



RADIO TEST REPORT

Test Report No.: 14443577H

Customer	Panasonic Corporation of North America
Description of EUT	Radio Module (Tested inside of Panasonic Personal Computer FZ-G2)
Model Number of EUT	WW21A
FCC ID	ACJ9TGWW21A
Test Regulation	FCC Part 27
Test Result	Complied (Refer to SECTION 3)
Issue Date	October 18, 2022
Remarks	-

Representative Test Engineer	Approved By
	
Tetsuro Yoshida Engineer	Takayuki Shimada Leader
 	
CERTIFICATE 5107.02	
☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.	
☒ There is no testing item of "Non-accreditation".	

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REVISION HISTORY

Original Test Report No.: 14443577H

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14443577H	October 18, 2022	-

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	ICES	Interference-Causing Equipment Standard
AC	Alternating Current	IEC	International Electrotechnical Commission
AFH	Adaptive Frequency Hopping	IEEE	Institute of Electrical and Electronics Engineers
AM	Amplitude Modulation	IF	Intermediate Frequency
Amp, AMP	Amplifier	ILAC	International Laboratory Accreditation Conference
ANSI	American National Standards Institute	ISED	Innovation, Science and Economic Development Canada
Ant, ANT	Antenna	ISO	International Organization for Standardization
AP	Access Point	JAB	Japan Accreditation Board
ASK	Amplitude Shift Keying	LAN	Local Area Network
Atten., ATT	Attenuator	LIMS	Laboratory Information Management System
AV	Average	MCS	Modulation and Coding Scheme
BPSK	Binary Phase-Shift Keying	MRA	Mutual Recognition Arrangement
BR	Bluetooth Basic Rate	N/A	Not Applicable
BT	Bluetooth	NIST	National Institute of Standards and Technology
BT LE	Bluetooth Low Energy	NS	No signal detect.
BW	BandWidth	NSA	Normalized Site Attenuation
Cal Int	Calibration Interval	NVLAP	National Voluntary Laboratory Accreditation Program
CCK	Complementary Code Keying	OBW	Occupied Band Width
Ch., CH	Channel	OFDM	Orthogonal Frequency Division Multiplexing
CISPR	Comité International Special des Perturbations Radioelectriques	P/M	Power meter
CW	Continuous Wave	PCB	Printed Circuit Board
DBPSK	Differential BPSK	PER	Packet Error Rate
DC	Direct Current	PHY	Physical Layer
D-factor	Distance factor	PK	Peak
DFS	Dynamic Frequency Selection	PN	Pseudo random Noise
DQPSK	Differential QPSK	PRBS	Pseudo-Random Bit Sequence
DSSS	Direct Sequence Spread Spectrum	PSD	Power Spectral Density
EDR	Enhanced Data Rate	QAM	Quadrature Amplitude Modulation
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QP	Quasi-Peak
EMC	ElectroMagnetic Compatibility	QPSK	Quadri-Phase Shift Keying
EMI	ElectroMagnetic Interference	RBW	Resolution Band Width
EN	European Norm	RDS	Radio Data System
ERP, e.r.p.	Effective Radiated Power	RE	Radio Equipment
EU	European Union	RF	Radio Frequency
EUT	Equipment Under Test	RMS	Root Mean Square
Fac.	Factor	RSS	Radio Standards Specifications
FCC	Federal Communications Commission	Rx	Receiving
FHSS	Frequency Hopping Spread Spectrum	SA, S/A	Spectrum Analyzer
FM	Frequency Modulation	SG	Signal Generator
Freq.	Frequency	SVSWR	Site-Voltage Standing Wave Ratio
FSK	Frequency Shift Keying	TR	Test Receiver
GFSK	Gaussian Frequency-Shift Keying	Tx	Transmitting
GNSS	Global Navigation Satellite System	VBW	Video BandWidth
GPS	Global Positioning System	Vert.	Vertical
Hori.	Horizontal	WLAN	Wireless LAN

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SECTION 1: Customer information

Company Name	Panasonic Corporation of North America
Address	Two Riverfront Plaza, 9th Floor Newark, NEW JERSEY, 07102-5940, USA
Telephone Number	+1-201-348-7760
Contact Person	Ben Botros

*Remarks:

Panasonic Connect Co., Ltd. is on behalf of the applicant: Panasonic Corporation of North America (Company incorporated abroad).

The information provided from the customer is as follows;

- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

* The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Description	Radio Module
Model Number	WW21A
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	June 22, 2021 tested in 2021 June 16, 2022 (for AT*) and August 4, 2022 (for RE*) tested in 2022
Test Date	December 9, 2021 to September 29, 2022

*AT: Antenna Terminal Conducted tests, RE: Radiated Spurious Emission test

2.2 Product Description

General Specification

Rating	DC 3.0 V to 3.6 V
Operating temperature	-20 deg. C to 50 deg. C

Radio Specification

Wireless technologies	Dup.	Band	Mode
WCDMA	FDD		2 UMTS Rel. 99 (Data) HSDPA (Rel. 5)
	FDD		4 HSUPA (Rel. 6), HSPA+ (Rel. 7), DC-HSDPA (Rel. 8)
	FDD		5
LTE	FDD		2 QPSK, 16QAM, 64AQM, 256QAM
	FDD		4
	FDD		5
	FDD		7 Downlink MIMO Support: Yes(2x2, 4x4)
	FDD		12 Supported band : B2, B4, B7, B25, B38, B41, B42, B48, B66
	FDD		13
	FDD		14 Uplink MIMO Support: No
	FDD		17 Uplink transmission is limited to a single output stream.
	FDD		25
	FDD		26
	FDD(RX only)		29
	TDD		38
	TDD		41
	TDD		42
	TDD(Rx only)		46
	TDD		48
	FDD		66
	FDD		71
LTE CA	Downlink		Uplink
	Maximum 7 carriers		*B42: not used in US (FCC) / B48: not used in Canada(ISED)
5G NR (FR1)	FDD	15 kHz	n2 Pi/2 BPSK (DFT-s-OFDM),
	FDD	15 kHz	n5 QPSK (CP-OFDM/DFT-s-OFDM),
	TDD	15 kHz	n41 16QAM (CP-OFDM/DFT-s-OFDM),
	FDD	15 kHz	n66 64QAM (CP-OFDM/DFT-s-OFDM),
	FDD	15 kHz	n71 256QAM (CP-OFDM/DFT-s-OFDM)
	TDD	30 kHz	n77 Downlink MIMO Support: Yes(2x2, 4x4)
	TDD	30 kHz	n78 Supported band : n2, n41, n66, n77, n78
	-	-	Uplink MIMO Support: No
	-	-	Uplink transmission is limited to a single output stream.
	-	-	
EN-DC(LTE-FR1 Sub6) (NSA mode only)	Supported combination		*n78: not used in US (FCC)
	LTE Anchor Bands for NR band n2		LTE Band 5/12/13
	LTE Anchor Bands for NR band n5		LTE Band 2/7/66
	LTE Anchor Bands for NR band n41		LTE Band 2/25/26/66
	LTE Anchor Bands for NR band n66		LTE Band 5/12/13/14/71
	LTE Anchor Bands for NR band n71		LTE Band 2/7/66
	LTE Anchor Bands for NR band n77		LTE Band 41
	LTE Anchor Bands for NR band n78*		LTE Band 2/5/7/12/38/66

*This test report applies to Sub6 n77 part only.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	FCC Part 27 The latest version on the first day of the testing period
Title	FCC 47CFR Part 27 MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES Subpart C Technical Standards

3.2 Procedures and results

Part 27

Item	Test Specification & Procedure	Remarks	Deviation	Worst margin	Results
RF Output Power(Conducted) (Conducted Output Power / Equivalent isotropic radiated power(EIRP))	FCC 2.1046 FCC 27.50	Conducted	N/A	-	Complied a)
Peak to Average power Ratio	FCC 27.50	Conducted	N/A	-	Complied b)
Emission Bandwidth, 99 % Occupied Bandwidth	FCC 2.1049	Conducted	N/A	-	Complied c)
Band-Edge	FCC 2.1051 FCC 2.1053 FCC 27.53	Conducted/ Radiated	N/A	-	Complied d)
Spurious Emission(Conducted)	FCC 2.1051 FCC 27.53	Conducted	N/A	-	Complied e)
Spurious Emission(Radiated)	FCC 2.1053 FCC 27.53	Radiated	N/A	3.9 dB 11373.000 MHz Vertical, PK	Complied f)
Frequency Stability (Temperature Variation)	FCC 2.1055 FCC 27.54	Conducted	N/A	-	Complied g)
Frequency Stability (Voltage Variation)	FCC 2.1055 FCC 27.54	Conducted	N/A	-	Complied g)

Note: UL Japan's EMI Work Procedures No. 13-EM-W0420

*These tests were also referred to ANSI/C63.26:2015 "American National Standard for Compliance Testing of Transmitters Used in the Licensed Radio Services".

*These tests were also referred to KDB 971168 D01 "Power Meas License Digital Systems v03r01", KDB 971168 D02 "Misc Rev Approv License Devices v02r01" and KDB 442401.

*These tests were performed without any deviations from test procedure except for additions or exclusions.

a) Refer to APPENDIX 1 (RF Output Power (Conducted))

b) Refer to APPENDIX 1 (Peak to Average Power Ratio (Conducted))

c) Refer to APPENDIX 1 (99% and 26dB Occupied Bandwidth)

d) Refer to APPENDIX 1 (Out of Band Emission (Conducted))

e) Refer to APPENDIX 1 (Spurious Emission (Conducted))

f) Refer to APPENDIX 1 (Spurious Emission (Radiated))

g) Refer to APPENDIX 1 (Frequency Stability (Temperature / Voltage Variation))

3.3 Addition to Standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the results are derived depending on whether or not laboratory uncertainty is applied.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Radiated emission

Measurement distance	Frequency range		Uncertainty (+/-)
3 m	9 kHz to 30 MHz		3.2 dB
10 m			3.0 dB
3 m	30 MHz to 200 MHz	Horizontal	4.8 dB
		Vertical	5.0 dB
	200 MHz to 1000 MHz	Horizontal	5.1 dB
		Vertical	6.2 dB
10 m	30 MHz to 200 MHz	Horizontal	4.8 dB
		Vertical	4.8 dB
	200 MHz to 1000 MHz	Horizontal	5.0 dB
		Vertical	5.0 dB
3 m	1 GHz to 6 GHz		4.9 dB
	6 GHz to 18 GHz		5.2 dB
1 m	10 GHz to 26.5 GHz		5.4 dB
	26.5 GHz to 40 GHz		5.4 dB
10 m	1 GHz to 18 GHz		5.4 dB

Antenna Terminal test

Test Item	Uncertainty (+/-)
26 dB Emission Bandwidth / 6 dB Emission Bandwidth / 99 % Occupied Bandwidth	0.96 %
Maximum Conducted Output Power / Average Output Power	1.5 dB
Burst Rate	0.10 %
Maximum Power Spectral Density	2.7 dB
Conducted Spurious Emission	2.7 dB

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919

ISED Lab Company Number: 2973C / CAB identifier: JP0002

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 Japan

Telephone: +81-596-24-8999

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0 m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s) for 5G NR

<5G NR Band n77> (Part 27: For mobile operations in the 3450-3550 MHz band)

Test Item	Operating mode	Power Control	NR Band	Bandwidth (MHz)	Tested Frequency (MHz)			RB Allocation / Offset	OFDM	Modulation
					Low	Mid	High			
RF output Power (Conducted)	Transmitting	MAX	n77	100	3500.01			1RB / Low, Mid, High 50% RB / Low, Mid, High Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	90	3495.00					
			n77	80	3490.02					
			n77	60	3480.00					
			n77	50	3475.02					
			n77	40	3470.01					
			n77	20	3460.02					
			n77	90		3500.01	3525.00	*Worst RB configuration mode tested on the low channel was selected	CP-OFDM	QPSK
			n77	80		3500.01	3504.99			
			n77	60		3500.01	3510.00			
			n77	50		3500.01	3519.99			
			n77	40		3500.01	3529.98			
			n77	20		3500.01	3540.00			
n77	20	3500.01	3540.00							
Peak to Average Power Ratio (Conducted)	Transmitting	MAX	n77	100	3500.01			Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	90	3495.00					
			n77	80	3490.02					
			n77	60	3480.00					
			n77	50	3475.02		CP-OFDM		QPSK	
			n77	40	34701.00					
			n77	20	3460.02					
Occupied bandwidth (Conducted)	Transmitting	MAX	n77	100, 90, 80, 60, 50, 40, 20	3500.01			Full RB	CP-OFDM	QPSK, 16QAM, 64QAM, 256QAM
			n77	60	3500.01			Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	60	3500.01			Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
Out of Band Emissions (Conducted)	Transmitting	MAX	n77	100	3500.01			1RB / Low, High Full RB	DFT-s-OFDM	PI/2 BPSK * All modes of operation were investigated and the worst case emissions were reported
			n77	90	3495.00	-	3504.99			
			n77	80	3490.02	-	3510.00			
			n77	60	3480.00	-	3519.99			
			n77	50	3475.02	-	3525.00			
			n77	40	3470.01	-	3529.98			
			n77	20	3460.02	-	3540.00			
			n77	20	3460.02	-	3540.00			
Spurious Emission (Conducted)	Transmitting	MAX	n77	100	3500.01			*Tested with the worst power configuration mode for each bandwidth		
			n77	90	3495.00	3500.01	3504.99			
			n77	80	3490.02	3500.01	3510.00			
			n77	60	3480.00	3500.01	3519.99			
			n77	50	3475.02	3500.01	3525.00			
			n77	40	3470.01	3500.01	3529.98			
			n77	20	3460.02	3500.01	3540.00			
			n77	20	3460.02	3500.01	3540.00			
Spurious Emission (Radiated)	Transmitting	MAX	n77	100	3500.01			1RB / Low, DFT-s-OFDM, 64QAM * All modes of operation were investigated and the worst case emissions were reported with the modulation, RB sizes and offsets, and channel bandwidth configurations.		
Frequency Stability (Temperature/Voltage Variation) (Conducted)	Transmitting	MAX	n77	100		3500.01		Full RB	DFT-s-OFDM	PI/2 BPSK * Since there was no significant difference in frequency fluctuation for each modulation or bandwidth, a typical mode was selected.

<5G NR Band n77> (Part 27: For mobile operations in the 3700-3980 MHz band)

Test Item	Operating mode	Power Control	NR Band	Bandwidth (MHz)	Tested Frequency (MHz)			RB Allocation / Offset	OFDM	Modulation
					Low	Mid	High			
RF output Power (Conducted)	Transmitting	MAX	n77	100	3750.00			1RB / Low, Mid, High 50% RB / Low, Mid, High Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	90	3745.02					
			n77	80	3740.01					
			n77	60	3730.02					
			n77	50	3725.01					
			n77	40	3720.00					
			n77	20	3710.01					
			n77	100		3840.00	3930.00	*Worst RB configuration mode tested on the low channel was selected	CP-OFDM	QPSK
			n77	90		3840.00	3934.98			
			n77	80		3840.00	3939.99			
			n77	60		3840.00	3949.98			
			n77	50		3840.00	3954.99			
			n77	40		3840.00	3960.00			
			n77	20		3840.00	3969.99			
			n77	100	3750.00			Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	90	3745.02					
			n77	80	3740.01					
			n77	60	3730.02					
			n77	50	3725.01					
			n77	40	3720.00					
			n77	20	3710.01					
			n77	100, 90, 80, 60, 50, 40, 20	3840.00			Full RB	CP-OFDM	QPSK, 16QAM, 64QAM, 256QAM
			n77	60	3840.00					
			n77	60	3840.00			Full RB	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
			n77	60	3840.00					
			n77	100	3750.00	-	3930.00	1RB / Low, High Full RB	DFT-s-OFDM	PI/2 BPSK *All modes of operation were investigated and the worst case emissions were reported
			n77	90	3745.02	-	3934.98			
			n77	80	3740.01	-	3939.99			
			n77	60	3730.02	-	3949.98			
			n77	50	3725.01	-	3954.99			
			n77	40	3720.00	-	3960.00			
			n77	20	3710.01	-	3969.99			
Spurious Emission (Conducted)	Transmitting	MAX	n77	100	3750.00	3840.00	3930.00	*Tested with the worst power configuration mode for each bandwidth		
			n77	90	3745.02	3840.00	3934.98			
			n77	80	3740.01	3840.00	3939.99			
			n77	60	3730.02	3840.00	3949.98			
			n77	50	3725.01	3840.00	3954.99			
			n77	40	3720.00	3840.00	3960.00			
			n77	20	3710.01	3840.00	3969.99			
Spurious Emission (Radiated)	Transmitting	MAX	n77	100	3750.00	3840.00	3930.00	1RB / Low, DFT-s-OFDM, 64QAM *All modes of operation were investigated and the worst case emissions were reported with the modulation, RB sizes and offsets, and channel bandwidth configurations.		
			n77	100	3750.00	3840.00	3930.00			
Frequency Stability (Temperature/Voltage Variation) (Conducted)	Transmitting	MAX	n77	100		3840.00		Full RB	DFT-s-OFDM	PI/2 BPSK * Since there was no significant difference in frequency fluctuation for each modulation or bandwidth, a typical mode was selected.
			n77	100		3840.00				

*Power of the EUT was set by the software as follows;

Power settings: Sub6: AT^{*1)}: 23.5 dBm
RE^{*1)}: 23.5 dBm

Software: Qualcomm Radio Control Toolkit (Ver.4.0)

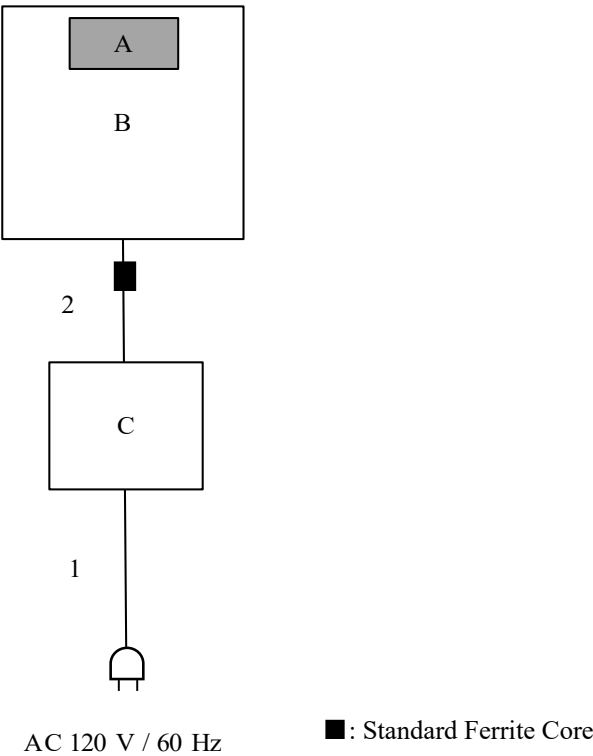
*This setting of software is the worst case.

Any conditions under the normal use do not exceed the condition of setting.

In addition, end users cannot change the settings of the output power of the product.

*1) AT: Antenna terminal conducted tests, RE: Radiated emission tests

4.2 Configuration and peripherals



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Radio Module	WW21A	*1)	Panasonic Connect Co., Ltd.	EUT
B	Personal Computer	FZG2-MK2DVT	2CTSA00754 *2) 2CTSA00740 *3) 0LTSA00731 *4)	Panasonic Connect Co., Ltd.	-
C	AC Adaptor	CF-AA5713A M6	5713AM6195000963WB	Panasonic Connect Co., Ltd.	-

- *1) This item is controlled with B: Personal Computer.
*2) Used for Spurious Emission (Radiated) test
*3) Used for all tests other than Spurious Emission (Radiated) test and Frequency Stability test
*4) Used for Frequency Stability test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	AC Cable	2.0	Unshielded	Unshielded	-
2	DC Cable	1.5	Unshielded	Unshielded	-

SECTION 5: RF Output Power (Conducted)

Test Procedure

All measurements are performed as RMS average measurements while the EUT is operating at maximum duty cycle, at maximum power, and at the appropriate frequencies.

