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Radio Test report – Radio 4449 B5 B12A

362902-1TRFWL-R1

Applicant:

Ericsson Canada Inc.

Product:

Radio 4449

Model:

Radio 4449 B5 B12A

Part number:

KRC 161 752/1

FCC ID:

TA8AKRC161752-1

ISED Registration Number:

287AB-AS1617521

HVIN:

AS1617521

Requirements/Summary:

Standard	Environmental phenomenon	Compliance
FCC 47 CFR Part 27	Miscellaneous wireless communications services	Yes
FCC 47 CFR Part 22	Public mobile services	Yes
RSS-132 Issue 3, January 2013	Cellular Telephone Systems Operating in the Bands 824–849 MHz and 869–894 MHz	Yes
RSS-130 Issue 1, October 2013	Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698–756 MHz and 777–787 MHz	Yes

Tested by:	Andrey Adelberg, Senior EMC/Wireless Specialist
Reviewed by:	Kevin Rose, Wireless/EMC Specialist
Date of issue:	December 7, 2018
Reviewer signature	

Test location

Company name	Nemko Canada Inc.	
Address	303 River Road	349 Terry Fox
City	Ottawa	Ottawa
Province	Ontario	Ontario
Postal code	K1V 1H2	K2K 2V6
Country	Canada	Canada
Telephone	+1 613 737 9680	+1 613 963 8000
Facsimile	+1 613 737 9691	
Toll free	+1 800 563 6336	
Website	www.nemko.com	
Site number	Test site registration number: FCC: CA2040; ISED: 2040A-4 (3 m semi anechoic chamber)	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Copyright notification

Table of contents

Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Ericsson Canada Inc.
Address	349 Terry Fox Drive
City	Ottawa
Province/State	Ontario
Postal/Zip code	K2K 2V6
Country	Canada

1.2 Test specifications

FCC 47 CFR Part 27	Miscellaneous wireless communications services
FCC 47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
FCC 47 CFR Part 27	Public mobile services
RSS-132 Issue 3, January 2013	Cellular Telephone Systems Operating in the Bands 824–849 MHz and 869–894 MHz
RSS-130 Issue 1, October 2013	Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698–756 MHz and 777–787 MHz
RSS-Gen, Issue 5, April 2018	General Requirements for Compliance of Radio Apparatus

1.3 Test method

ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
KDB 662911 D01	Multiple Transmitter Output v02r01
KDB 662911 D02	MIMO with Cross-Polarized Antennas v01

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested.

This report applies to the Radio 4449 B5 B12A with model numbers KRC 161 752/1.

See “Summary of test results” for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued

Section 2. Summary of test results

2.1 FCC Part 27 test results

Part	Test description	Verdict
§27.50(c)	Maximum output power at RF antenna connector	Reported
§27.53	Spurious emissions at RF antenna connector	Pass
§27.53	Radiated spurious emissions	Pass
§27.53(f)	Radiated spurious emissions within 1559–1610 MHz band	Pass
§27.54	Frequency stability	Pass
§2.1049	Occupied bandwidth	Pass

Notes: None

2.2 FCC Part 22 test results

Part	Test description	Verdict
§22.913	Effective radiated power limits	Reported
§22.917(a)	Emission limitations for cellular equipment	Pass
§22.917(b)	Emission bandwidth	Pass
§22.355	Frequency tolerance	Pass

Notes: None

2.3 RSS-130 test results

Part	Test description	Verdict
4.4	Transmitter output power and Equivalent Isotropic Radiated Power (e.i.r.p.)	Pass
4.6	Spurious emissions at RF antenna connector	Pass
4.6	Radiated spurious emissions	Pass
4.6	Transmitter frequency stability	Pass
RSS-Gen, 6.7	Occupied bandwidth	Pass

Notes: None

2.4 RSS-132 test results

Part	Test description	Verdict
5.4	Transmitter output power and Equivalent Isotropic Radiated Power (e.i.r.p.)	Pass
5.5	Spurious emissions at RF antenna connector	Pass
5.5	Radiated spurious emissions	Pass
5.3	Transmitter frequency stability	Pass
RSS-Gen, 6.7	Occupied bandwidth	Pass
5.6	Receiver Spurious Emissions	Pass

