Н	-	-	-72.64	16.55	50.91	-44.35	-25.00	-19.35
13400.00	Н	-	-	-72.89	20.55	54.66	-40.60	-25.00	-15.60

Table 7-6. Radiated Spurious Data (LTE Band 41(PC3) – High Channel)

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# NR Band n4



Plot 7-76. Radiated Spurious Plot (NR Band n41)

Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.00	Н	-	-	-71.22	7.18	42.96	-52.30	-25.00	-27.30
7638.00	Н	-	-	-70.21	12.88	49.67	-45.59	-25.00	-20.59
10184.00	Н	-	-	-73.21	15.22	49.01	-46.24	-25.00	-21.24
12730.00	Н	- Io 7 7 Padiat	- ad Spurious	-72.22	20.10	54.88	-40.38	-25.00	-15.38

Table 7-7. Radiated Spurious Data (NR Band n41 – Low Channel)

Frequency [MHz]	Ant. Pol.	Antenna Height [cm]	Turntable Azimuth	4	
Mode:	1 / 136 Stand Alone				
 RB / Offset:	1 / 136				
Frequency (MHz):	2593.0				
Bandwidth <mark>(MHz</mark> ):	100				

	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Γ	5186.00	Н	-	-	-70.85	7.10	43.25	-52.01	-25.00	-27.01
Γ	7779.00	Н	301	266	-70.05	12.66	49.61	-45.65	-25.00	-20.65
	10372.00	Н	-	-	-72.82	16.05	50.23	-45.03	-25.00	-20.03
	12965.00	Н	-	-	-71.95	19.52	54.57	-40.69	-25.00	-15.69

Table 7-8. Radiated Spurious Data (NR Band n41 – Mid Channel)

FCC ID: PY7-95324M	PCTEST* Preud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand Alone

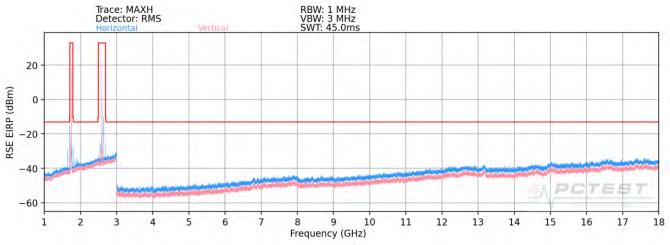
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	Н	-	-	-71.01	7.63	43.62	-51.63	-25.00	-26.63
7920.00	Н	298	255	-69.80	13.91	51.11	-44.15	-25.00	-19.15
10560.00	Н	-	-	-72.78	16.41	50.63	-44.63	-25.00	-19.63
13200.00	Н	-	-	-72.04	20.83	55.79	-39.46	-25.00	-14.46

Table 7-9. Radiated Spurious Data (NR Band n41 – High Channel)

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### NR Band n41 – B66





Bandwidth (MHz):	100 / 20
Frequency (MHz):	2593 / 1745
RB / Offset:	1 / 135 & 1 / 53
Mode:	EN-DC
Anchor Band:	LTE Band 66

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1647.00	Н	-	-	-70.21	9.55	46.34	-48.92	-13.00	-35.92
3441.00	Н	-	-	-68.99	15.22	53.23	-42.03	-13.00	-29.03
4289.00	Н	-	-	-70.12	16.27	53.15	-42.11	-13.00	-29.11
5137.00	Н	-	-	-72.06	17.35	52.29	-42.97	-13.00	-29.97

Table 7-10. Radiated Spurious Data (NR Band n41 - B66)

FCC ID: PY7-95324M		PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 70
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# 7.7 Frequency Stability / Temperature Variation

#### Test Overview and Limit

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.

#### Test Procedure Used

ANSI/TIA-603-E-2016

#### **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.

#### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

#### Test Notes

None

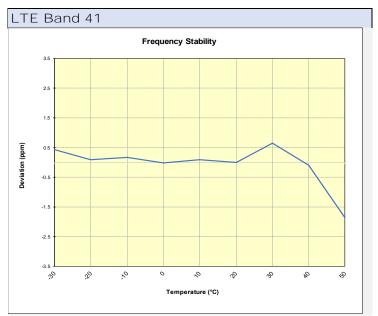
FCC ID: PY7-95324M		PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 67 of 70
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# LTE Band B41

LTE Band 41						
	Operating F	requency (Hz):	2,593,00	0,000	T	
	Ref.	Voltage (VDC):	3.86	3	1	
					-	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	
	3.86	- 30	2,593,049,336	1,115	0.0000430	
		- 20	2,593,048,457	236	0.0000091	
		- 10	2,593,048,665	444	0.0000171	
		0	2,593,048,199	-22	-0.000008	
100 %		+ 10	2,593,048,474	253	0.0000098	
		+ 20 (Ref)	2,593,048,221	0	0.0000000	
		+ 30	2,593,049,919	1,698	0.0000655	
		+ 40	2,593,047,999	-222	-0.000086	
		+ 50	2,593,043,395	-4,826	-0.0001861	
Battery Endpoint	3.32	+ 20	2,593,048,199	-22	-0.000008	

Table 7-11. LTE Band B41 Frequency Stability Data



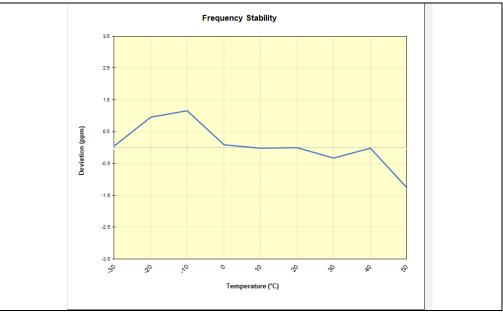
Plot 7-78. LTE Band B41 Frequency Stability Chart

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NR Band n41						
	Operating F	requency (Hz):	2,593,00	0,000		
	Ref.	Voltage (VDC):	3.86	6		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)	
		- 30	2,593,048,226	115	0.0000044	
		- 20	2,593,050,597	2,486	0.0000959	
		- 10	2,593,051,125	3,014	0.0001162	
		0	2,593,048,352	241	0.0000093	
100 %	3.86	+ 10	2,593,048,089	-22	-0.000008	
		+ 20 (Ref)	2,593,048,111	0	0.0000000	
		+ 30	2,593,047,269	-842	-0.0000325	
		+ 40	2,593,048,079	-32	-0.0000012	
		+ 50	2,593,044,846	-3,265	-0.0001259	
Battery Endpoint	3.32	+ 20	2,593,049,703	1,592	0.0000614	

Table 7-12. NR Band n41 Frequency Stability Data



Plot 7-79. NR Band n41 Frequency Stability Chart

FCC ID: PY7-95324M	PCTEST Proud to be part of @element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
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# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the SONY **Portable Handset FCC ID: PY7-95324M** complies with all the requirements of Part 27 of the FCC rules.

FCC ID: PY7-95324M	PCTEST* Proud to be part of @ element	PART 27 MEASUREMENT REPORT	SONY	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 70 of 70
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