[Conducted: Conducted Output Power]

The RF output power (conducted) was measured with a Power Meter and an attenuator at the antenna port.

All modes of operation were investigated and the worst case powers/emissions are reported with the modulation, RB sizes and offsets, and channel bandwidth configurations.

§ 27.50 Power limits and duty cycle.

(j)(3) Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

Sample calculations

Below 1 GHz: $\text{dBm}[\text{erp}] = \text{Reading}[\text{dBm}] + \text{Ant gain}[\text{dBd}]$

Above 1 GHz: $\text{dBm}[\text{eirp}] = \text{Reading}[\text{dBm}] + \text{Ant gain}[\text{dBi}]$

(reading includes the losses such as cable or attenuator or combiners etc.)

Test data : **APPENDIX**
Test result : **Pass**

SECTION 6: Peak to Average Power Ratio(Conducted)

To demonstrate compliance with PAPR limits, power meters were used to measure peak and average power, and these measurements were applied to the following equations:

$$\text{PAPR (dB)} = P_{\text{Pk}} (\text{dBm or dBW}) - P_{\text{Avg}} (\text{dBm or dBW})$$

where

PAPR peak-to-average power ratio, in dB

P_{Pk} measured peak power or peak PSD level, in dBm or dBW

P_{Avg} measured average power or average PSD level, in dBm or dBW

Limit : 13dB

Test data : **APPENDIX**

Test result : **Pass**

SECTION 7: Occupied Bandwidth and 26dB Emission Bandwidth

Function of OBW of the spectrum analyzer is used.

Setting of the spectrum analyzer : RBW at least one percent of the span, VBW $\geq 3 * \text{RBW}$

Limit : not specified

Result : 99% and -26dB bandwidth value.

Test data : **APPENDIX**

Test result : **Only reported**

SECTION 8: Spurious Emission

§ 27.53 Emission limits.

(l)(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. 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.

(n)(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. 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.

Test Procedure

[Conducted: Out of Band Emission]

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

All modes of operation (modulation and data rate) were investigated and the worst case emissions are reported with the modulation, RB sizes and offsets, and channel bandwidth configurations.

The spectrum analyzer was configured to acquire data only over durations when the EUT is actively transmitting at full power.

(i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power)

Test data : **APPENDIX**
Test result : **Pass**

[Radiated: Spurious Emission]

[For below 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beam width of the antenna.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

Test Antennas are used as below;

Frequency	Below 30 MHz	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Setting of the spectrum analyzer:

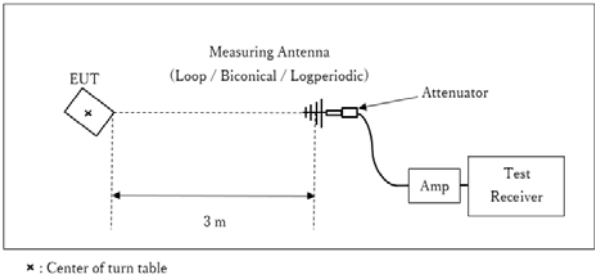
below 1 GHz PK : RBW 100 kHz VBW 300 kHz

above 1 GHz PK : RBW 1 MHz VBW 3 MHz

AV: RBW 1 MHz VBW 3 MHz, RMS PAve 100 trace

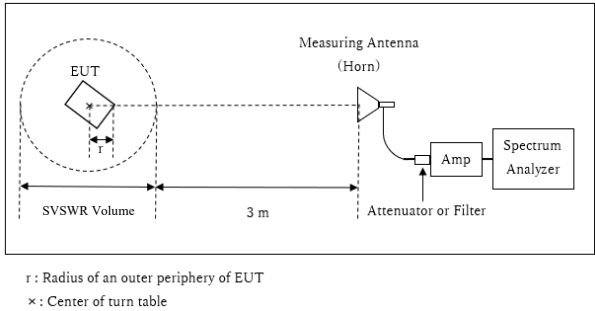
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

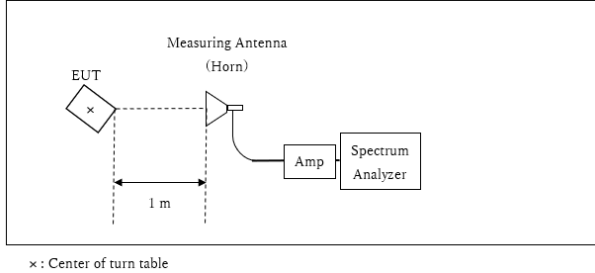
1 GHz to 10 GHz



Distance Factor: $20 \times \log (3.85 \text{ m} / 3.0 \text{ m}) = 2.17 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.85 \text{ m}$

SVSWR Volume : 4.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.1 \text{ m}$

10 GHz to 40 GHz



Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$
*Test Distance: 1 m

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range	: 30 MHz to 40 GHz
Test data	: APPENDIX
Test result	: Pass

SECTION 9: Frequency Stability(Temperature/Voltage Variation)

Test Procedure

The Frequency Stability was measured with a Wireless Communication Test Set and attenuator connected to the antenna port.

The Frequency Drift was measured with the 10 deg. C steps from -30 deg. C to 50 deg. C, and it is presented as the ppm unit. The Frequency Drift was measured with the normal temperature (20 deg. C) and Voltage tolerance, and it is presented as the ppm unit.

Temperature : -20 deg. C to +50 deg. C (10 deg. C step)
(EUT doesn't work at -30 deg. C)
Voltage : For other than hand carried battery equipment
Primary supply voltage from 85 % to 115 % of the nominal voltage.
Vnom: AC 120 V, Vmin: AC 102 V, Vmax: AC 138 V
For hand carried battery powered equipment
Battery operating end point

Frequency Stability test was performed under the above condition.

Limit

§ 2.1055 Frequency stability

Fundamental emission stay within authorized frequency block.

Limit

§ 27.54 Frequency stability.

§ 2.1055 Frequency stability

Test data : **APPENDIX**

Test result : **Pass**

APPENDIX 1: Test data

RF Output Power (Conducted)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.8
Date	September 5, 2022
Temperature / Humidity	22 deg. C / 68 % RH
Engineer	Tetsuro Yoshida
Mode	NR Band n77 100 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band n77												
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
100	633334 Low	3500.01	30	DFTS-OFDM	PI/2 BPSK	1	0	22.34	2.30	24.64	30.00	5.36
						1	1	22.83	2.30	25.13	30.00	4.87
						1	271	22.80	2.30	25.10	30.00	4.90
						1	272	22.22	2.30	24.52	30.00	5.48
						135	69	22.80	2.30	25.10	30.00	4.90
						270	0	22.24	2.30	24.54	30.00	5.46
					QPSK	1	0	21.92	2.30	24.22	30.00	5.78
						1	1	22.94	2.30	25.24	30.00	4.76
						1	271	22.77	2.30	25.07	30.00	4.93
						1	272	21.80	2.30	24.10	30.00	5.90
						135	69	22.77	2.30	25.07	30.00	4.93
						270	0	21.71	2.30	24.01	30.00	5.99
					16QAM	1	0	20.83	2.30	23.13	30.00	6.87
						1	1	21.86	2.30	24.16	30.00	5.84
						1	271	21.72	2.30	24.02	30.00	5.98
						1	272	20.97	2.30	23.27	30.00	6.73
						135	69	21.75	2.30	24.05	30.00	5.95
						270	0	20.73	2.30	23.03	30.00	6.97
					64QAM	1	0	20.58	2.30	22.88	30.00	7.12
						1	1	20.57	2.30	22.87	30.00	7.13
						1	271	20.45	2.30	22.75	30.00	7.25
						1	272	20.43	2.30	22.73	30.00	7.27
						135	69	20.23	2.30	22.53	30.00	7.47
						270	0	20.22	2.30	22.52	30.00	7.48
					256QAM	1	0	18.54	2.30	20.84	30.00	9.16
						1	1	18.55	2.30	20.85	30.00	9.15
						1	271	18.41	2.30	20.71	30.00	9.29
						1	272	18.45	2.30	20.75	30.00	9.25
						135	69	18.18	2.30	20.48	30.00	9.52
						270	0	18.13	2.30	20.43	30.00	9.57
				CP-OFDM	QPSK	1	1	21.39	2.30	23.69	30.00	6.31

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 6, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 90 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band n77													
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	
90	633000 Low	3495	30	DFTS-OFDM	PI/2 BPSK	1	0	22.38	2.30	24.68	30.00	5.32	
						1	1	22.98	2.30	25.28	30.00	4.72	
						1	243	22.75	2.30	25.05	30.00	4.95	
						1	244	22.24	2.30	24.54	30.00	5.46	
						120	63	22.77	2.30	25.07	30.00	4.93	
						243	0	22.22	2.30	24.52	30.00	5.48	
					QPSK	1	0	21.84	2.30	24.14	30.00	5.86	
						1	1	22.92	2.30	25.22	30.00	4.78	
						1	243	22.79	2.30	25.09	30.00	4.91	
						1	244	21.68	2.30	23.98	30.00	6.02	
						120	63	22.78	2.30	25.08	30.00	4.92	
						243	0	21.66	2.30	23.96	30.00	6.04	
					16QAM	1	0	20.80	2.30	23.10	30.00	6.90	
						1	1	21.81	2.30	24.11	30.00	5.89	
						1	243	21.66	2.30	23.96	30.00	6.04	
						1	244	20.54	2.30	22.84	30.00	7.16	
						120	63	21.76	2.30	24.06	30.00	5.94	
						243	0	20.69	2.30	22.99	30.00	7.01	
					64QAM	1	0	20.36	2.30	22.66	30.00	7.34	
						1	1	20.37	2.30	22.67	30.00	7.33	
						1	243	20.24	2.30	22.54	30.00	7.46	
						1	244	20.23	2.30	22.53	30.00	7.47	
						120	63	20.16	2.30	22.46	30.00	7.54	
						243	0	20.17	2.30	22.47	30.00	7.53	
					256QAM	1	0	18.36	2.30	20.66	30.00	9.34	
						1	1	18.37	2.30	20.67	30.00	9.33	
						1	243	18.27	2.30	20.57	30.00	9.43	
						1	244	18.28	2.30	20.58	30.00	9.42	
						120	63	18.20	2.30	20.50	30.00	9.50	
						243	0	18.15	2.30	20.45	30.00	9.55	
				CP-OFDM	QPSK	1	1	21.44	2.30	23.74	30.00	6.26	
	633334 Mid	3500.01	30	DFTS-OFDM	PI/2 BPSK	1	1	22.97	2.30	25.27	30.00	4.73	
						1	1	22.87	2.30	25.17	30.00	4.83	
						16QAM	1	1	21.86	2.30	24.16	30.00	5.84
						64QAM	1	1	20.35	2.30	22.65	30.00	7.35
						256QAM	1	1	18.35	2.30	20.65	30.00	9.35
					CP-OFDM	QPSK	1	1	21.41	2.30	23.71	30.00	6.29
	633666 High	3504.99	30	DFTS-OFDM	PI/2 BPSK	1	1	22.98	2.30	25.28	30.00	4.72	
						QPSK	1	1	22.90	2.30	25.20	30.00	4.80
						16QAM	1	1	21.82	2.30	24.12	30.00	5.88
						64QAM	1	1	20.32	2.30	22.62	30.00	7.38
						256QAM	1	1	18.27	2.30	20.57	30.00	9.43
				CP-OFDM	QPSK	1	1	21.38	2.30	23.68	30.00	6.32	

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 6, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 80 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band n77		UL	Freq.	SCS	OFDM	Modu-	UL RB	UL RB	Conducted Pwr	Ant. Gain	EIRP	EIRP Limit	Margin
BW	Ch #	(MHz)	(kHz)			lation	Allocation	Start	Avg (dBm)	(dBi)	(dBm)	(dBm)	(dB)
80	632668 Low	3490.02	30	DFTS-OFDM	PI/2 BPSK		1	0	22.43	2.30	24.73	30.00	5.27
							1	1	22.94	2.30	25.24	30.00	4.76
							1	215	22.78	2.30	25.08	30.00	4.92
							1	216	22.18	2.30	24.48	30.00	5.52
							108	55	22.84	2.30	25.14	30.00	4.86
							216	0	22.30	2.30	24.60	30.00	5.40
					QPSK		1	0	21.80	2.30	24.10	30.00	5.90
							1	1	22.87	2.30	25.17	30.00	4.83
							1	215	22.69	2.30	24.99	30.00	5.01
							1	216	21.67	2.30	23.97	30.00	6.03
							108	55	22.81	2.30	25.11	30.00	4.89
							216	0	21.78	2.30	24.08	30.00	5.92
					16QAM		1	0	20.80	2.30	23.10	30.00	6.90
							1	1	21.83	2.30	24.13	30.00	5.87
							1	215	21.61	2.30	23.91	30.00	6.09
							1	216	20.55	2.30	22.85	30.00	7.15
							108	55	21.79	2.30	24.09	30.00	5.91
							216	0	20.73	2.30	23.03	30.00	6.97
					64QAM		1	0	20.35	2.30	22.65	30.00	7.35
							1	1	20.39	2.30	22.69	30.00	7.31
							1	215	20.21	2.30	22.51	30.00	7.49
							1	216	20.21	2.30	22.51	30.00	7.49
							108	55	20.24	2.30	22.54	30.00	7.46
							216	0	20.21	2.30	22.51	30.00	7.49
					256QAM		1	0	18.42	2.30	20.72	30.00	9.28
							1	1	18.34	2.30	20.64	30.00	9.36
							1	215	18.23	2.30	20.53	30.00	9.47
							1	216	18.24	2.30	20.54	30.00	9.46
							108	55	18.16	2.30	20.46	30.00	9.54
							216	0	18.13	2.30	20.43	30.00	9.57
	633334 Mid	3500.01	30	CP-OFDM	QPSK		1	1	21.36	2.30	23.66	30.00	6.34
				DFTS-OFDM	PI/2 BPSK		1	1	22.96	2.30	25.26	30.00	4.74
					QPSK		1	1	22.84	2.30	25.14	30.00	4.86
					16QAM		1	1	21.82	2.30	24.12	30.00	5.88
					64QAM		1	1	20.33	2.30	22.63	30.00	7.37
					256QAM		1	0	18.44	2.30	20.74	30.00	9.26
	634000 High	3510	30	CP-OFDM	QPSK		1	1	21.32	2.30	23.62	30.00	6.38
				DFTS-OFDM	PI/2 BPSK		1	1	22.95	2.30	25.25	30.00	4.75
					QPSK		1	1	22.81	2.30	25.11	30.00	4.89
					16QAM		1	1	21.85	2.30	24.15	30.00	5.85
					64QAM		1	1	20.27	2.30	22.57	30.00	7.43
					256QAM		1	0	18.37	2.30	20.67	30.00	9.33
				CP-OFDM	QPSK		1	1	21.34	2.30	23.64	30.00	6.36

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 6, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 60 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band	n77													
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)		
60	632000 Low	3480	30	DFTS-OFDM	PI/2 BPSK	1	0	22.31	2.30	24.61	30.00	5.39		
						1	1	22.82	2.30	25.12	30.00	4.88		
						1	160	22.75	2.30	25.05	30.00	4.95		
						1	161	22.25	2.30	24.55	30.00	5.45		
						81	40	22.76	2.30	25.06	30.00	4.94		
						162	0	22.30	2.30	24.60	30.00	5.40		
					QPSK	1	0	21.81	2.30	24.11	30.00	5.89		
						1	1	22.84	2.30	25.14	30.00	4.86		
						1	160	22.83	2.30	25.13	30.00	4.87		
						1	161	21.81	2.30	24.11	30.00	5.89		
						81	40	22.53	2.30	24.83	30.00	5.17		
						162	0	21.78	2.30	24.08	30.00	5.92		
					16QAM	1	0	20.68	2.30	22.98	30.00	7.02		
						1	1	21.80	2.30	24.10	30.00	5.90		
						1	160	21.60	2.30	23.90	30.00	6.10		
						1	161	20.59	2.30	22.89	30.00	7.11		
						81	40	21.76	2.30	24.06	30.00	5.94		
						162	0	20.76	2.30	23.06	30.00	6.94		
					64QAM	1	0	20.33	2.30	22.63	30.00	7.37		
						1	1	20.28	2.30	22.58	30.00	7.42		
						1	160	20.24	2.30	22.54	30.00	7.46		
						1	161	20.27	2.30	22.57	30.00	7.43		
						81	40	20.23	2.30	22.53	30.00	7.47		
						162	0	20.24	2.30	22.54	30.00	7.46		
					256QAM	1	0	18.28	2.30	20.58	30.00	9.42		
						1	1	18.33	2.30	20.63	30.00	9.37		
						1	160	18.30	2.30	20.60	30.00	9.40		
						1	161	18.32	2.30	20.62	30.00	9.38		
						81	40	18.20	2.30	20.50	30.00	9.50		
						162	0	18.13	2.30	20.43	30.00	9.57		
					CP-OFDM	QPSK	1	1	21.41	2.30	23.71	30.00	6.29	
						DFTS-OFDM	PI/2 BPSK	1	1	22.82	2.30	25.12	30.00	4.88
							QPSK	1	1	22.86	2.30	25.16	30.00	4.84
							16QAM	1	1	21.82	2.30	24.12	30.00	5.88
							64QAM	1	0	20.33	2.30	22.63	30.00	7.37
							256QAM	1	1	18.31	2.30	20.61	30.00	9.39
					CP-OFDM	QPSK	1	1	21.41	2.30	23.71	30.00	6.29	
	634666 High	3519.99	30	DFTS-OFDM	PI/2 BPSK	1	1	22.79	2.30	25.09	30.00	4.91		
						QPSK	1	1	22.89	2.30	25.19	30.00	4.81	
						16QAM	1	1	21.83	2.30	24.13	30.00	5.87	
						64QAM	1	0	20.35	2.30	22.65	30.00	7.35	
						256QAM	1	1	18.32	2.30	20.62	30.00	9.38	
					CP-OFDM	QPSK	1	1	21.39	2.30	23.69	30.00	6.31	

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 7, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 50 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band	n77													
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)		
50	631668 Low	3475.02	30	DFTS-OFDM	PI/2 BPSK	1	0	22.37	2.30	24.67	30.00	5.33		
						1	1	22.81	2.30	25.11	30.00	4.89		
						1	131	22.86	2.30	25.16	30.00	4.84		
						1	132	22.32	2.30	24.62	30.00	5.38		
						64	35	22.80	2.30	25.10	30.00	4.90		
						128	0	22.23	2.30	24.53	30.00	5.47		
					QPSK	1	0	21.84	2.30	24.14	30.00	5.86		
						1	1	22.87	2.30	25.17	30.00	4.83		
						1	131	22.86	2.30	25.16	30.00	4.84		
						1	132	21.85	2.30	24.15	30.00	5.85		
						64	35	22.80	2.30	25.10	30.00	4.90		
						128	0	21.77	2.30	24.07	30.00	5.93		
					16QAM	1	0	21.05	2.30	23.35	30.00	6.65		
						1	1	22.10	2.30	24.40	30.00	5.60		
						1	131	22.02	2.30	24.32	30.00	5.68		
						1	132	20.96	2.30	23.26	30.00	6.74		
						64	35	21.77	2.30	24.07	30.00	5.93		
						128	0	20.76	2.30	23.06	30.00	6.94		
					64QAM	1	0	20.60	2.30	22.90	30.00	7.10		
						1	1	20.62	2.30	22.92	30.00	7.08		
						1	131	20.56	2.30	22.86	30.00	7.14		
						1	132	20.56	2.30	22.86	30.00	7.14		
						64	35	20.22	2.30	22.52	30.00	7.48		
						128	0	20.26	2.30	22.56	30.00	7.44		
					256QAM	1	0	18.22	2.30	20.52	30.00	9.48		
						1	1	18.29	2.30	20.59	30.00	9.41		
						1	131	18.20	2.30	20.50	30.00	9.50		
						1	132	18.24	2.30	20.54	30.00	9.46		
						64	35	18.17	2.30	20.47	30.00	9.53		
						128	0	18.15	2.30	20.45	30.00	9.55		
	CP-OFDM	QPSK	1	1	21.72	2.30	24.02	30.00	5.98					
	633334 Mid	3500.01	30	DFTS-OFDM	PI/2 BPSK	1	131	22.82	2.30	25.12	30.00	4.88		
						QPSK	1	1	22.85	2.30	25.15	30.00	4.85	
						16QAM	1	1	22.03	2.30	24.33	30.00	5.67	
						64QAM	1	1	20.58	2.30	22.88	30.00	7.12	
						256QAM	1	1	18.25	2.30	20.55	30.00	9.45	
					CP-OFDM	QPSK	1	1	21.71	2.30	24.01	30.00	5.99	
	635000 High	3525	30	DFTS-OFDM	PI/2 BPSK	1	131	22.79	2.30	25.09	30.00	4.91		
						QPSK	1	1	22.81	2.30	25.11	30.00	4.89	
						16QAM	1	1	22.05	2.30	24.35	30.00	5.65	
						64QAM	1	1	20.55	2.30	22.85	30.00	7.15	
						256QAM	1	1	18.23	2.30	20.53	30.00	9.47	
				CP-OFDM	QPSK	1	1	21.69	2.30	23.99	30.00	6.01		