Notes: None

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	October 23, 2018

3.2 EUT information

Product name	Radio 4449	
Model	Radio 4449 B5 B12A	
Part number	KRC 161 752/1	
Revision	R1C	
Serial number	B441893298	
Antenna ports	4 TX/RX Ports	
RF BW / IBW	B5: 25 MHz B12A: 16 MHz	
FDD	B5: 45 MHz B12A: 30 MHz	
B5 Frequency bands	TX (DL): 869–894 MHz RX (UL): 824–849MHz	
B12A Frequency bands	TX (DL): 729–745 MHz RX (UL): 699–715 MHz	
Nominal O/P per antenna port for B5	Configuration 1	Single Carrier, Ports A through D: 1 × 40 W (46 dBm) Multi Carrier, Ports A through D; 2 × 20 W (46 dBm) Multi Carrier, Ports A through D; 3 × 13.3 W (46 dBm)
	Configuration 2	Single Carrier, Ports A and C: 1 × 60 W (47.8 dBm) Multi Carrier, Ports A and C; 2 × 30 W (47.8 dBm) Multi Carrier, Ports A and C; 3 × 20 W (47.8 dBm)
Nominal O/P per antenna port for B12A	Configuration 1	Single Carrier, Ports A through D: 1 × 40 W (46 dBm) Multi Carrier, Ports A through D; 2 × 20 W (46 dBm)
	Configuration 2	Single Carrier, Ports A and C: 1 × 60 W (47.8 dBm) Multi Carrier, Ports A and C; 2 × 30 W (47.8 dBm)
Accuracy (nominal)	±0.1 ppm	
Nominal voltage	2 × −48 V_{DC} @ 20 A	
RAT	LTE: SC, MC, MIMO; (IoT GB, IB: SC, MC)	
Modulation	LTE: QPSK, 16 QAM, 64 QAM, 256QAM	
Channel bandwidth	B5 LTE: 5 MHz and 10 MHz	B12A: 5 MHz and 10 MHz
Maximum combined OBW per port	B5: 35 MHz	B12A: 16 MHz
CPRI	10.1 Gbps	
Channel raster	100 kHz	
Regulatory requirements	Radio:	FCC Parts 2, 22, 27; ISED: RSS-132, RSS-130, RSS-Gen
	EMC:	FCC Part 15 Subpart B; ICES-003
	Safety:	IEC/EN 62368-1, UL/CSA 62368-1 IEC/EN 60950-22, IEC/EN 62950, UL 50E/CAN/CSA
Emission Designator:	B5: 5M00W7D, 10M0W7D	B12A: 5M00W7D, 10M0W7D
Supported Configuration	SC, MC, Single Antenna, TX Diversity, MIMO, Carrier Aggregation	
Operating temperature	−40 °C to +55 °C	
Total Power per port	80 W (49 dBm)	
Supported carrier configurations	B5 LTE BW: 5 (1-3), 10 (1-2)	B12A LTE BW: 5 (1-2), 10 (1)

3.3 Product description and theory of operation

EUT description of the methods used to exercise the EUT and all relevant ports:

Description/theory of operation	The Radio 4449 B5 B12A (KRC 161 752/1) is a multi-standard remote radio forming part of the Ericsson RBS (Radio Base Station) equipment. The Radio 4449 provides radio access for mobile and fixed devices and is designed for the outdoor environment. Radio unit installation is designed for pole, wall or mast mount options intended for co-location near the antenna. A fiber optic interface provides the RRU/RBS control and digital interface between the Radio and the RBS. The Radio 4449 product is convection cooled and shall be mounted vertically Horizontal mounting is not supported on this product. Output RF Power is rated at 4 × 80 W (config 1) and 2 × 120 W (config 2); additional: 2 × 40 W + 2 × 100 W This report covers Config 1 only. Altitude during operation: Below 3000 m

Port description

Port	Description
ANT A	RF Out A
ANT B	RF Out B
ANT C	RF Out C
ANT D	RF Out D
RET	Antenna Line Device
Alarm	Alarm and DC for Optional Fan Tray
Data 1	Optical Interface Data 1
Data 2	Optical Interface Data 2
DC Input	2 × −48 V_{DC}
MMI	Display - Radio Status
GND	Ground

Physical

Dimensions	455 × 335 × 240 mm (H × W × D)
Weight	32 kg
Operating Temperature	−40 to +55 °C
Mounting	Pole, Wall Mount
Cooling	Convection (optional fan tray - forced air)

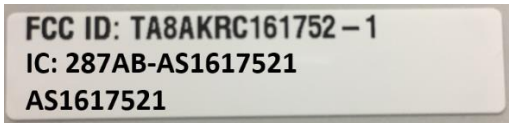
Software details: CXP9013268/15-R73DV80

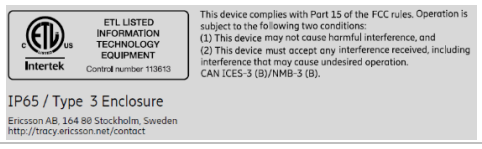
Radio 2212 B5 and B12A (R1C) Hardware Configuration

Product: KRC 161 752/1	Revision	Description		
KRF 901 438	R1A	FU		
KRY 901 400/496	R1A	Radio B5 Master		
ROA 128 6610/491	R1H	Radio Board B5		
TVK 128 2649	R3	PCB		
NTB 101 171/495	R1A	Parts B5		
KRY 901 400/495	R1A	Radio B12A Slave		
ROA 128 6610/495	R1A	Radio Board B12A		
TVK 128 2740	R4A	PCB		
NTB 101 171/494	R1B	Parts B12A		

Product Identification Label KRC 161 752/1

Legal Overlay / Label





3.4 EUT test details

EUT setup/configuration rationale:

Down link	**RAT**	**Modulation**	**Performance Requirement**		**Test Model / Configuration**
	LTE	QPSK	N/A		E-TM1.1
Up link	**RAT**	**Modulation**	**Performance Requirement**	**Input Signal**	**Test Model / Configuration**
	LTE	QPSK	N/A		E-UTRA-UL

Carrier Configurations:

Single carrier B5

Bandwidth, MHz	Transmit / DL, MHz					
	B	**EARFCN**	**M**	**EARFCN**	**T**	**EARFCN**
5	871.5	*2425*	881.5	*2525*	891.5	*2625*
10	874.0	*2450*	881.5	*2525*	889.0	*2600*

Bandwidth, MHz	Receive / UL, MHz					
	B	**EARFCN**	**M**	**EARFCN**	**T**	**EARFCN**
5	826.5	*20425*	836.5	*20525*	846.5	*20625*
10	829.0	*20450*	836.5	*20525*	844.0	*20600*

Multi-Carrier B5

Bandwidth, MHz	Transmit / DL, MHz											
	B	**EARFCN**	**B2**	**EARFCN**	**B3**	**EARFCN**	**T3**	**EARFCN**	**T2**	**EARFCN**	**T1**	**EARFCN**
5	871.5	2425	876.5	2475	881.5	2525	881.5	2525	886.5	2575	891.5	2625
10	874	2450	879	2550	–	–	–	–	884	2550	889	2650

Bandwidth, MHz	Receive/ UL, MHz											
	B	**EARFCN**	**B2**	**EARFCN**	**B3**	**EARFCN**	**T3**	**EARFCN**	**T2**	**EARFCN**	**T1**	**EARFCN**
5	701.5	23035	706.5	23085	711.5	23135	702.5	23045	707.5	23095	712.5	23145
10	704.0	23060	–	–	–	–	–	–	–	–	710.0	23120

Single carrier B12A

Bandwidth, MHz	Transmit / DL, MHz					
	B	**EARFCN**	**M**	**EARFCN**	**T**	**EARFCN**
5	731.5	*5035*	737.0	*5090*	742.5	*5145*
10	734.0	*5060*	737.0	*5090*	740.0	*5120*

Bandwidth, MHz	Receive / UL, MHz					
	B	**EARFCN**	**M**	**EARFCN**	**T**	**EARFCN**
5	701.5	*23035*	707.0	*23090*	712.5	*23145*
10	704.0	*23060*	707.0	*23090*	710.0	*23120*