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 7, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 40 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band n77		BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modulation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
40	631334 Low	3470.01			30	DFTS-OFDM	PI/2 BPSK	1	0	22.72	2.30	25.02	30.00	4.98
								1	1	23.27	2.30	25.57	30.00	4.43
								1	104	23.24	2.30	25.54	30.00	4.46
								1	105	22.70	2.30	25.00	30.00	5.00
								50	28	23.16	2.30	25.46	30.00	4.54
								100	0	22.64	2.30	24.94	30.00	5.06
							QPSK	1	0	22.25	2.30	24.55	30.00	5.45
								1	1	23.30	2.30	25.60	30.00	4.40
								1	104	23.27	2.30	25.57	30.00	4.43
								1	105	22.26	2.30	24.56	30.00	5.44
								50	28	23.05	2.30	25.35	30.00	4.65
								100	0	22.07	2.30	24.37	30.00	5.63
							16QAM	1	0	21.46	2.30	23.76	30.00	6.24
								1	1	22.47	2.30	24.77	30.00	5.23
								1	104	22.43	2.30	24.73	30.00	5.27
								1	105	21.45	2.30	23.75	30.00	6.25
								50	28	22.10	2.30	24.40	30.00	5.60
								100	0	21.10	2.30	23.40	30.00	6.60
							64QAM	1	0	20.98	2.30	23.28	30.00	6.72
								1	1	20.90	2.30	23.20	30.00	6.80
								1	104	21.01	2.30	23.31	30.00	6.69
								1	105	20.92	2.30	23.22	30.00	6.78
								50	28	20.56	2.30	22.86	30.00	7.14
								100	0	20.58	2.30	22.88	30.00	7.12
							256QAM	1	0	18.63	2.30	20.93	30.00	9.07
								1	1	18.64	2.30	20.94	30.00	9.06
								1	104	18.70	2.30	21.00	30.00	9.00
								1	105	18.68	2.30	20.98	30.00	9.02
								50	28	18.49	2.30	20.79	30.00	9.21
								100	0	18.55	2.30	20.85	30.00	9.15
	633334 Mid	3500.01			30	CP-OFDM	QPSK	1	1	21.75	2.30	24.05	30.00	5.95
						DFTS-OFDM	PI/2 BPSK	1	1	23.26	2.30	25.56	30.00	4.44
								1	1	23.32	2.30	25.62	30.00	4.38
								1	1	22.47	2.30	24.77	30.00	5.23
								1	104	20.99	2.30	23.29	30.00	6.71
								1	104	18.73	2.30	21.03	30.00	8.97
						CP-OFDM	QPSK	1	1	21.73	2.30	24.03	30.00	5.97
	635332 High	3529.98			30	DFTS-OFDM	PI/2 BPSK	1	1	23.25	2.30	25.55	30.00	4.45
								1	1	23.30	2.30	25.60	30.00	4.40
								1	1	22.50	2.30	24.80	30.00	5.20
								1	104	21.01	2.30	23.31	30.00	6.69
								1	104	18.71	2.30	21.01	30.00	8.99
						CP-OFDM	QPSK	1	1	21.72	2.30	24.02	30.00	5.98

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 7, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 20 MHz BW Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band	n77																					
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)										
20	630668 Low	3460.02	30	DFTS-OFDM	PI/2 BPSK	1	0	22.49	2.30	24.79	30.00	5.21										
						1	1	23.07	2.30	25.37	30.00	4.63										
						1	49	23.00	2.30	25.30	30.00	4.70										
						1	50	22.48	2.30	24.78	30.00	5.22										
						25	13	22.81	2.30	25.11	30.00	4.89										
						50	0	22.44	2.30	24.74	30.00	5.26										
						1	1	23.10	2.30	25.40	30.00	4.60										
						1	49	23.03	2.30	25.33	30.00	4.67										
						1	50	21.99	2.30	24.29	30.00	5.71										
						25	13	22.91	2.30	25.21	30.00	4.79										
						50	0	21.92	2.30	24.22	30.00	5.78										
						1	1	22.29	2.30	24.59	30.00	5.41										
						1	49	22.20	2.30	24.50	30.00	5.50										
						1	50	21.17	2.30	23.47	30.00	6.53										
						25	13	21.84	2.30	24.14	30.00	5.86										
						50	0	20.94	2.30	23.24	30.00	6.76										
						1	1	20.79	2.30	23.09	30.00	6.91										
						1	49	20.63	2.30	22.93	30.00	7.07										
						1	50	20.59	2.30	22.89	30.00	7.11										
						25	13	20.34	2.30	22.64	30.00	7.36										
						50	0	20.42	2.30	22.72	30.00	7.28										
						1	1	18.34	2.30	20.64	30.00	9.36										
						1	49	18.27	2.30	20.57	30.00	9.43										
						1	50	18.28	2.30	20.58	30.00	9.42										
						25	13	18.31	2.30	20.61	30.00	9.39										
						50	0	18.36	2.30	20.66	30.00	9.34										
						CP-OFDM	QPSK	1	1	21.53	2.30	23.83	30.00	6.17								
						633334 Mid	3500.01	30	DFTS-OFDM	PI/2 BPSK	1	1	23.06	2.30	25.36	30.00	4.64					
											QPSK	1	1	23.07	2.30	25.37	30.00	4.63				
											16QAM	1	1	22.33	2.30	24.63	30.00	5.37				
					64QAM						1	1	20.79	2.30	23.09	30.00	6.91					
					256QAM						50	0	18.34	2.30	20.64	30.00	9.36					
						CP-OFDM	QPSK	1	1	21.53	2.30	23.83	30.00	6.17								
								1	1	23.06	2.30	25.36	30.00	4.64								
								QPSK	1	1	23.07	2.30	25.37	30.00	4.63							
								16QAM	1	1	22.37	2.30	24.67	30.00	5.33							
								64QAM	1	1	20.78	2.30	23.08	30.00	6.92							
						256QAM	50	0	18.37	2.30	20.67	30.00	9.33									
														CP-OFDM	QPSK	1	1	21.48	2.30	23.78	30.00	6.22

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.8
September 7, 2022
23 deg. C / 54 % RH
Tetsuro Yoshida
NR Band n77 100 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band n77												
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
100	650000 Low	3750	30	DFTS-OFDM	PI/2 BPSK	1	0	22.46	2.30	24.76	30.00	5.24
						1	1	23.15	2.30	25.45	30.00	4.55
						1	271	23.20	2.30	25.50	30.00	4.50
						1	272	22.61	2.30	24.91	30.00	5.09
						135	69	23.10	2.30	25.40	30.00	4.60
						270	0	22.50	2.30	24.80	30.00	5.20
					QPSK	1	0	22.12	2.30	24.42	30.00	5.58
						1	1	23.13	2.30	25.43	30.00	4.57
						1	271	23.24	2.30	25.54	30.00	4.46
						1	272	22.22	2.30	24.52	30.00	5.48
						135	69	23.11	2.30	25.41	30.00	4.59
						270	0	22.01	2.30	24.31	30.00	5.69
					16QAM	1	0	21.36	2.30	23.66	30.00	6.34
						1	1	22.38	2.30	24.68	30.00	5.32
						1	271	22.41	2.30	24.71	30.00	5.29
						1	272	21.38	2.30	23.68	30.00	6.32
						135	69	22.05	2.30	24.35	30.00	5.65
						270	0	20.96	2.30	23.26	30.00	6.74
					64QAM	1	0	20.54	2.30	22.84	30.00	7.16
						1	1	20.53	2.30	22.83	30.00	7.17
						1	271	20.56	2.30	22.86	30.00	7.14
						1	272	20.55	2.30	22.85	30.00	7.15
						135	69	20.47	2.30	22.77	30.00	7.23
						270	0	20.43	2.30	22.73	30.00	7.27
					256QAM	1	0	18.38	2.30	20.68	30.00	9.32
						1	1	18.39	2.30	20.69	30.00	9.31
						1	271	18.44	2.30	20.74	30.00	9.26
						1	272	18.37	2.30	20.67	30.00	9.33
						135	69	18.43	2.30	20.73	30.00	9.27
						270	0	18.35	2.30	20.65	30.00	9.35
	CP-OFDM	QPSK	1	1	21.59	2.30	23.89	30.00	6.11			
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	271	23.09	2.30	25.39	30.00	4.61
					QPSK	1	271	23.09	2.30	25.39	30.00	4.61
					16QAM	1	271	22.30	2.30	24.60	30.00	5.40
					64QAM	1	271	20.49	2.30	22.79	30.00	7.21
					256QAM	1	271	18.31	2.30	20.61	30.00	9.39
				CP-OFDM	QPSK	1	1	21.58	2.30	23.88	30.00	6.12
	662000 High	3930	30	DFTS-OFDM	PI/2 BPSK	1	271	22.77	2.30	25.07	30.00	4.93
					QPSK	1	271	22.79	2.30	25.09	30.00	4.91
					16QAM	1	271	22.06	2.30	24.36	30.00	5.64
					64QAM	1	271	20.21	2.30	22.51	30.00	7.49
					256QAM	1	271	18.08	2.30	20.38	30.00	9.62
				CP-OFDM	QPSK	1	1	21.41	2.30	23.71	30.00	6.29

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 90 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band	n77												
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	
90	649668 Low	3745.02	30	DFTS-OFDM	PI/2 BPSK	1	0	22.65	2.30	24.95	30.00	5.05	
						1	1	23.12	2.30	25.42	30.00	4.58	
						1	243	23.15	2.30	25.45	30.00	4.55	
						1	244	22.60	2.30	24.90	30.00	5.10	
						120	63	23.03	2.30	25.33	30.00	4.67	
						243	0	22.55	2.30	24.85	30.00	5.15	
					QPSK	1	0	22.06	2.30	24.36	30.00	5.64	
						1	1	23.09	2.30	25.39	30.00	4.61	
						1	243	23.10	2.30	25.40	30.00	4.60	
						1	244	22.06	2.30	24.36	30.00	5.64	
						120	63	23.01	2.30	25.31	30.00	4.69	
						243	0	21.95	2.30	24.25	30.00	5.75	
					16QAM	1	0	20.99	2.30	23.29	30.00	6.71	
						1	1	22.06	2.30	24.36	30.00	5.64	
						1	243	22.07	2.30	24.37	30.00	5.63	
						1	244	21.05	2.30	23.35	30.00	6.65	
						120	63	22.01	2.30	24.31	30.00	5.69	
						243	0	20.96	2.30	23.26	30.00	6.74	
					64QAM	1	0	20.39	2.30	22.69	30.00	7.31	
						1	1	20.38	2.30	22.68	30.00	7.32	
						1	243	20.37	2.30	22.67	30.00	7.33	
						1	244	20.37	2.30	22.67	30.00	7.33	
						120	63	20.22	2.30	22.52	30.00	7.48	
						243	0	20.23	2.30	22.53	30.00	7.47	
					256QAM	1	0	18.56	2.30	20.86	30.00	9.14	
						1	1	18.55	2.30	20.85	30.00	9.15	
						1	243	18.51	2.30	20.81	30.00	9.19	
						1	244	18.52	2.30	20.82	30.00	9.18	
						120	63	18.35	2.30	20.65	30.00	9.35	
						243	0	18.32	2.30	20.62	30.00	9.38	
				CP-OFDM	QPSK	1	1	21.56	2.30	23.86	30.00	6.14	
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	243	22.90	2.30	25.20	30.00	4.80	
						1	243	22.85	2.30	25.15	30.00	4.85	
					16QAM	1	243	21.83	2.30	24.13	30.00	5.87	
					64QAM	1	0	20.43	2.30	22.73	30.00	7.27	
					256QAM	1	0	18.61	2.30	20.91	30.00	9.09	
					CP-OFDM	QPSK	1	1	21.54	2.30	23.84	30.00	6.16
	662332 High	3934.98	30	DFTS-OFDM	PI/2 BPSK	1	243	22.79	2.30	25.09	30.00	4.91	
						1	243	22.64	2.30	24.94	30.00	5.06	
					16QAM	1	243	21.70	2.30	24.00	30.00	6.00	
					64QAM	1	0	20.13	2.30	22.43	30.00	7.57	
					256QAM	1	0	18.32	2.30	20.62	30.00	9.38	
					CP-OFDM	QPSK	1	1	21.35	2.30	23.65	30.00	6.35

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 80 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band	n77											
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
80	649334 Low	3740.01	30	DFTS-OFDM	PI/2 BPSK	1	0	22.47	2.30	24.77	30.00	5.23
						1	1	23.00	2.30	25.30	30.00	4.70
						1	215	23.10	2.30	25.40	30.00	4.60
						1	216	22.54	2.30	24.84	30.00	5.16
						108	55	23.07	2.30	25.37	30.00	4.63
						216	0	22.52	2.30	24.82	30.00	5.18
					QPSK	1	0	22.06	2.30	24.36	30.00	5.64
						1	1	23.16	2.30	25.46	30.00	4.54
						1	215	23.08	2.30	25.38	30.00	4.62
						1	216	22.02	2.30	24.32	30.00	5.68
						108	55	23.07	2.30	25.37	30.00	4.63
						216	0	21.97	2.30	24.27	30.00	5.73
					16QAM	1	0	21.08	2.30	23.38	30.00	6.62
						1	1	22.12	2.30	24.42	30.00	5.58
						1	215	22.04	2.30	24.34	30.00	5.66
						1	216	21.03	2.30	23.33	30.00	6.67
						108	55	22.06	2.30	24.36	30.00	5.64
						216	0	20.96	2.30	23.26	30.00	6.74
					64QAM	1	0	20.35	2.30	22.65	30.00	7.35
						1	1	20.37	2.30	22.67	30.00	7.33
						1	215	20.28	2.30	22.58	30.00	7.42
						1	216	20.26	2.30	22.56	30.00	7.44
						108	55	20.50	2.30	22.80	30.00	7.20
						216	0	20.48	2.30	22.78	30.00	7.22
					256QAM	1	0	18.55	2.30	20.85	30.00	9.15
						1	1	18.54	2.30	20.84	30.00	9.16
						1	215	18.50	2.30	20.80	30.00	9.20
						1	216	18.50	2.30	20.80	30.00	9.20
						108	55	18.40	2.30	20.70	30.00	9.30
						216	0	18.40	2.30	20.70	30.00	9.30
				CP-OFDM	QPSK	1	1	21.57	2.30	23.87	30.00	6.13
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	215	22.76	2.30	25.06	30.00	4.94
						1	1	22.95	2.30	25.25	30.00	4.75
						1	1	21.98	2.30	24.28	30.00	5.72
						1	1	20.46	2.30	22.76	30.00	7.24
						1	0	18.47	2.30	20.77	30.00	9.23
						1	1	21.53	2.30	23.83	30.00	6.17
	662666 High	3939.99	30	DFTS-OFDM	PI/2 BPSK	1	215	22.76	2.30	25.06	30.00	4.94
						1	1	22.87	2.30	25.17	30.00	4.83
						1	1	21.91	2.30	24.21	30.00	5.79
						1	1	20.21	2.30	22.51	30.00	7.49
						1	0	18.44	2.30	20.74	30.00	9.26
						1	1	21.49	2.30	23.79	30.00	6.21
	CP-OFDM	QPSK	1	1	21.49	2.30	23.79	30.00	6.21			

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 60 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band n77		Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB	UL RB	Conducted Pwr Avg (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	
BW (MHz)	Ch #					Allocation	Start						
60	648668 Low	3730.02	30	DFTS-OFDM	PI/2 BPSK	1	0	22.52	2.30	24.82	30.00	5.18	
						1	1	23.11	2.30	25.41	30.00	4.59	
						1	160	23.17	2.30	25.47	30.00	4.53	
						1	161	22.66	2.30	24.96	30.00	5.04	
						81	40	23.08	2.30	25.38	30.00	4.62	
						162	0	22.54	2.30	24.84	30.00	5.16	
					QPSK	1	0	21.94	2.30	24.24	30.00	5.76	
						1	1	22.88	2.30	25.18	30.00	4.82	
						1	160	23.08	2.30	25.38	30.00	4.62	
						1	161	22.08	2.30	24.38	30.00	5.62	
						81	40	23.04	2.30	25.34	30.00	4.66	
						162	0	22.08	2.30	24.38	30.00	5.62	
					16QAM	1	0	21.04	2.30	23.34	30.00	6.66	
						1	1	22.07	2.30	24.37	30.00	5.63	
						1	160	22.15	2.30	24.45	30.00	5.55	
						1	161	21.13	2.30	23.43	30.00	6.57	
						81	40	22.11	2.30	24.41	30.00	5.59	
						162	0	21.01	2.30	23.31	30.00	6.69	
					64QAM	1	0	20.33	2.30	22.63	30.00	7.37	
						1	1	20.34	2.30	22.64	30.00	7.36	
						1	160	20.42	2.30	22.72	30.00	7.28	
						1	161	20.41	2.30	22.71	30.00	7.29	
						81	40	20.51	2.30	22.81	30.00	7.19	
						162	0	20.52	2.30	22.82	30.00	7.18	
					256QAM	1	0	18.51	2.30	20.81	30.00	9.19	
						1	1	18.50	2.30	20.80	30.00	9.20	
						1	160	18.56	2.30	20.86	30.00	9.14	
						1	161	18.55	2.30	20.85	30.00	9.15	
						81	40	18.40	2.30	20.70	30.00	9.30	
						162	0	18.42	2.30	20.72	30.00	9.28	
					CP-OFDM	QPSK	1	1	21.48	2.30	23.78	30.00	6.22
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	160	22.92	2.30	25.22	30.00	4.78	
						QPSK	1	160	22.85	2.30	25.15	30.00	4.85
						16QAM	1	160	21.90	2.30	24.20	30.00	5.80
						64QAM	162	0	20.31	2.30	22.61	30.00	7.39
						256QAM	1	160	18.33	2.30	20.63	30.00	9.37
					CP-OFDM	QPSK	1	1	21.48	2.30	23.78	30.00	6.22
	663332 High	3949.98	30	DFTS-OFDM	PI/2 BPSK	1	160	22.86	2.30	25.16	30.00	4.84	
						QPSK	1	160	22.77	2.30	25.07	30.00	4.93
						16QAM	1	160	21.79	2.30	24.09	30.00	5.91
						64QAM	162	0	20.20	2.30	22.50	30.00	7.50
						256QAM	1	160	18.21	2.30	20.51	30.00	9.49
				CP-OFDM	QPSK	1	1	21.35	2.30	23.65	30.00	6.35	