Multi-Carrier B12A

Bandwidth, MHz	Transmit / DL, MHz											
	B	**EARFCN**	**B2**	**EARFCN**	**B3**	**EARFCN**	**T3**	**EARFCN**	**T2**	**EARFCN**	**T1**	**EARFCN**
5	731.5	5035	736.5	5085	741.5	5135	732.5	5045	737.5	5095	742.5	5145
10	734.0	***5060***	–	–	–	–	–	–	–	–	740.0	***5120***

Bandwidth, MHz	Receive/ UL, MHz											
	B	**EARFCN**	**B2**	**EARFCN**	**B3**	**EARFCN**	**T3**	**EARFCN**	**T2**	**EARFCN**	**T1**	**EARFCN**
5	701.5	23035	706.5	23085	711.5	23135	702.5	23045	707.5	23095	712.5	23145
10	704.0	23060	–	–	–	–	–	–	–	–	710.0	23120

EUT Monitoring Method / Equipment:

Support equipment	**Node EMC Test System** - Anritsu MS 2691 VSA/Sig Gen - HP Laptop - Timing and Synchronization box (GPS) - Ethernet Switch - Isolation Transformer - **RBS 6601, BFM 901 009/1:** - DUS 4101 KDU 137 624/1, R7B, S/N: CD3B327591 - DUS SW: CXP102051/25-R26DM - Input Voltage: −48 V_{DC}

3.5 EUT setup diagram

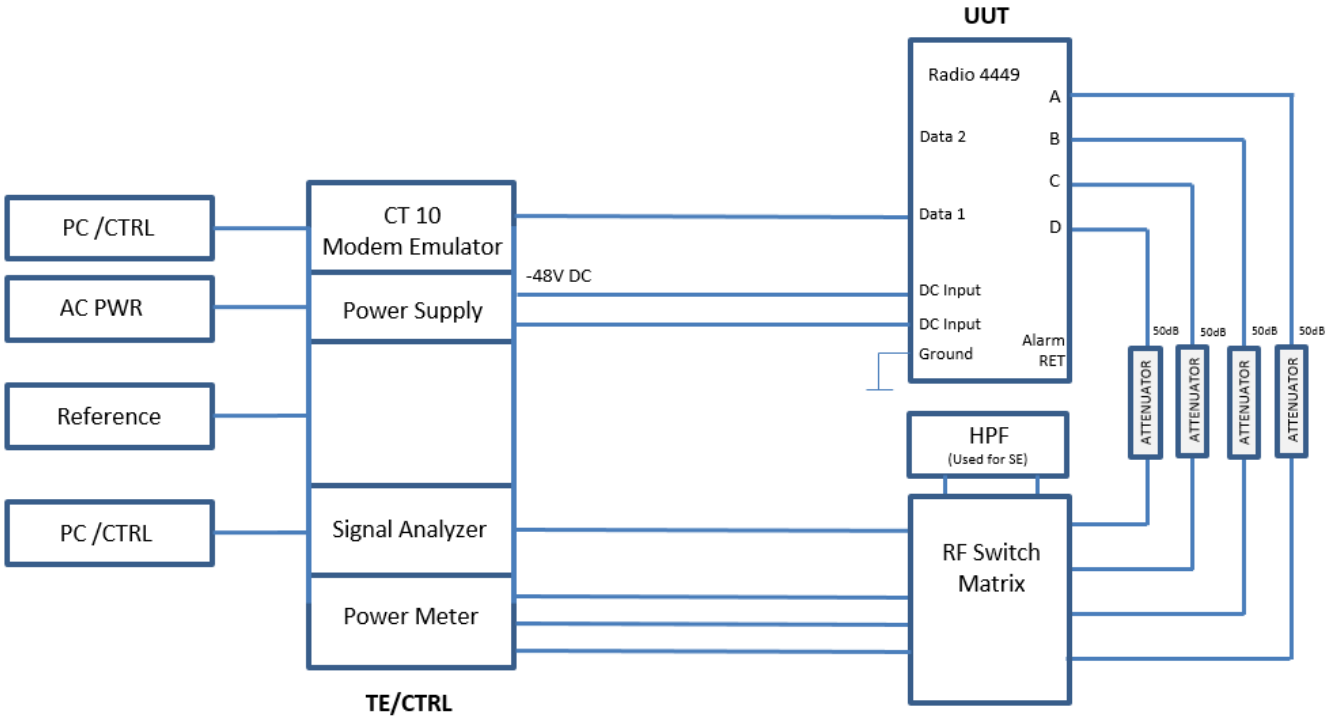


Figure 3.5-1: *Setup diagram, conducted*

3.6 Setup photographs

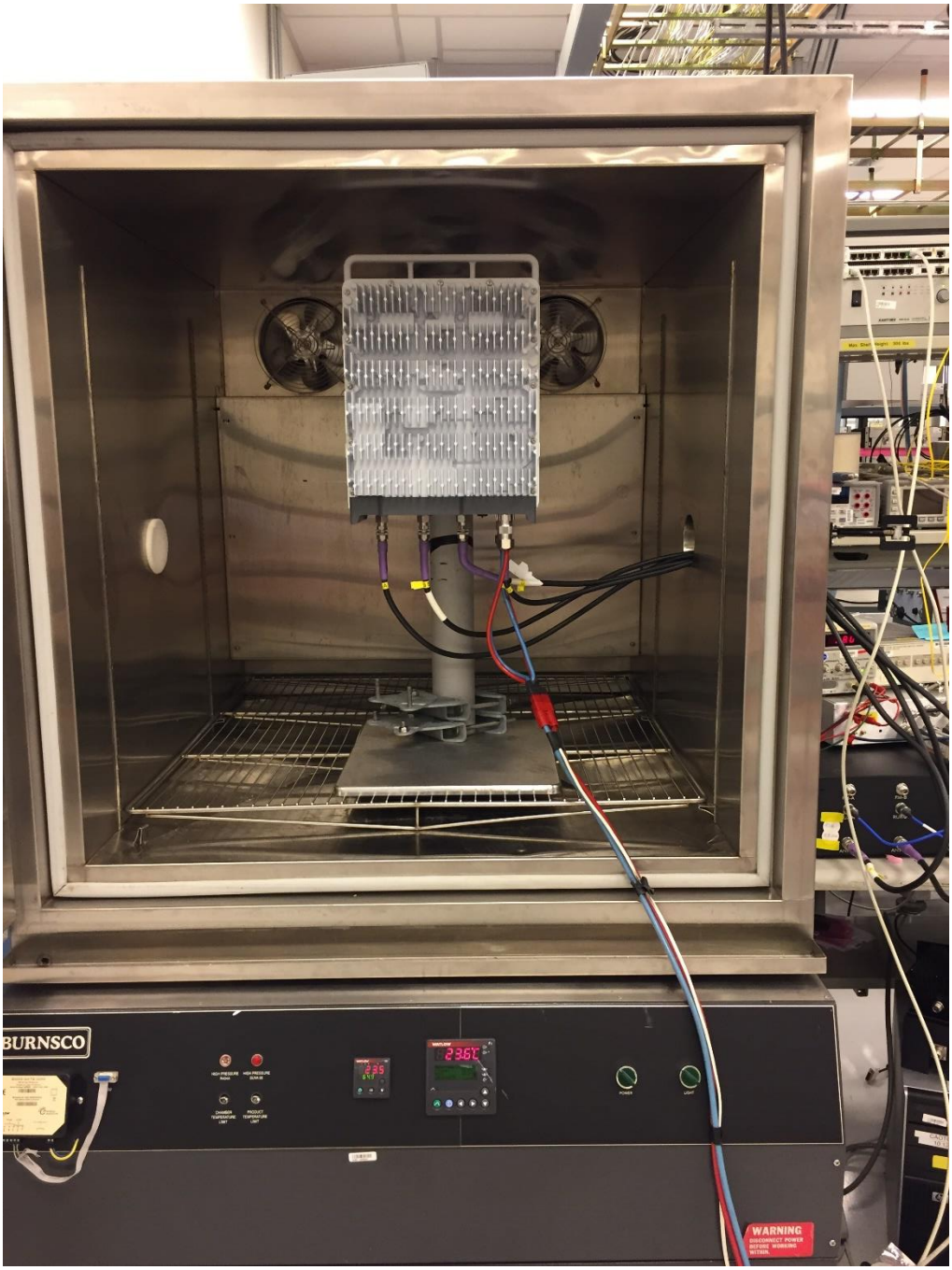


Figure 3.6-1: *Test / Measurement Equipment - Set up for Radio Compliance Testing*