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 50 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band	n77													
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)		
50	648334 Low	3725.01	30	DFTS-OFDM	PI/2 BPSK	1	0	22.63	2.30	24.93	30.00	5.07		
						1	1	23.21	2.30	25.51	30.00	4.49		
						1	131	23.17	2.30	25.47	30.00	4.53		
						1	132	22.67	2.30	24.97	30.00	5.03		
						64	35	23.12	2.30	25.42	30.00	4.58		
						128	0	22.57	2.30	24.87	30.00	5.13		
					QPSK	1	0	21.95	2.30	24.25	30.00	5.75		
						1	1	22.99	2.30	25.29	30.00	4.71		
						1	131	23.16	2.30	25.46	30.00	4.54		
						1	132	22.11	2.30	24.41	30.00	5.59		
						64	35	23.13	2.30	25.43	30.00	4.57		
						128	0	22.05	2.30	24.35	30.00	5.65		
					16QAM	1	0	21.01	2.30	23.31	30.00	6.69		
						1	1	22.08	2.30	24.38	30.00	5.62		
						1	131	22.13	2.30	24.43	30.00	5.57		
						1	132	21.13	2.30	23.43	30.00	6.57		
						64	35	22.05	2.30	24.35	30.00	5.65		
						128	0	21.01	2.30	23.31	30.00	6.69		
					64QAM	1	0	20.37	2.30	22.67	30.00	7.33		
						1	1	20.40	2.30	22.70	30.00	7.30		
						1	131	20.41	2.30	22.71	30.00	7.29		
						1	132	20.40	2.30	22.70	30.00	7.30		
						64	35	20.48	2.30	22.78	30.00	7.22		
						128	0	20.49	2.30	22.79	30.00	7.21		
					256QAM	1	0	18.51	2.30	20.81	30.00	9.19		
						1	1	18.52	2.30	20.82	30.00	9.18		
						1	131	18.55	2.30	20.85	30.00	9.15		
						1	132	18.54	2.30	20.84	30.00	9.16		
						64	35	18.41	2.30	20.71	30.00	9.29		
						128	0	18.37	2.30	20.67	30.00	9.33		
					CP-OFDM	QPSK	1	1	21.52	2.30	23.82	30.00	6.18	
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	1	22.94	2.30	25.24	30.00	4.76		
						QPSK	1	131	22.90	2.30	25.20	30.00	4.80	
						16QAM	1	131	21.95	2.30	24.25	30.00	5.75	
						64QAM	128	0	20.35	2.30	22.65	30.00	7.35	
						256QAM	1	131	18.35	2.30	20.65	30.00	9.35	
					CP-OFDM	QPSK	1	1	21.50	2.30	23.80	30.00	6.20	
	663666 High	3954.99	30	DFTS-OFDM	PI/2 BPSK	1	1	22.87	2.30	25.17	30.00	4.83		
						QPSK	1	131	22.79	2.30	25.09	30.00	4.91	
						16QAM	1	131	21.75	2.30	24.05	30.00	5.95	
						64QAM	128	0	20.24	2.30	22.54	30.00	7.46	
						256QAM	1	131	18.17	2.30	20.47	30.00	9.53	
				CP-OFDM	QPSK	1	1	21.33	2.30	23.63	30.00	6.37		

RF Output Power (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 40 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band n77														
BW (MHz)	UL Ch #	Freq. (MHz)	SCS (kHz)	OFDM	Modu- lation	UL RB Allocation	UL RB Start	Conducted Pwr Avg (dBm)	Ant.Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)		
40	648000 Low	3720	30	DFTS-OFDM	PI/2 BPSK	1	0	22.87	2.30	25.17	30.00	4.83		
						1	1	23.40	2.30	25.70	30.00	4.30		
						1	104	23.51	2.30	25.81	30.00	4.19		
						1	105	22.92	2.30	25.22	30.00	4.78		
						50	28	23.28	2.30	25.58	30.00	4.42		
						100	0	22.72	2.30	25.02	30.00	4.98		
					QPSK	1	0	22.35	2.30	24.65	30.00	5.35		
						1	1	23.31	2.30	25.61	30.00	4.39		
						1	104	23.41	2.30	25.71	30.00	4.29		
						1	105	22.38	2.30	24.68	30.00	5.32		
						50	28	23.26	2.30	25.56	30.00	4.44		
						100	0	22.26	2.30	24.56	30.00	5.44		
					16QAM	1	0	21.38	2.30	23.68	30.00	6.32		
						1	1	22.40	2.30	24.70	30.00	5.30		
						1	104	22.58	2.30	24.88	30.00	5.12		
						1	105	21.56	2.30	23.86	30.00	6.14		
						50	28	22.23	2.30	24.53	30.00	5.47		
						100	0	21.20	2.30	23.50	30.00	6.50		
					64QAM	1	0	20.64	2.30	22.94	30.00	7.06		
						1	1	20.60	2.30	22.90	30.00	7.10		
						1	104	20.85	2.30	23.15	30.00	6.85		
						1	105	20.87	2.30	23.17	30.00	6.83		
						50	28	20.73	2.30	23.03	30.00	6.97		
						100	0	20.72	2.30	23.02	30.00	6.98		
					256QAM	1	0	18.82	2.30	21.12	30.00	8.88		
						1	1	18.81	2.30	21.11	30.00	8.89		
						1	104	18.89	2.30	21.19	30.00	8.81		
						1	105	18.93	2.30	21.23	30.00	8.77		
						50	28	18.61	2.30	20.91	30.00	9.09		
						100	0	18.68	2.30	20.98	30.00	9.02		
				CP-OFDM	QPSK	1	1	21.90	2.30	24.20	30.00	5.80		
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK	1	104	23.38	2.30	25.68	30.00	4.32		
						1	104	23.33	2.30	25.63	30.00	4.37		
						1	104	22.39	2.30	24.69	30.00	5.31		
						1	105	20.61	2.30	22.91	30.00	7.09		
						1	105	18.81	2.30	21.11	30.00	8.89		
						1	1	21.89	2.30	24.19	30.00	5.81		
	664000 High	3960	30	DFTS-OFDM	PI/2 BPSK	1	104	23.20	2.30	25.50	30.00	4.50		
						1	104	23.16	2.30	25.46	30.00	4.54		
						1	104	22.14	2.30	24.44	30.00	5.56		
						1	105	20.40	2.30	22.70	30.00	7.30		
						1	105	18.64	2.30	20.94	30.00	9.06		
						1	1	21.69	2.30	23.99	30.00	6.01		

RF Output Power (Conducted)

Test place Ise EMC Lab.
Semi Anechoic Chamber No.11
Date September 8, 2022
Temperature / Humidity 22 deg. C / 65 % RH
Engineer Tetsuro Yoshida
Mode NR Band n77 20 MHz BW Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band n77		UL	Freq.	SCS	OFDM	Modu-	UL RB	UL RB	Conducted Pwr	Ant.Gain	EIRP	EIRP Limit	Margin
BW	Ch #	(MHz)	(MHz)	(kHz)		lation	Allocation	Start	Avg (dBm)	(dBi)	(dBm)	(dBm)	(dB)
20	647334 Low	3710.01	30	DFTS-OFDM	PI/2 BPSK		1	0	22.68	2.30	24.98	30.00	5.02
							1	1	23.19	2.30	25.49	30.00	4.51
							1	49	23.17	2.30	25.47	30.00	4.53
							1	50	22.64	2.30	24.94	30.00	5.06
							25	13	23.04	2.30	25.34	30.00	4.66
							50	0	22.54	2.30	24.84	30.00	5.16
					QPSK		1	0	22.10	2.30	24.40	30.00	5.60
							1	1	23.16	2.30	25.46	30.00	4.54
							1	49	23.10	2.30	25.40	30.00	4.60
							1	50	22.08	2.30	24.38	30.00	5.62
							25	13	23.05	2.30	25.35	30.00	4.65
							50	0	22.03	2.30	24.33	30.00	5.67
					16QAM		1	0	21.15	2.30	23.45	30.00	6.55
							1	1	22.19	2.30	24.49	30.00	5.51
							1	49	22.16	2.30	24.46	30.00	5.54
							1	50	21.11	2.30	23.41	30.00	6.59
							25	13	21.97	2.30	24.27	30.00	5.73
							50	0	20.98	2.30	23.28	30.00	6.72
					64QAM		1	0	20.41	2.30	22.71	30.00	7.29
							1	1	20.46	2.30	22.76	30.00	7.24
							1	49	20.40	2.30	22.70	30.00	7.30
							1	50	20.40	2.30	22.70	30.00	7.30
							25	13	20.39	2.30	22.69	30.00	7.31
							50	0	20.51	2.30	22.81	30.00	7.19
					256QAM		1	0	18.61	2.30	20.91	30.00	9.09
							1	1	18.62	2.30	20.92	30.00	9.08
							1	49	18.60	2.30	20.90	30.00	9.10
							1	50	18.58	2.30	20.88	30.00	9.12
							25	13	18.39	2.30	20.69	30.00	9.31
							50	0	18.39	2.30	20.69	30.00	9.31
					CP-OFDM	QPSK	1	1	21.70	2.30	24.00	30.00	6.00
	656000 Mid	3840	30	DFTS-OFDM	PI/2 BPSK		1	1	23.05	2.30	25.35	30.00	4.65
					QPSK		1	1	23.00	2.30	25.30	30.00	4.70
					16QAM		1	1	22.04	2.30	24.34	30.00	5.66
					64QAM		50	0	20.44	2.30	22.74	30.00	7.26
					256QAM		1	1	18.49	2.30	20.79	30.00	9.21
					CP-OFDM	QPSK	1	1	21.51	2.30	23.81	30.00	6.19
	664666 High	3969.99	30	DFTS-OFDM	PI/2 BPSK		1	1	22.92	2.30	25.22	30.00	4.78
					QPSK		1	1	22.91	2.30	25.21	30.00	4.79
					16QAM		1	1	21.89	2.30	24.19	30.00	5.81
					64QAM		50	0	20.32	2.30	22.62	30.00	7.38
					256QAM		1	1	18.33	2.30	20.63	30.00	9.37
					CP-OFDM	QPSK	1	1	21.43	2.30	23.73	30.00	6.27

Peak to Average power Ratio (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 Tx

Part 27: For mobile operations in the 3450-3550 MHz band

Band	Bandwidth	Frequency	UL RB	UL RB	OFDM	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)	Limit (dB)	Margin (dB)
	(MHz)	(MHz)	Allocation	Start			Peak	Average			
n77	100	3500.01	270	0	DFT-s-OFDM	PI/2 BPSK	26.97	22.24	4.73	13.00	8.27
						QPSK	27.38	21.71	5.67	13.00	7.33
						16QAM	27.74	20.73	7.01	13.00	5.99
						64QAM	27.64	20.22	7.42	13.00	5.58
						256QAM	26.86	18.13	8.73	13.00	4.27
					CP-OFDM	QPSK	28.15	19.87	8.28	13.00	4.72
n77	90	3495	243	0	DFT-s-OFDM	PI/2 BPSK	27.63	22.22	5.41	13.00	7.59
						QPSK	27.54	21.66	5.88	13.00	7.12
						16QAM	27.92	20.69	7.23	13.00	5.77
						64QAM	27.87	20.17	7.70	13.00	5.30
						256QAM	27.30	18.15	9.15	13.00	3.85
					CP-OFDM	QPSK	28.18	19.76	8.42	13.00	4.58
n77	80	3490.02	216	0	DFT-s-OFDM	PI/2 BPSK	27.65	22.30	5.35	13.00	7.65
						QPSK	27.47	21.78	5.69	13.00	7.31
						16QAM	27.70	20.73	6.97	13.00	6.03
						64QAM	28.02	20.21	7.81	13.00	5.19
						256QAM	27.14	18.13	9.01	13.00	3.99
					CP-OFDM	QPSK	28.02	19.81	8.21	13.00	4.79
n77	60	3480	162	0	DFT-s-OFDM	PI/2 BPSK	27.61	22.30	5.31	13.00	7.69
						QPSK	27.72	21.78	5.94	13.00	7.06
						16QAM	27.92	20.76	7.16	13.00	5.84
						64QAM	28.00	20.24	7.76	13.00	5.24
						256QAM	26.86	18.13	8.73	13.00	4.27
					CP-OFDM	QPSK	28.17	19.78	8.39	13.00	4.61
n77	50	3475.02	128	0	DFT-s-OFDM	PI/2 BPSK	27.48	22.23	5.25	13.00	7.75
						QPSK	27.48	21.77	5.71	13.00	7.29
						16QAM	27.72	20.76	6.96	13.00	6.04
						64QAM	27.89	20.26	7.63	13.00	5.37
						256QAM	27.55	18.15	9.40	13.00	3.60
					CP-OFDM	QPSK	27.88	19.76	8.12	13.00	4.88
n77	40	3470.01	100	0	DFT-s-OFDM	PI/2 BPSK	27.75	22.64	5.11	13.00	7.89
						QPSK	27.77	22.07	5.70	13.00	7.30
						16QAM	27.99	21.10	6.89	13.00	6.11
						64QAM	28.22	20.58	7.64	13.00	5.36
						256QAM	27.64	18.55	9.09	13.00	3.91
					CP-OFDM	QPSK	28.26	20.14	8.12	13.00	4.88
n77	20	3460.02	50	0	DFT-s-OFDM	PI/2 BPSK	27.91	22.44	5.47	13.00	7.53
						QPSK	27.89	21.92	5.97	13.00	7.03
						16QAM	28.03	20.94	7.09	13.00	5.91
						64QAM	28.01	20.42	7.59	13.00	5.41
						256QAM	27.17	18.36	8.81	13.00	4.19
					CP-OFDM	QPSK	28.17	19.94	8.23	13.00	4.77

Peak to Average power Ratio (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 8, 2022
22 deg. C / 65 % RH
Tetsuro Yoshida
NR Band n77 Tx

Part 27: For mobile operations in the 3700-3980 MHz band

Band	Bandwidth	Frequency	RB	RB	OFDM	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)	Limit (dB)	Margin (dB)
	(MHz)	(MHz)	Allocation	Start			Peak	Average			
n77	100	3750	270	0	DFT-s-OFDM	PI/2 BPSK	28.30	22.50	5.80	13.00	7.20
						QPSK	26.73	22.01	4.72	13.00	8.28
						16QAM	26.96	20.96	6.00	13.00	7.00
						64QAM	26.83	20.43	6.40	13.00	6.60
						256QAM	26.89	18.35	8.54	13.00	4.46
					CP-OFDM	QPSK	27.22	20.00	7.22	13.00	5.78
n77	90	3745.02	243	0	DFT-s-OFDM	PI/2 BPSK	28.00	22.55	5.45	13.00	7.55
						QPSK	26.67	21.95	4.72	13.00	8.28
						16QAM	26.95	20.96	5.99	13.00	7.01
						64QAM	26.97	20.23	6.74	13.00	6.26
						256QAM	26.90	18.32	8.58	13.00	4.42
					CP-OFDM	QPSK	27.07	19.97	7.10	13.00	5.90
n77	80	3740.01	216	0	DFT-s-OFDM	PI/2 BPSK	26.70	22.52	4.18	13.00	8.82
						QPSK	26.79	21.97	4.82	13.00	8.18
						16QAM	28.95	20.96	7.99	13.00	5.01
						64QAM	27.08	20.48	6.60	13.00	6.40
						256QAM	27.00	18.40	8.60	13.00	4.40
					CP-OFDM	QPSK	27.09	19.94	7.15	13.00	5.85
n77	60	3730.02	162	0	DFT-s-OFDM	PI/2 BPSK	26.90	22.54	4.36	13.00	8.64
						QPSK	26.95	22.08	4.87	13.00	8.13
						16QAM	27.09	21.01	6.08	13.00	6.92
						64QAM	27.12	20.52	6.60	13.00	6.40
						256QAM	27.02	18.42	8.60	13.00	4.40
					CP-OFDM	QPSK	27.19	19.96	7.23	13.00	5.77
n77	50	3725.01	128	0	DFT-s-OFDM	PI/2 BPSK	27.08	22.57	4.51	13.00	8.49
						QPSK	26.98	22.05	4.93	13.00	8.07
						16QAM	27.06	21.01	6.05	13.00	6.95
						64QAM	27.17	20.49	6.68	13.00	6.32
						256QAM	27.15	18.37	8.78	13.00	4.22
					CP-OFDM	QPSK	27.11	19.99	7.12	13.00	5.88
n77	40	3720	100	0	DFT-s-OFDM	PI/2 BPSK	29.26	22.72	6.54	13.00	6.46
						QPSK	29.31	22.26	7.05	13.00	5.95
						16QAM	29.25	21.20	8.05	13.00	4.95
						64QAM	27.20	20.72	6.48	13.00	6.52
						256QAM	27.09	18.68	8.41	13.00	4.59
					CP-OFDM	QPSK	27.00	20.21	6.79	13.00	6.21
n77	20	3710.01	50	0	DFT-s-OFDM	PI/2 BPSK	26.83	22.54	4.29	13.00	8.71
						QPSK	29.36	22.03	7.33	13.00	5.67
						16QAM	29.00	20.98	8.02	13.00	4.98
						64QAM	28.90	20.51	8.39	13.00	4.61
						256QAM	27.03	18.39	8.64	13.00	4.36
					CP-OFDM	QPSK	27.27	20.00	7.27	13.00	5.73

99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.	No.11
Semi Anechoic Chamber	No.6	September 9, 2022
Date	July 30, 2021	21 deg. C / 55 % RH
Temperature / Humidity	24 deg. C / 59 % RH	Tetsuro Yoshida
Engineer	Takafumi Noguchi	
Mode	NR Band n77 Tx	

Part 27: For mobile operations in the 3450-3550 MHz band

NR Band	Bandwidth (MHz)	Tested Frequency (MHz)	RB Allocation / Start	OFDM	Modulation	99% Occupied Bandwidth	26dB Emission Bandwidth
n77	20	3500.01	Full RB	CP-OFDM	QPSK	18.2290	19.494
n77	20	3500.01	Full RB	CP-OFDM	16QAM	18.2000	19.411
n77	20	3500.01	Full RB	CP-OFDM	64QAM	18.1662	19.213
n77	20	3500.01	Full RB	CP-OFDM	256QAM	18.1926	19.275
n77	40	3500.01	Full RB	CP-OFDM	QPSK	37.8288	39.444
n77	40	3500.01	Full RB	CP-OFDM	16QAM	37.7393	39.438
n77	40	3500.01	Full RB	CP-OFDM	64QAM	37.8039	39.120
n77	40	3500.01	Full RB	CP-OFDM	256QAM	37.7339	39.587
n77	50	3500.01	Full RB	CP-OFDM	QPSK	47.2971	49.338
n77	50	3500.01	Full RB	CP-OFDM	16QAM	47.3852	49.402
n77	50	3500.01	Full RB	CP-OFDM	64QAM	47.3567	49.360
n77	50	3500.01	Full RB	CP-OFDM	256QAM	47.3720	49.307
n77	60	3500.01	Full RB	CP-OFDM	QPSK	57.7559	60.032
n77	60	3500.01	Full RB	CP-OFDM	16QAM	57.7001	60.074
n77	60	3500.01	Full RB	CP-OFDM	64QAM	57.6918	60.132
n77	60	3500.01	Full RB	CP-OFDM	256QAM	57.6994	60.097
n77	60	3500.01	Full RB	DFTS-OFDM	BPSK	57.7308	59.814
n77	60	3500.01	Full RB	DFTS-OFDM	QPSK	57.7755	60.215
n77	60	3500.01	Full RB	DFTS-OFDM	16QAM	57.7862	59.852
n77	60	3500.01	Full RB	DFTS-OFDM	64QAM	57.7837	60.073
n77	60	3500.01	Full RB	DFTS-OFDM	256QAM	57.7803	60.121
n77	80	3500.01	Full RB	CP-OFDM	QPSK	77.2495	80.042
n77	80	3500.01	Full RB	CP-OFDM	16QAM	77.2455	80.199
n77	80	3500.01	Full RB	CP-OFDM	64QAM	77.1646	80.350
n77	80	3500.01	Full RB	CP-OFDM	256QAM	77.1696	79.919
n77	90	3500.01	Full RB	CP-OFDM	QPSK	87.2354	90.395
n77	90	3500.01	Full RB	CP-OFDM	16QAM	87.2818	90.532
n77	90	3500.01	Full RB	CP-OFDM	64QAM	87.1926	90.469
n77	90	3500.01	Full RB	CP-OFDM	256QAM	87.1885	90.191
n77	100	3500.01	Full RB	CP-OFDM	QPSK	97.3229	100.831
n77	100	3500.01	Full RB	CP-OFDM	16QAM	97.3956	100.951
n77	100	3500.01	Full RB	CP-OFDM	64QAM	97.1970	100.928
n77	100	3500.01	Full RB	CP-OFDM	256QAM	97.2621	100.834
n77	100	3500.01	Full RB	DFTS-OFDM	BPSK	96.2733	99.802

99% and 26dB Occupied Bandwidth

Test place Ise EMC Lab.
Semi Anechoic Chamber No.11
Date September 9, 2022
Temperature / Humidity 21 deg. C / 55 % RH
Engineer Tetsuro Yoshida
Mode NR Band n77 Tx

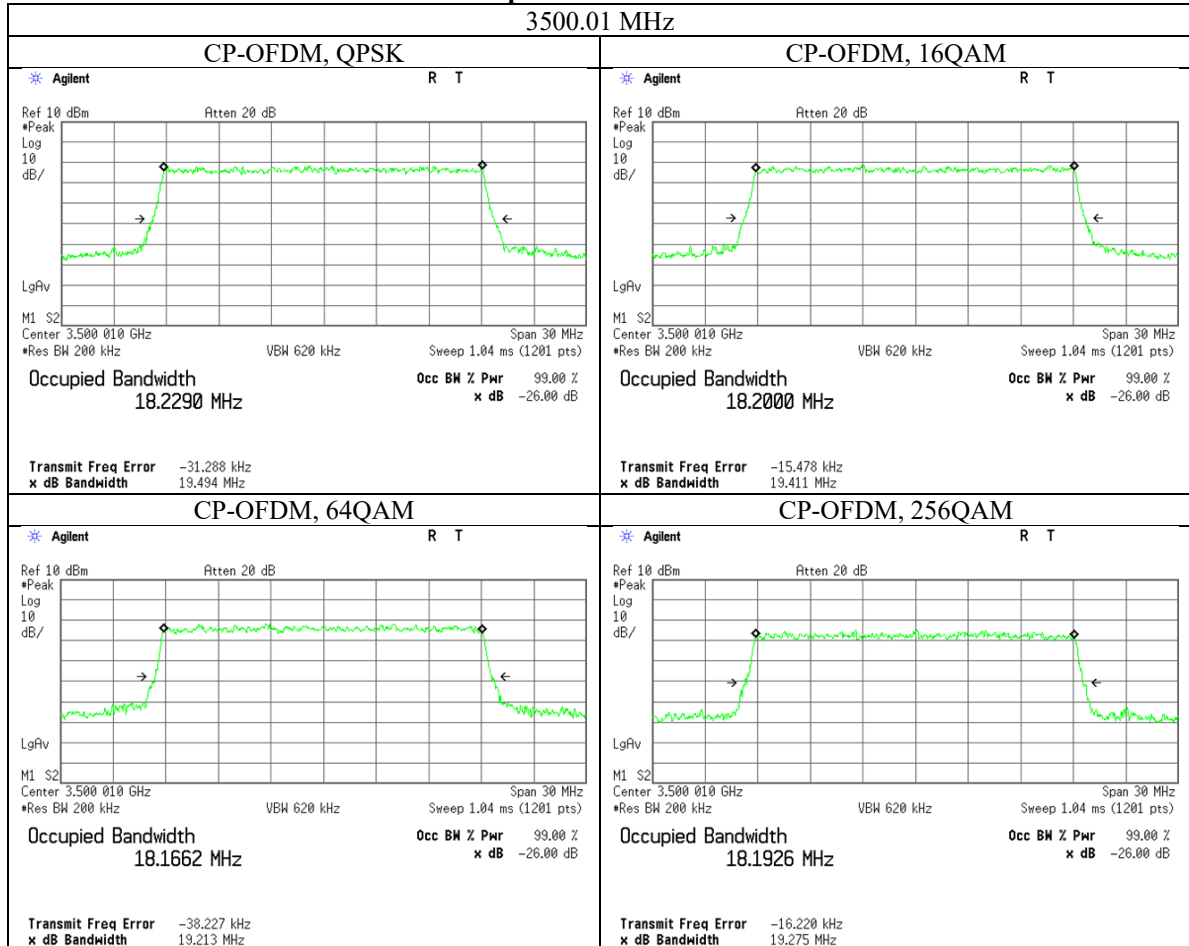
Part 27: For mobile operations in the 3700-3980 MHz band

NR Band	Bandwidth (MHz)	Tested Frequency (MHz) (MHz)	RB Allocation / Start	OFDM	Modulation	99% Occupied Bandwidth	26dB Emission Bandwidth
n77	20	3840.00	Full RB	CP-OFDM	QPSK	18.2025	19.498
n77	20	3840.00	Full RB	CP-OFDM	16QAM	18.1963	19.659
n77	20	3840.00	Full RB	CP-OFDM	64QAM	18.1960	19.396
n77	20	3840.00	Full RB	CP-OFDM	256QAM	18.1719	19.391
n77	40	3840.00	Full RB	CP-OFDM	QPSK	37.7978	39.459
n77	40	3840.00	Full RB	CP-OFDM	16QAM	37.8019	39.397
n77	40	3840.00	Full RB	CP-OFDM	64QAM	37.7992	39.754
n77	40	3840.00	Full RB	CP-OFDM	256QAM	37.7642	39.743
n77	50	3840.00	Full RB	CP-OFDM	QPSK	47.3955	49.418
n77	50	3840.00	Full RB	CP-OFDM	16QAM	47.3416	49.318
n77	50	3840.00	Full RB	CP-OFDM	64QAM	47.4000	49.225
n77	50	3840.00	Full RB	CP-OFDM	256QAM	47.3471	49.285
n77	60	3840.00	Full RB	CP-OFDM	QPSK	57.7421	60.067
n77	60	3840.00	Full RB	CP-OFDM	16QAM	57.7667	59.668
n77	60	3840.00	Full RB	CP-OFDM	64QAM	57.6936	59.990
n77	60	3840.00	Full RB	CP-OFDM	256QAM	57.6289	59.819
n77	60	3840.00	Full RB	DFTS-OFDM	BPSK	57.6813	60.005
n77	60	3840.00	Full RB	DFTS-OFDM	QPSK	57.7230	59.945
n77	60	3840.00	Full RB	DFTS-OFDM	16QAM	57.7569	59.895
n77	60	3840.00	Full RB	DFTS-OFDM	64QAM	57.6898	59.726
n77	60	3840.00	Full RB	DFTS-OFDM	256QAM	57.8334	60.067
n77	80	3840.00	Full RB	CP-OFDM	QPSK	77.3695	80.077
n77	80	3840.00	Full RB	CP-OFDM	16QAM	77.2382	79.940
n77	80	3840.00	Full RB	CP-OFDM	64QAM	77.2000	80.238
n77	80	3840.00	Full RB	CP-OFDM	256QAM	77.3278	80.083
n77	90	3840.00	Full RB	CP-OFDM	QPSK	87.2658	90.232
n77	90	3840.00	Full RB	CP-OFDM	16QAM	87.1124	90.145
n77	90	3840.00	Full RB	CP-OFDM	64QAM	87.2859	90.285
n77	90	3840.00	Full RB	CP-OFDM	256QAM	87.3234	90.256
n77	100	3840.00	Full RB	CP-OFDM	QPSK	97.3921	101.002
n77	100	3840.00	Full RB	CP-OFDM	16QAM	97.4097	100.996
n77	100	3840.00	Full RB	CP-OFDM	64QAM	97.1530	100.918
n77	100	3840.00	Full RB	CP-OFDM	256QAM	97.3282	100.937
n77	100	3840.00	Full RB	DFTS-OFDM	BPSK	96.1783	99.829

99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 20 MHz BW

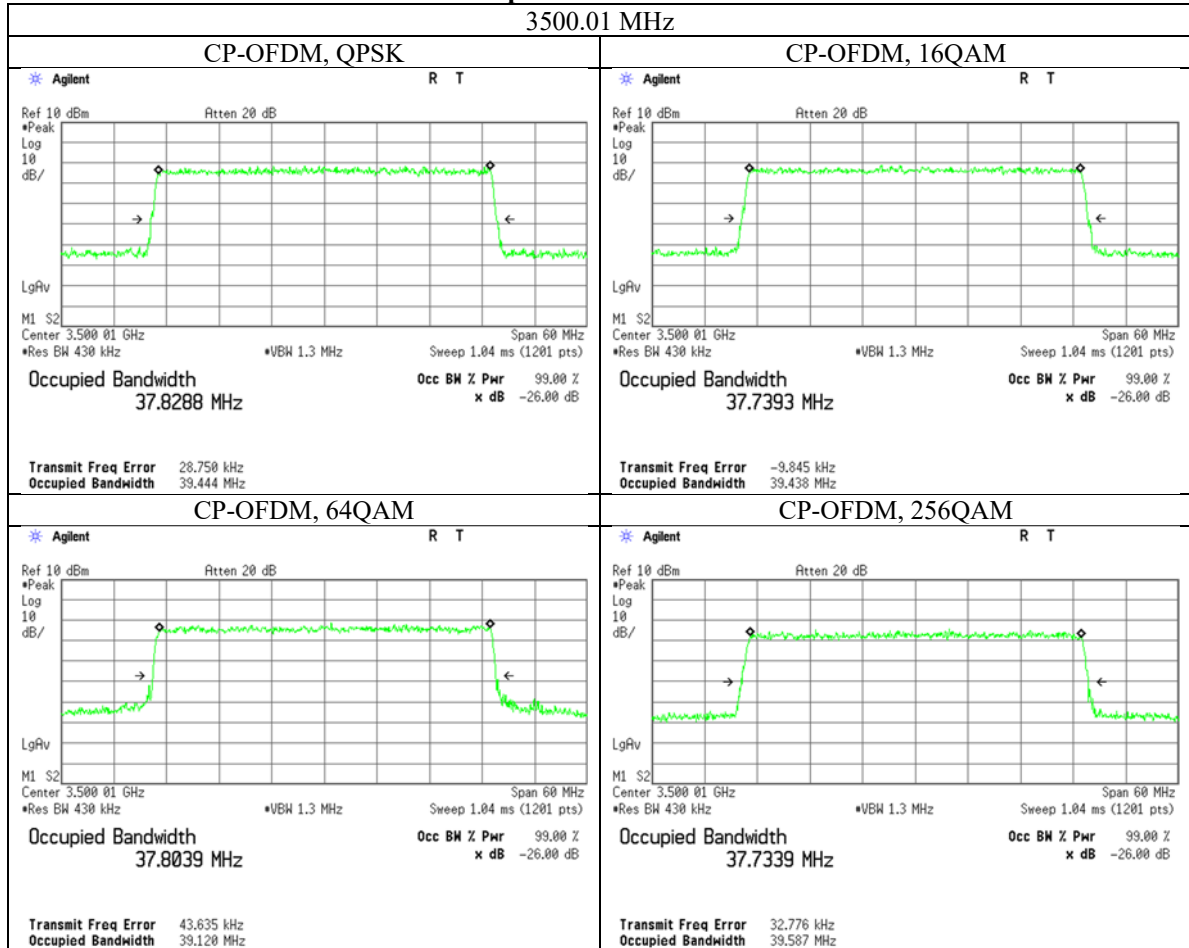
Part 27: For mobile operations in the 3450-3550 MHz band



99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.11
Date	September 9, 2022
Temperature / Humidity	21 deg. C / 55 % RH
Engineer	Tetsuro Yoshida
Mode	n77 40 MHz BW

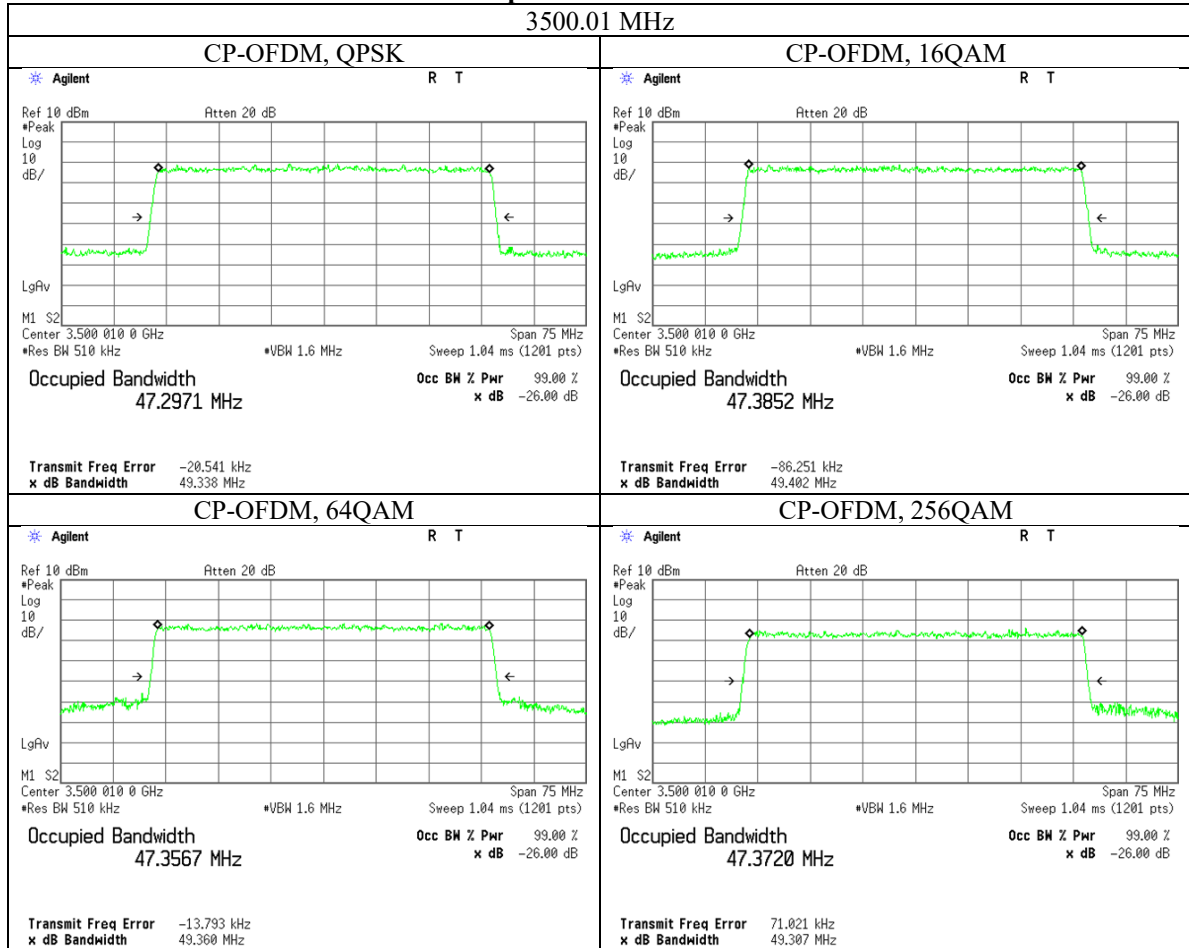
Part 27: For mobile operations in the 3450-3550 MHz band



99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 50 MHz BW

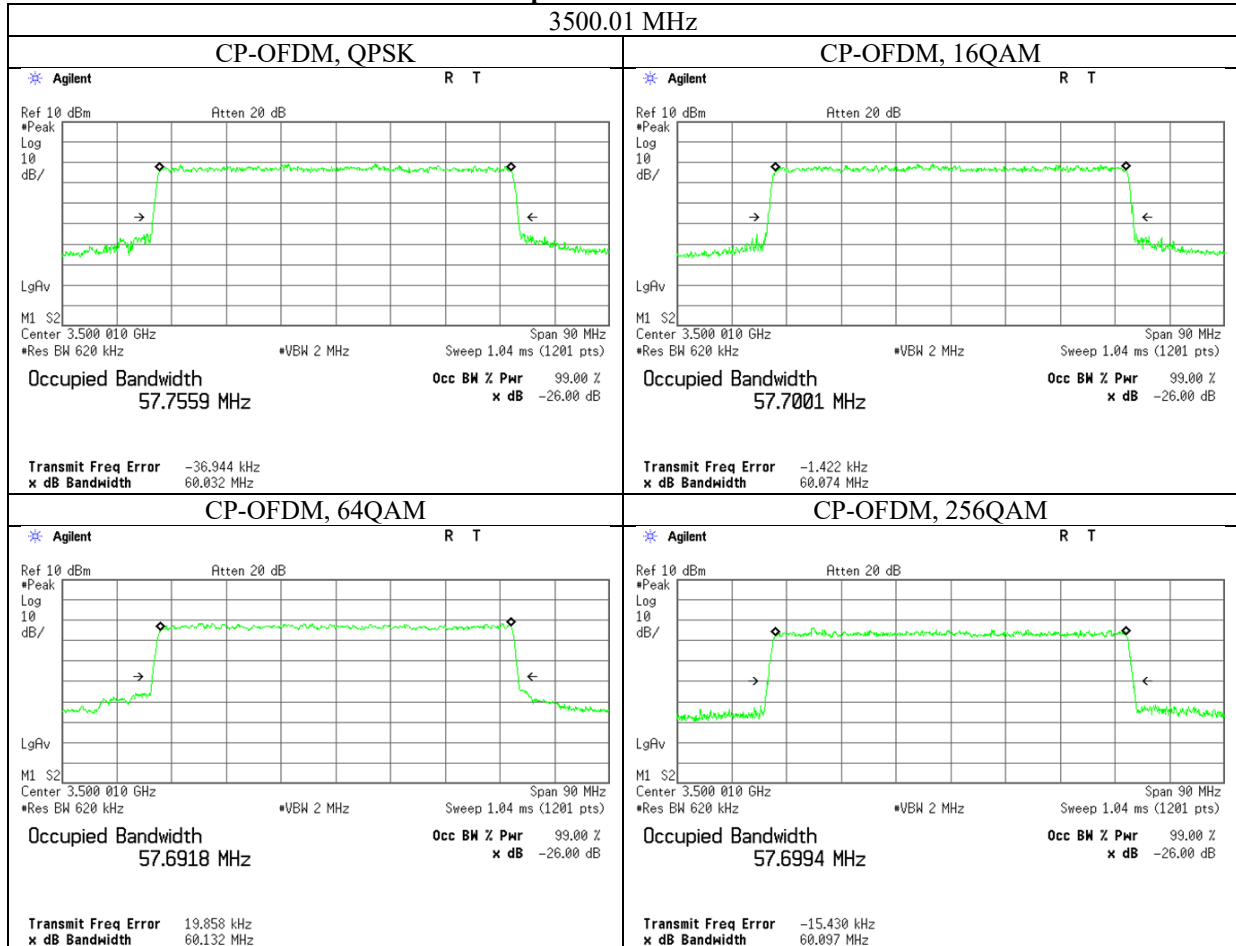
Part 27: For mobile operations in the 3450-3550 MHz band



99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 60 MHz BW

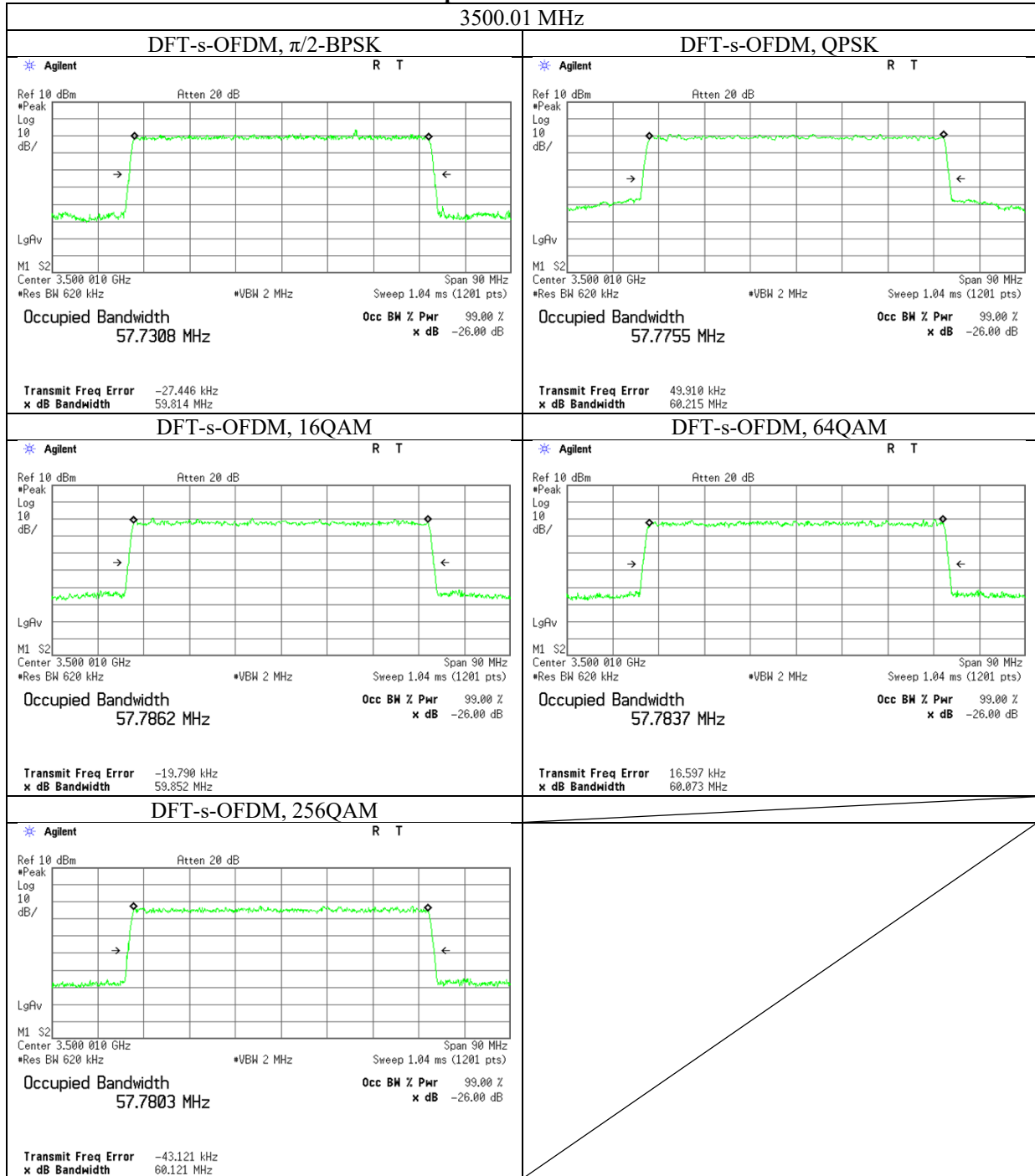
Part 27: For mobile operations in the 3450-3550 MHz band



99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 60 MHz BW

Part 27: For mobile operations in the 3450-3550 MHz band

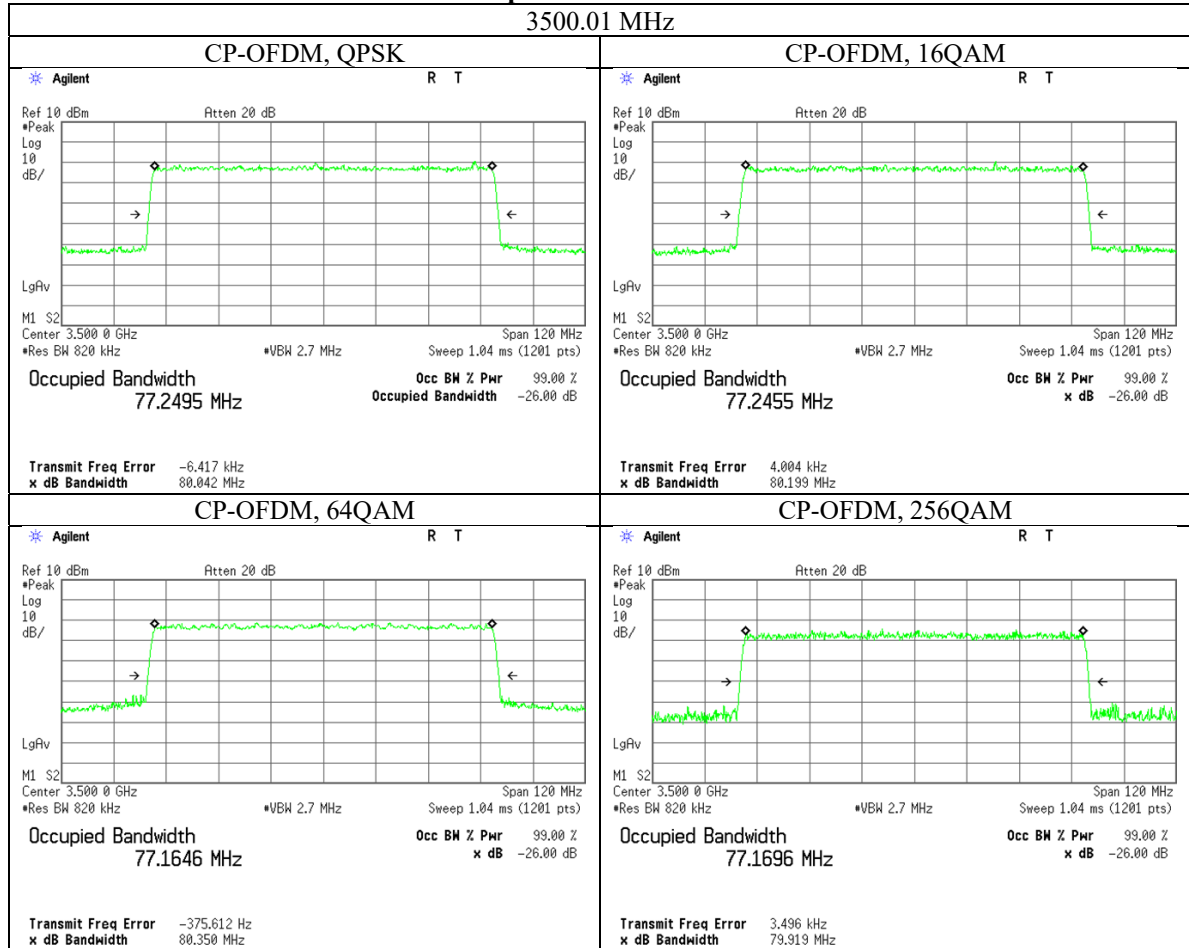


99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 80 MHz BW

Part 27: For mobile operations in the 3450-3550 MHz band

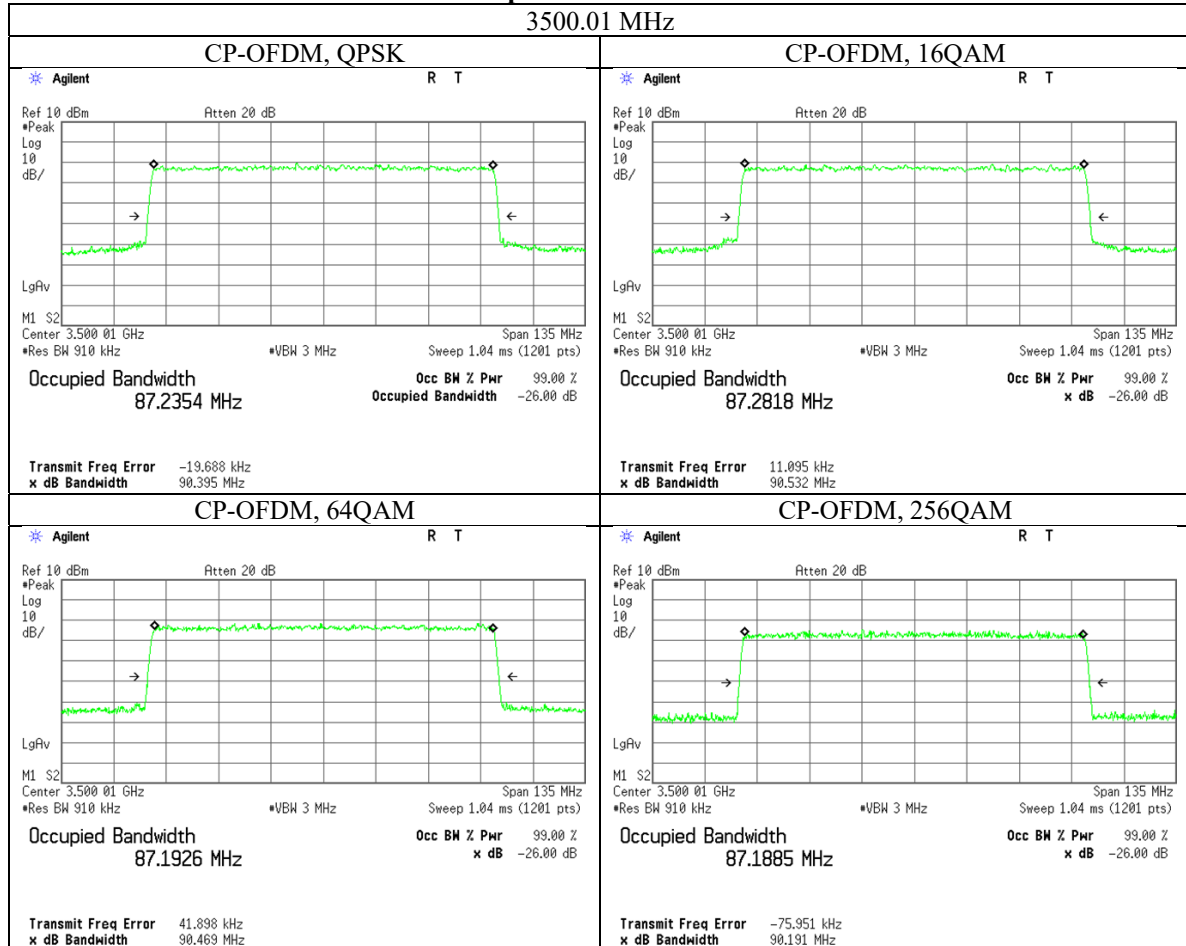
3500.01 MHz



99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 30, 2021
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Takafumi Noguchi
Mode	n77 90 MHz BW

Part 27: For mobile operations in the 3450-3550 MHz band

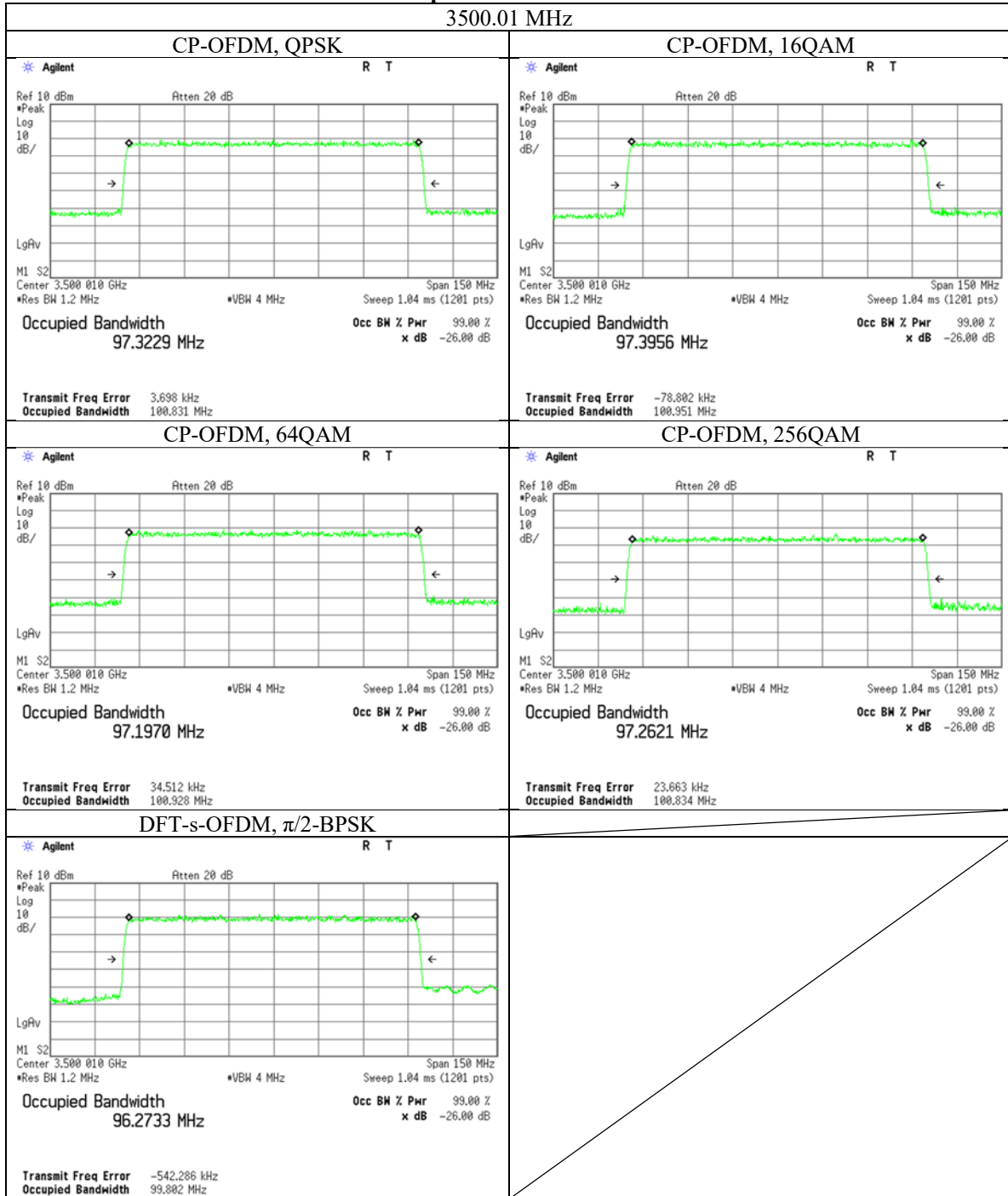


99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 100 MHz BW

Part 27: For mobile operations in the 3450-3550 MHz band

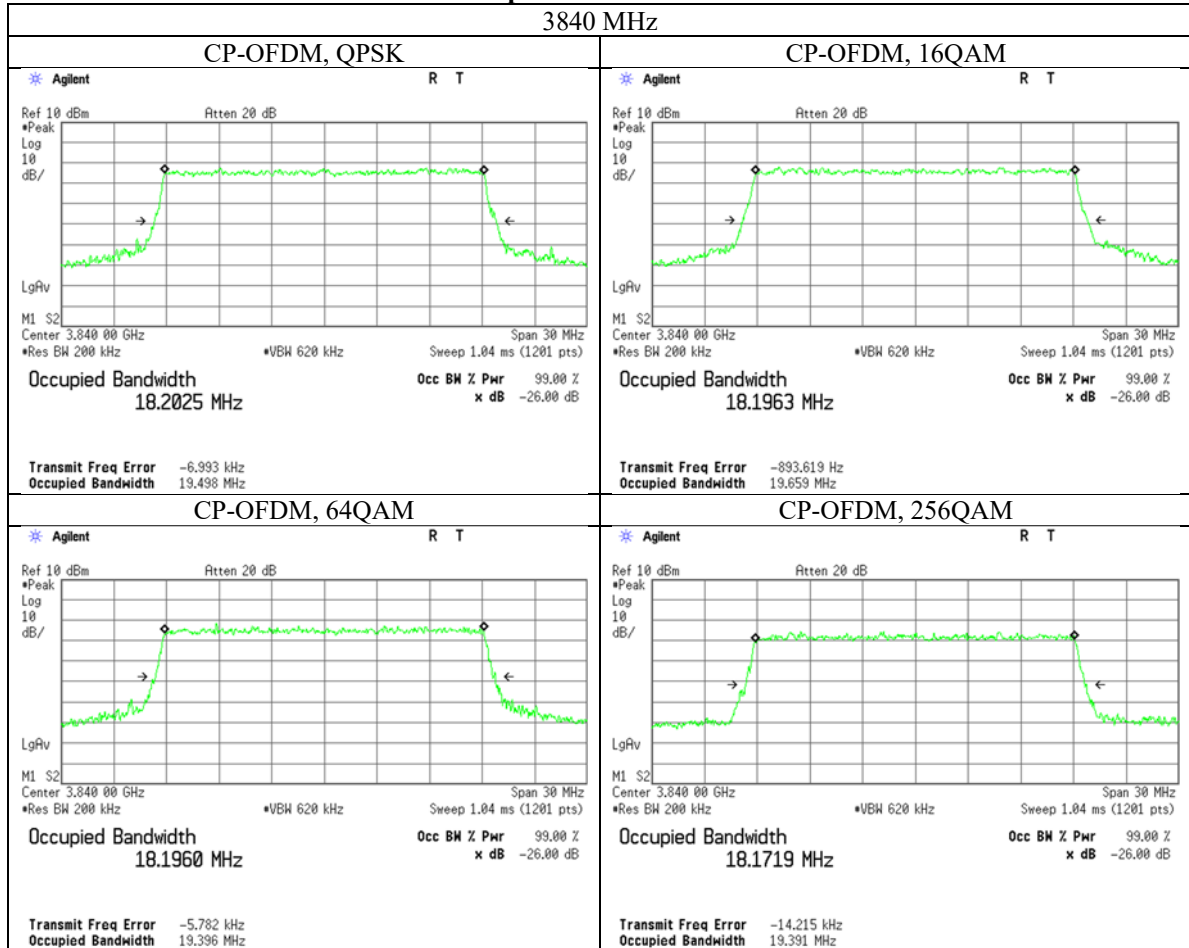


99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.11
Date	September 9, 2022
Temperature / Humidity	21 deg. C / 55 % RH
Engineer	Tetsuro Yoshida
Mode	n77 20 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band

3840 MHz

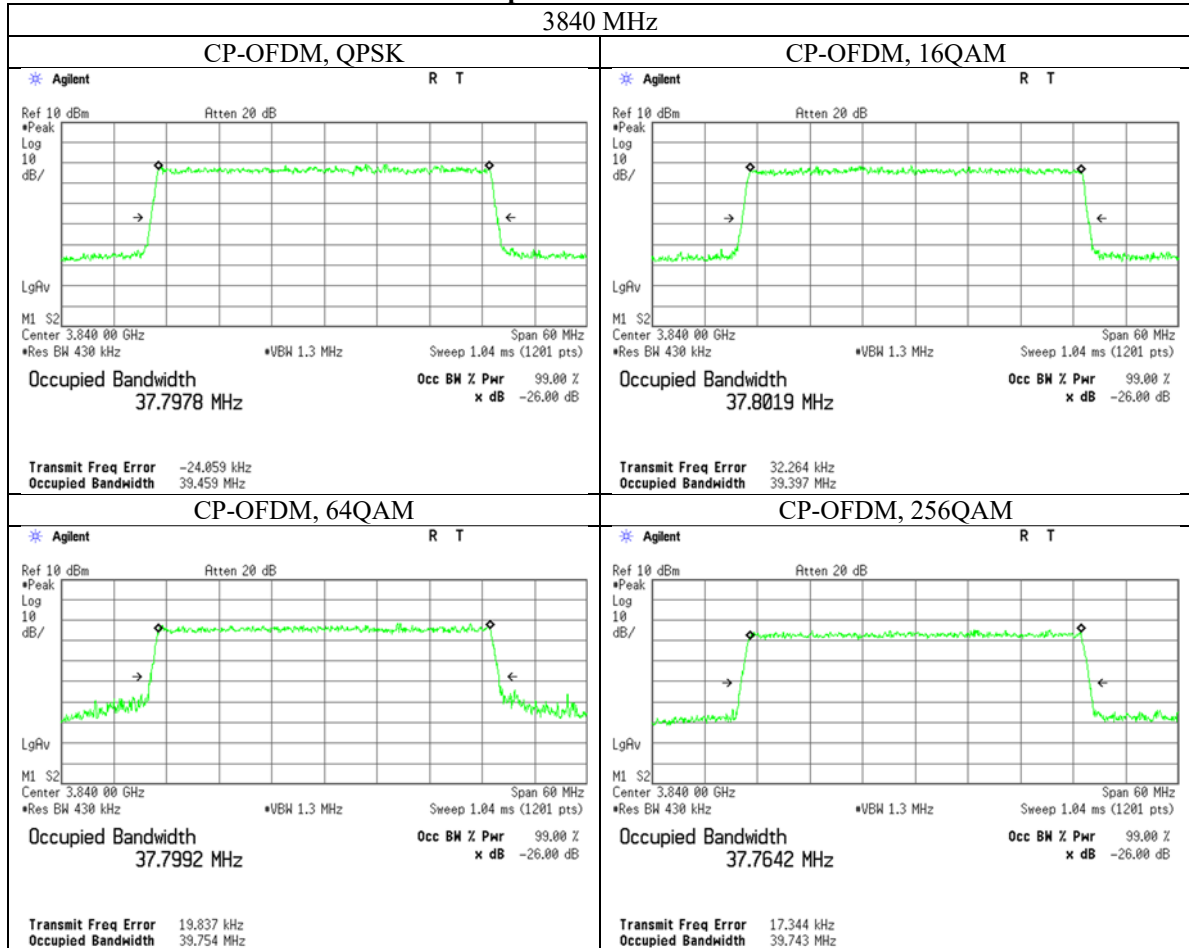


99% and 26dB Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.11
Date	September 9, 2022
Temperature / Humidity	21 deg. C / 55 % RH
Engineer	Tetsuro Yoshida
Mode	n77 40 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band

3840 MHz

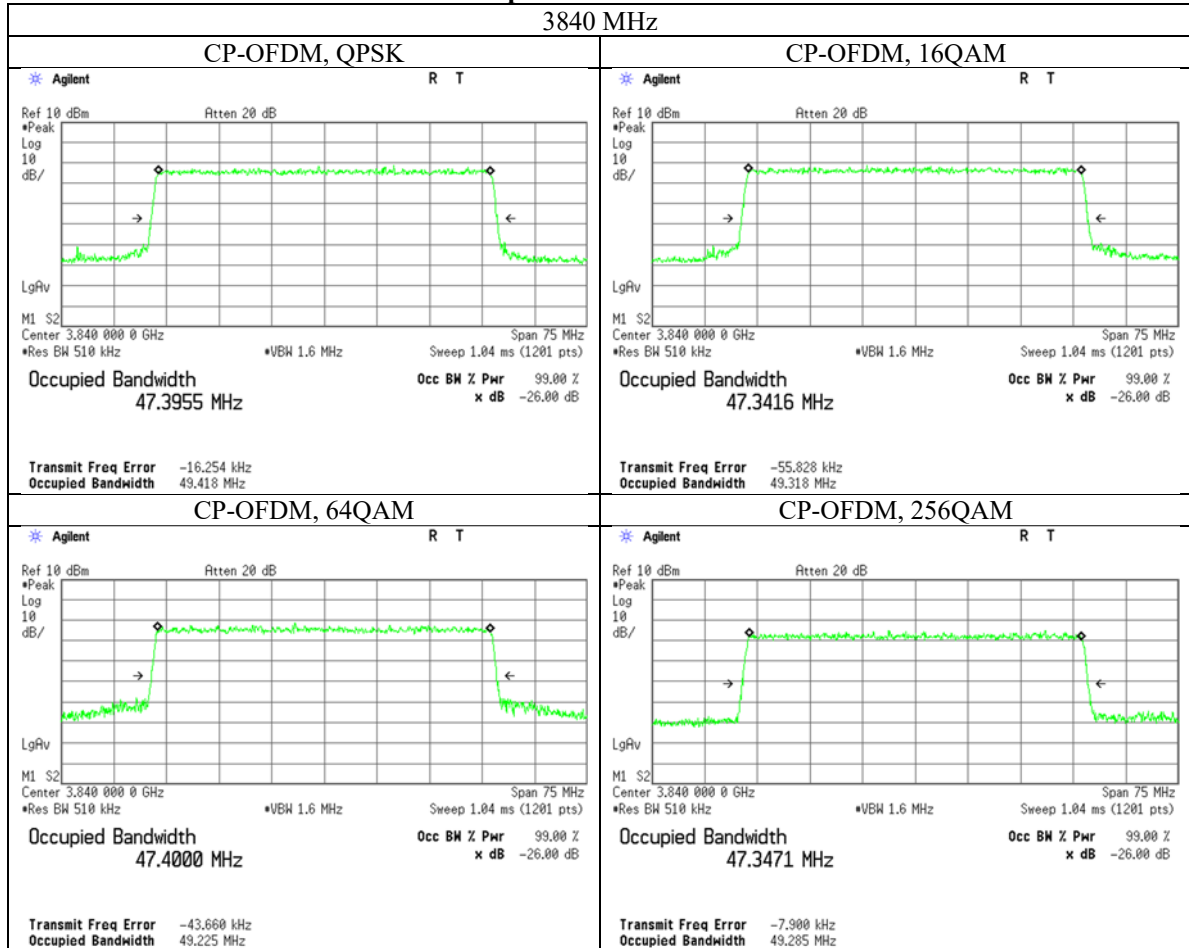


99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 50 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band



99% and 26dB Occupied Bandwidth

Test place

Ise EMC Lab.

Semi Anechoic Chamber

No.11

Date

September 9, 2022

Temperature / Humidity

21 deg. C / 55 % RH

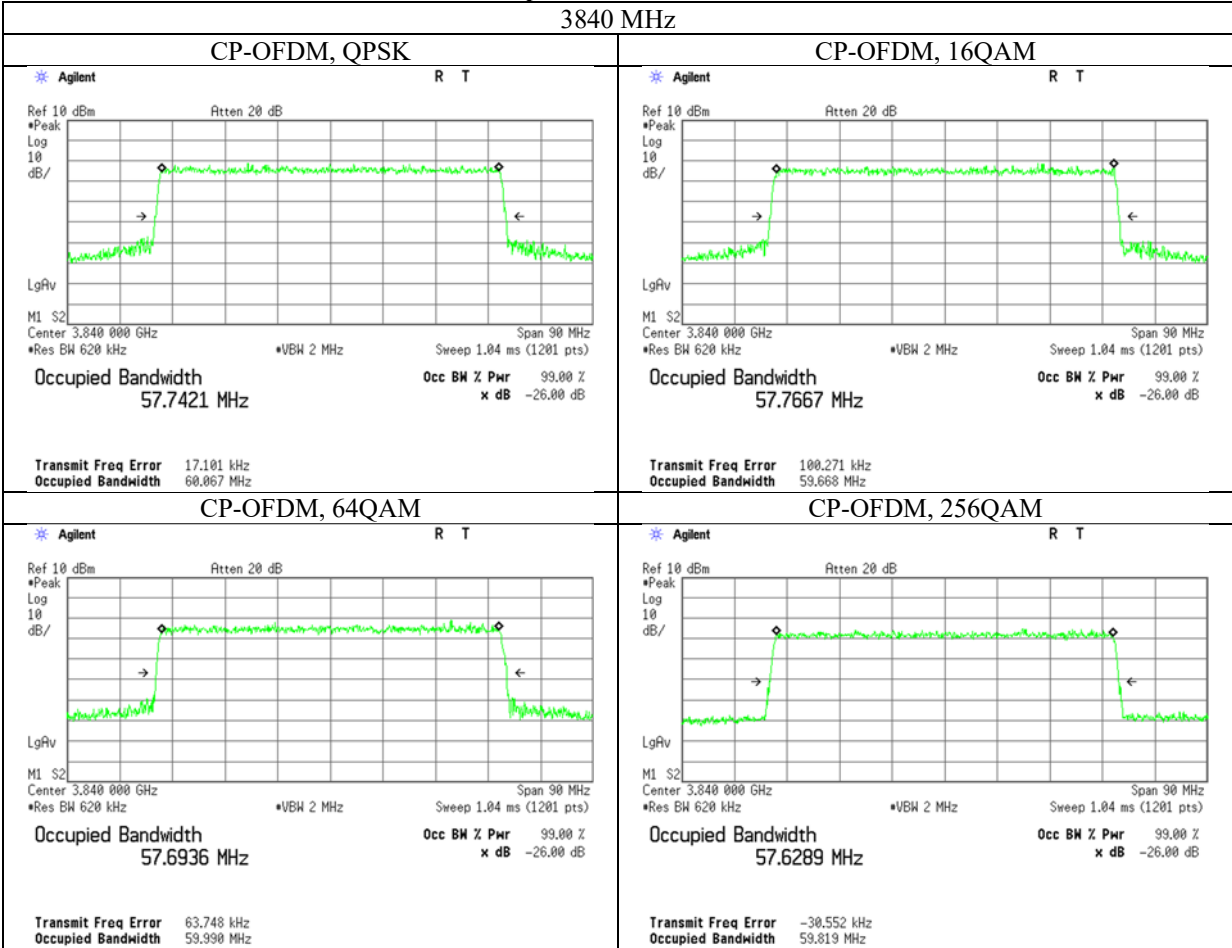
Engineer

Tetsuro Yoshida

Mode

n77 60 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band



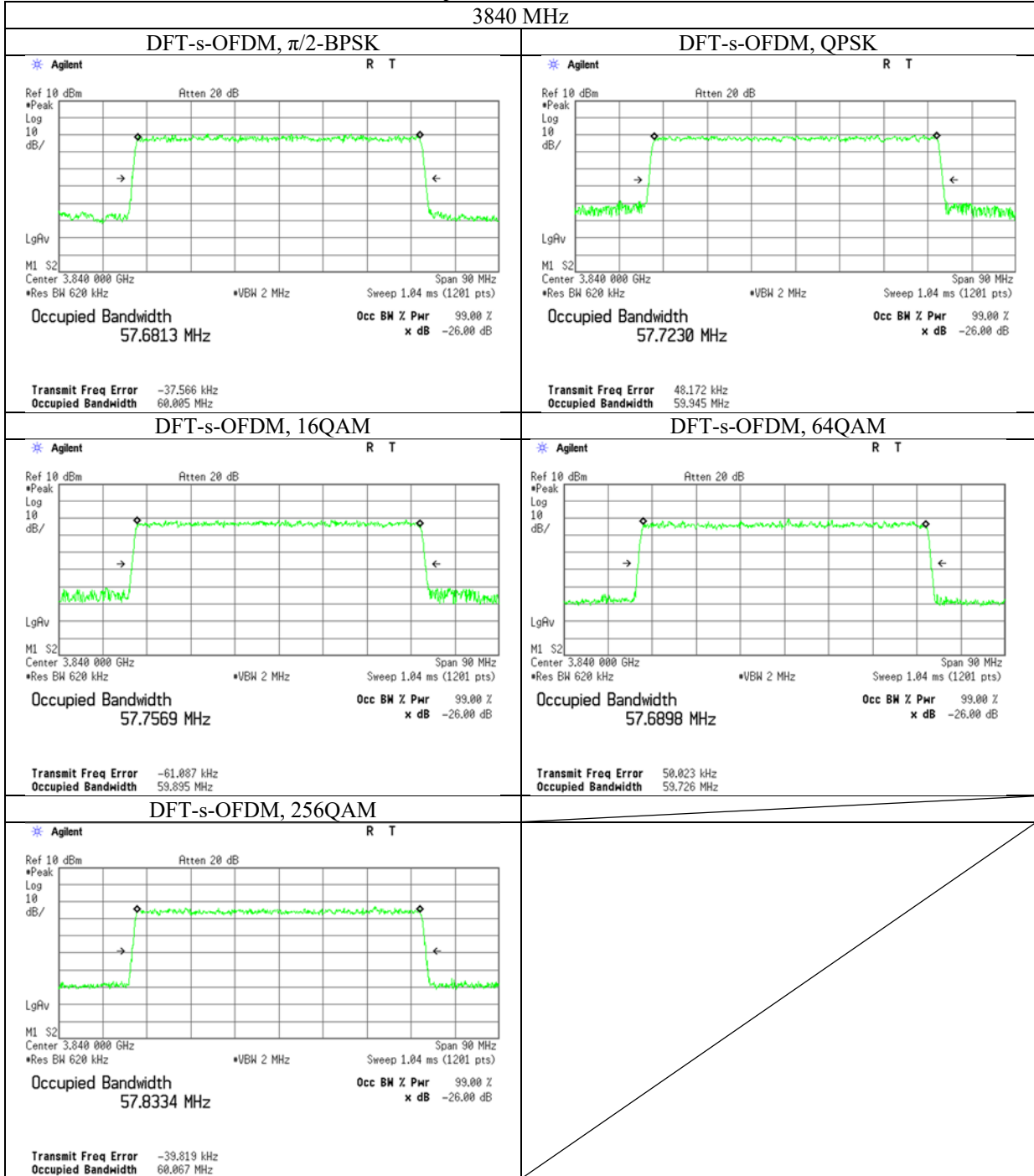
99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 60 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band

3840 MHz

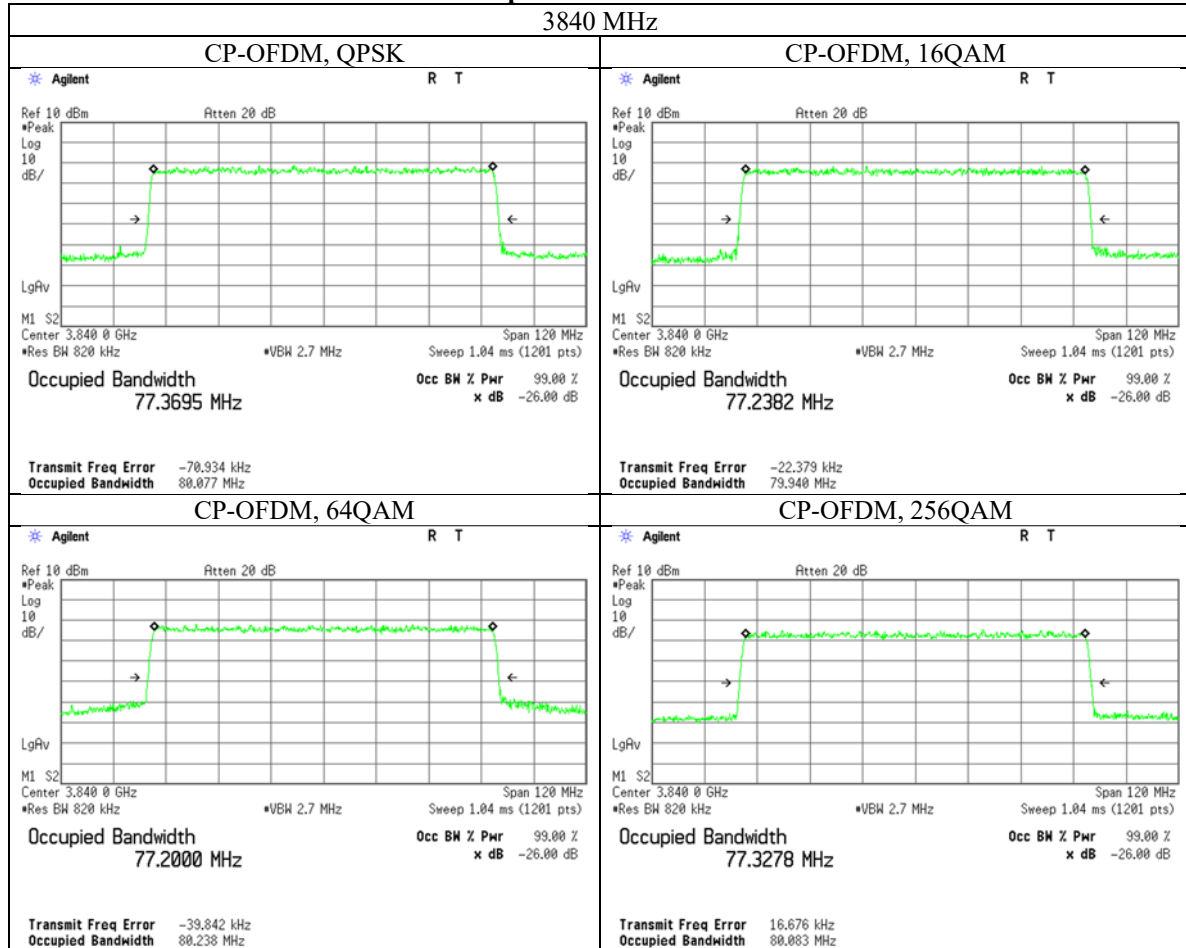


99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 80 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band

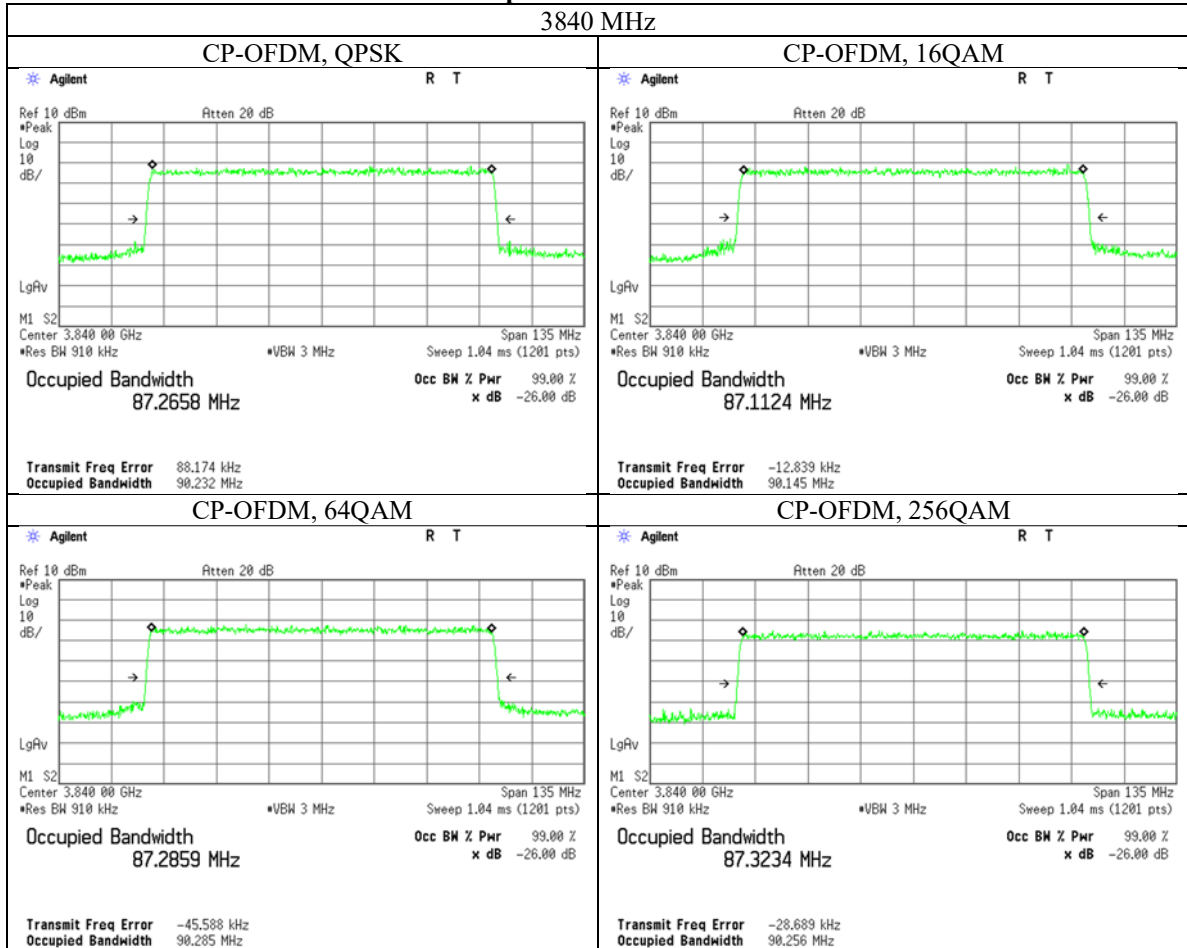


99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 90 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band

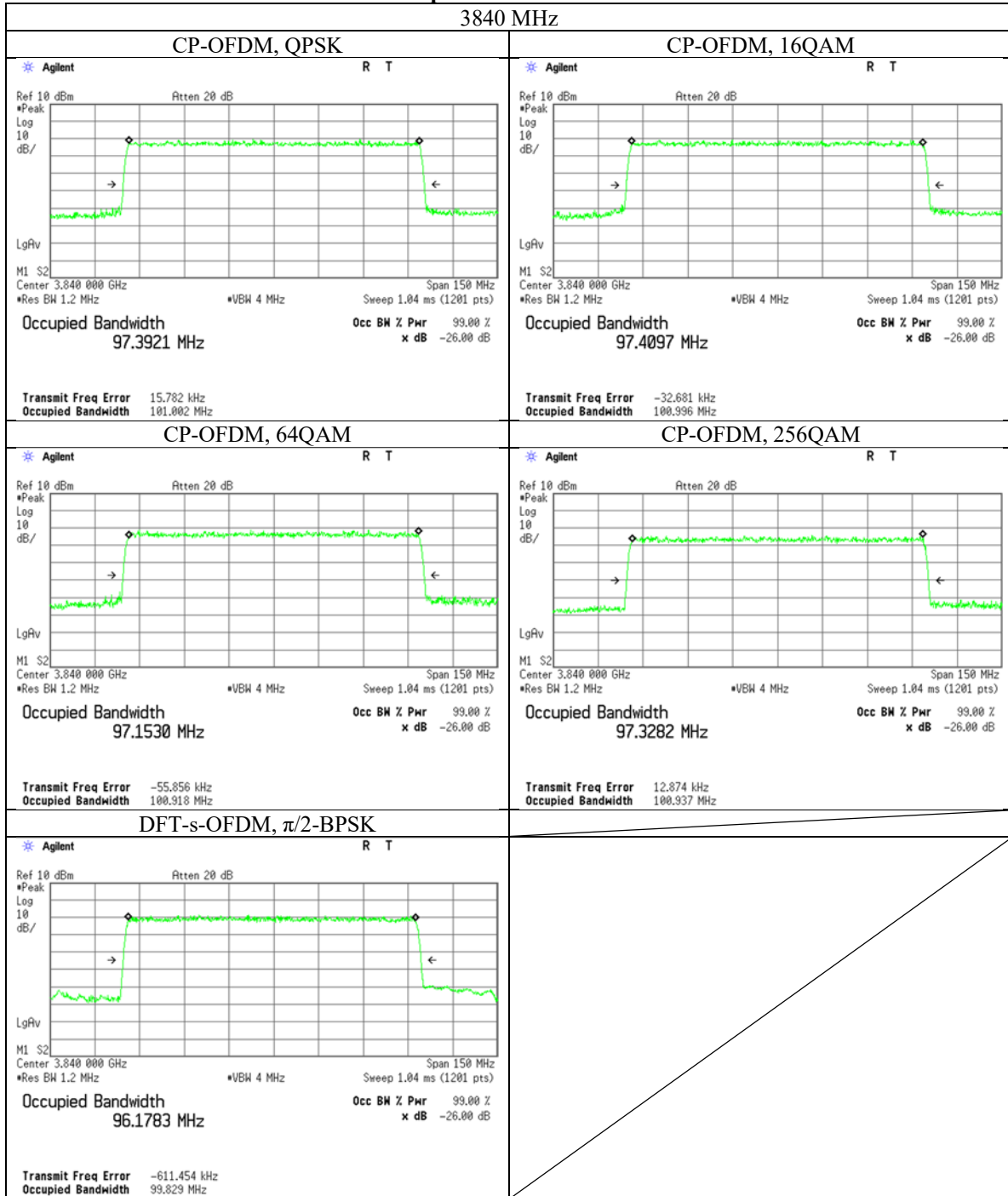


99% and 26dB Occupied Bandwidth

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 9, 2022
21 deg. C / 55 % RH
Tetsuro Yoshida
n77 100 MHz BW

Part 27: For mobile operations in the 3700-3980 MHz band



Out of Band Emission (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 12, 2022
21 deg. C / 50 % RH
Tetsuro Yoshida
NR Band n77, Tx 3500.01 MHz, BW 100 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
270-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3500.01 MHz, BW 100 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

High Side		
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block	bands between 1 and 5 MHz removed from the licensee's frequency block
1-272		
270-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3495 MHz, BW 90 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
243-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3504.99 MHz, BW 90 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

High Side	
RB Num/Start	
1-244	1 megahertz bands immediately outside and adjacent to the licensee's frequency block bands between 1 and 5 MHz removed from the licensee's frequency block
243-0	

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

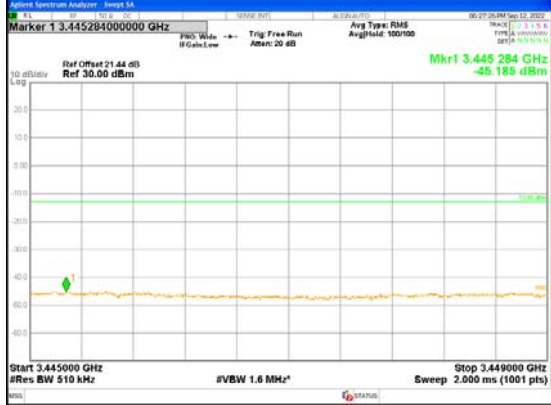
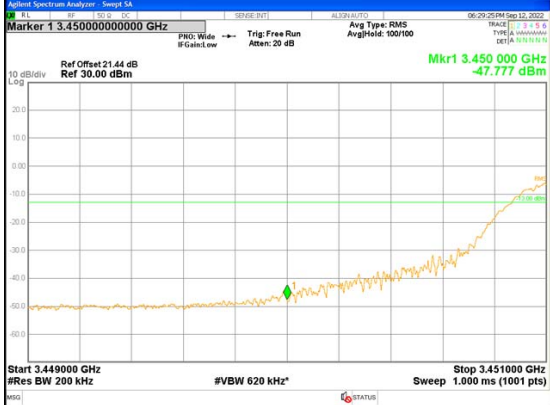
September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3490.02 MHz, BW 80 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
216-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3510 MHz, BW 80 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

High Side	
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-216	Agilent Spectrum Analyzer - Screenshot Marker 1 3.550000000000 GHz Ref Offset 21.44 dB Ref 30.00 dBm Mkr1 3.550 000 GHz -34.716 dBm Start 3.549000 GHz #Res BW 30 kHz #VBW 91 kHz Stop 3.551000 GHz Sweep 2.800 ms (1001 pts) Agilent Spectrum Analyzer - Screenshot Marker 1 3.551060000000 GHz Ref Offset 21.44 dB Ref 30.00 dBm Mkr1 3.551 060 GHz -35.252 dBm Start 3.551000 GHz #Res BW 510 kHz #VBW 1.6 MHz Stop 3.555000 GHz Sweep 2.000 ms (1001 pts)
216-0	Agilent Spectrum Analyzer - Screenshot Marker 1 3.550000000000 GHz Ref Offset 21.44 dB Ref 30.00 dBm Mkr1 3.550 000 GHz -48.340 dBm Start 3.549000 GHz #Res BW 200 kHz #VBW 620 kHz Stop 3.551000 GHz Sweep 1.000 ms (1001 pts) Agilent Spectrum Analyzer - Screenshot Marker 1 3.551232000000 GHz Ref Offset 21.44 dB Ref 30.00 dBm Mkr1 3.551 232 GHz -43.153 dBm Start 3.551000 GHz #Res BW 510 kHz #VBW 1.6 MHz Stop 3.555000 GHz Sweep 2.000 ms (1001 pts)

Out of Band Emission (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 12, 2022
21 deg. C / 50 % RH
Tetsuro Yoshida
NR Band n77, Tx 3480 MHz, BW 60 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
162-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3519.99 MHz, BW 60 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

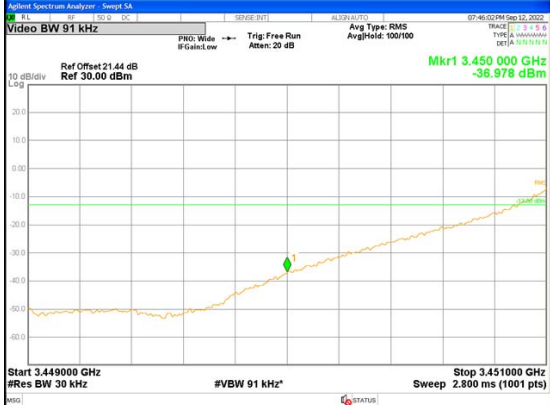
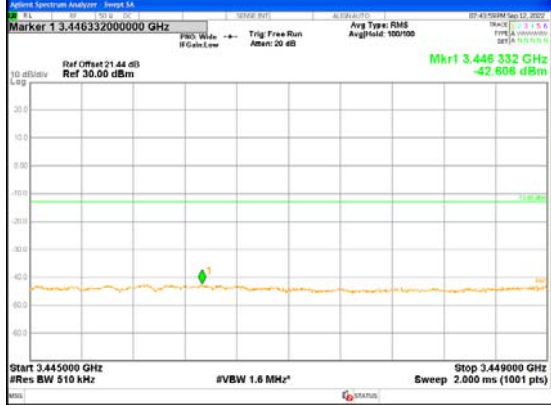
High Side		
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block	bands between 1 and 5 MHz removed from the licensee's frequency block
1-161		
162-0		

Out of Band Emission (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 12, 2022
21 deg. C / 50 % RH
Tetsuro Yoshida
NR Band n77, Tx 3475.02 MHz, BW 50 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
128-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

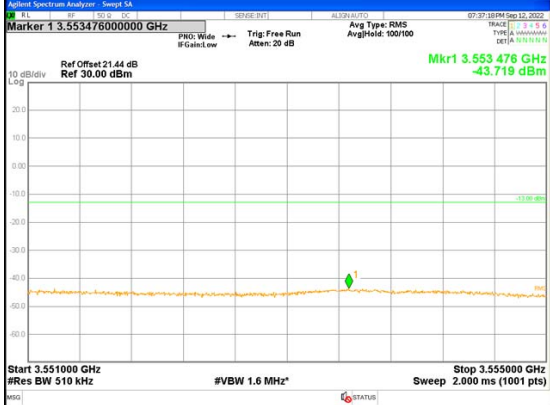
September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3525 MHz, BW 50 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

		High Side	
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block		bands between 1 and 5 MHz removed from the licensee's frequency block
1-132			
128-0			

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

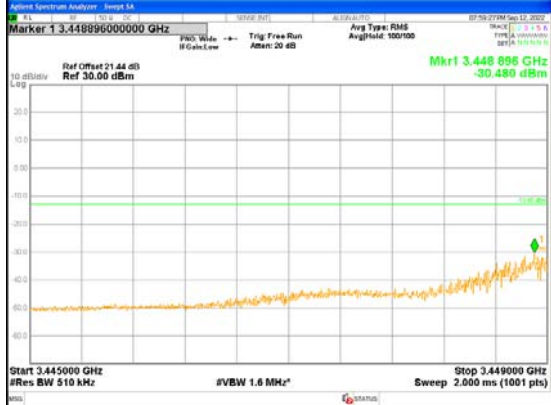
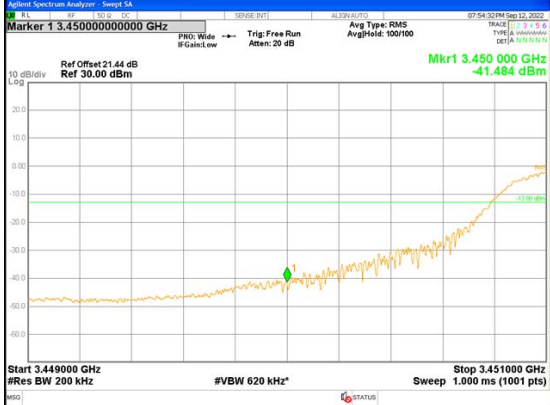
September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3470.01 MHz, BW 40 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
100-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3529.98 MHz, BW 40 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

High Side		
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block	bands between 1 and 5 MHz removed from the licensee's frequency block
1-105		
100-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

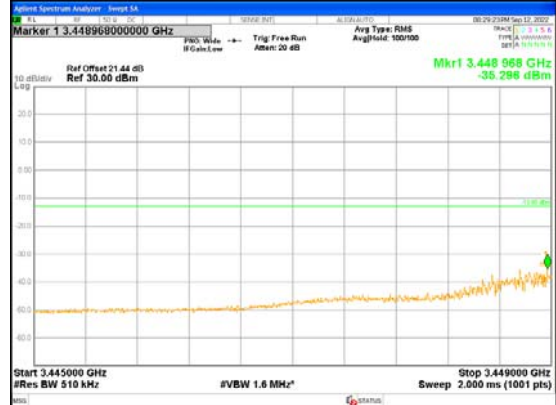
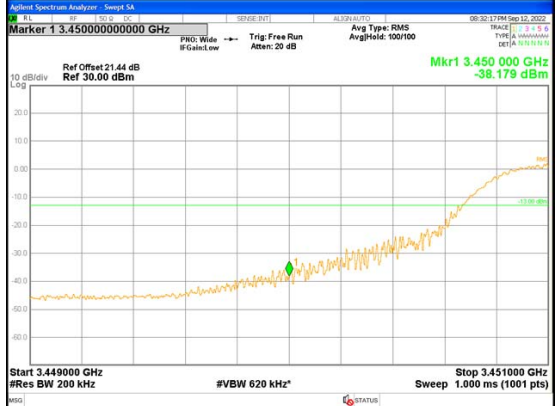
September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3470.01 MHz, BW 20 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
50-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 12, 2022

21 deg. C / 50 % RH

Tetsuro Yoshida

NR Band n77, Tx 3529.98 MHz, BW 20 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3450-3550 MHz band

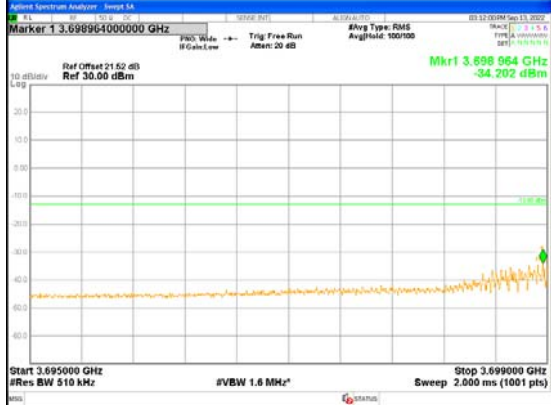
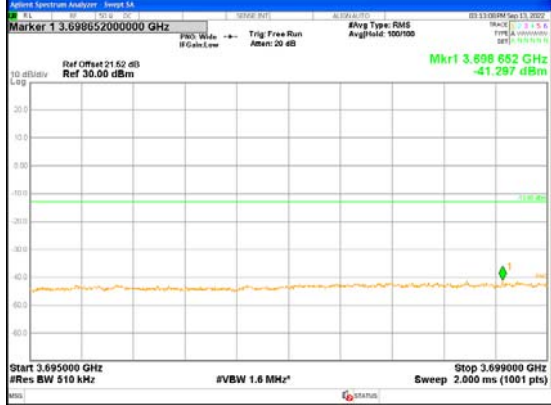
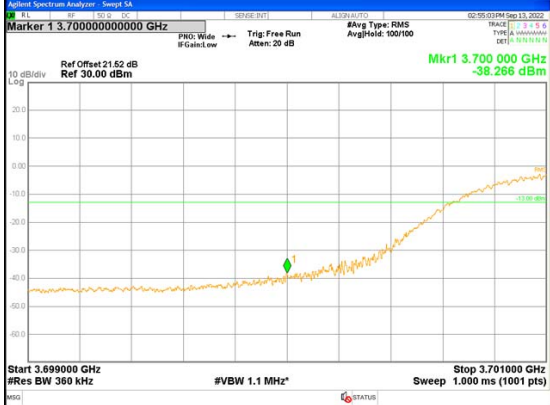
High Side		
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block	bands between 1 and 5 MHz removed from the licensee's frequency block
1-50		
50-0		

Out of Band Emission (Conducted)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.11
September 13, 2022
22 deg. C / 52 % RH
Tetsuro Yoshida
NR Band n77, Tx 3750 MHz, BW 100 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3700-3980 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
270-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 13, 2022

22 deg. C / 52 % RH

Tetsuro Yoshida

NR Band n77, Tx 3930 MHz, BW 100 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3700-3980 MHz band

		High Side	
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block	bands between 1 and 5 MHz removed from the licensee's frequency block	
1-272			
270-0			

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 13, 2022

22 deg. C / 52 % RH

Tetsuro Yoshida

NR Band n77, Tx 3745.02 MHz, BW 90 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3700-3980 MHz band

Low Side		
RB Num/Start	Bands between 1 and 5 MHz removed from the licensee's frequency block	1 megahertz bands immediately outside and adjacent to the licensee's frequency block
1-0		
243-0		

Out of Band Emission (Conducted)

Test place

Semi Anechoic Chamber

Date

Temperature / Humidity

Engineer

Mode

Ise EMC Lab.

No.11

September 13, 2022

22 deg. C / 52 % RH

Tetsuro Yoshida

NR Band n77, Tx 3934.98 MHz, BW 90 MHz, PI/2 BPSK

Part 27: For mobile operations in the 3700-3980 MHz band

		High Side	
RB Num/Start	1 megahertz bands immediately outside and adjacent to the licensee's frequency block		bands between 1 and 5 MHz removed from the licensee's frequency block
1-244	Agilent Spectrum Analyzer - Screenshot Marker 1 3.980000000000 GHz Ref Offset 21.52 dB Ref 30.00 dBm Mkr1 3.980 000 GHz -34.175 dBm Start 3.979000 GHz #Res BW 30 kHz #VBW 91 kHz Stop 3.981000 GHz Sweep 2.800 ms (1001 pts)		Agilent Spectrum Analyzer - Screenshot Marker 1 3.983160000000 GHz Ref Offset 21.52 dB Ref 30.00 dBm Mkr1 3.983 160 GHz -33.875 dBm Start 3.981000 GHz #Res BW 510 kHz #VBW 1.6 MHz Stop 3.985000 GHz Sweep 2.000 ms (1001 pts)
243-0	Agilent Spectrum Analyzer - Screenshot Marker 1 3.980000000000 GHz Ref Offset 21.52 dB Ref 30.00 dBm Mkr1 3.980 000 GHz -44.416 dBm Start 3.979000 GHz #Res BW 360 kHz #VBW 1.1 MHz Stop 3.981000 GHz Sweep 1.000 ms (1001 pts)		Agilent Spectrum Analyzer - Screenshot Marker 1 3.983620000000 GHz Ref Offset 21.52 dB Ref 30.00 dBm Mkr1 3.983 620 GHz -40.566 dBm Start 3.981000 GHz #Res BW 510 kHz #VBW 1.6 MHz Stop 3.985000 GHz Sweep 2.000 ms (1001 pts)