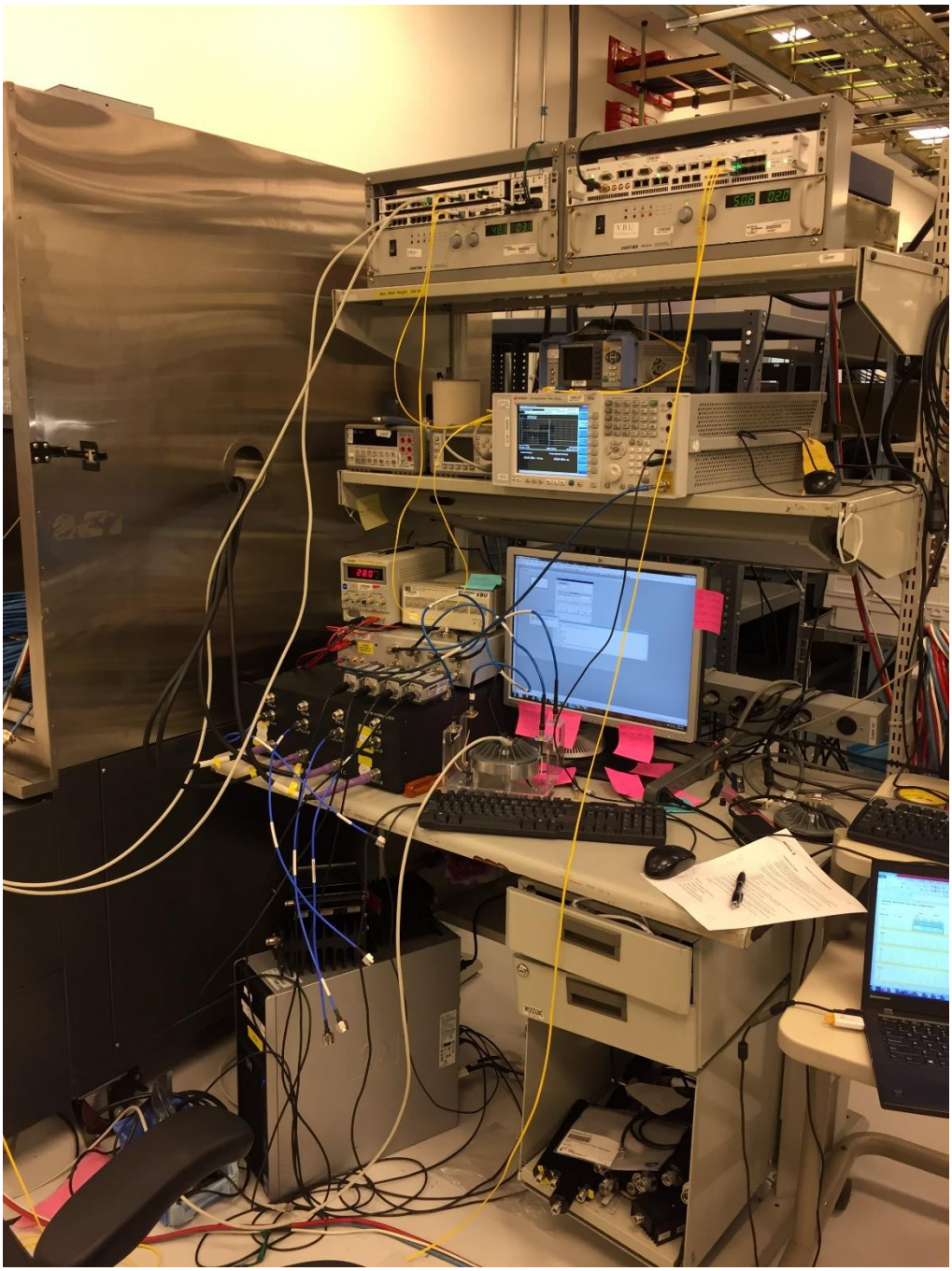


Figure 3.6-2: *EUT Set-up for Radio Compliance Testing*

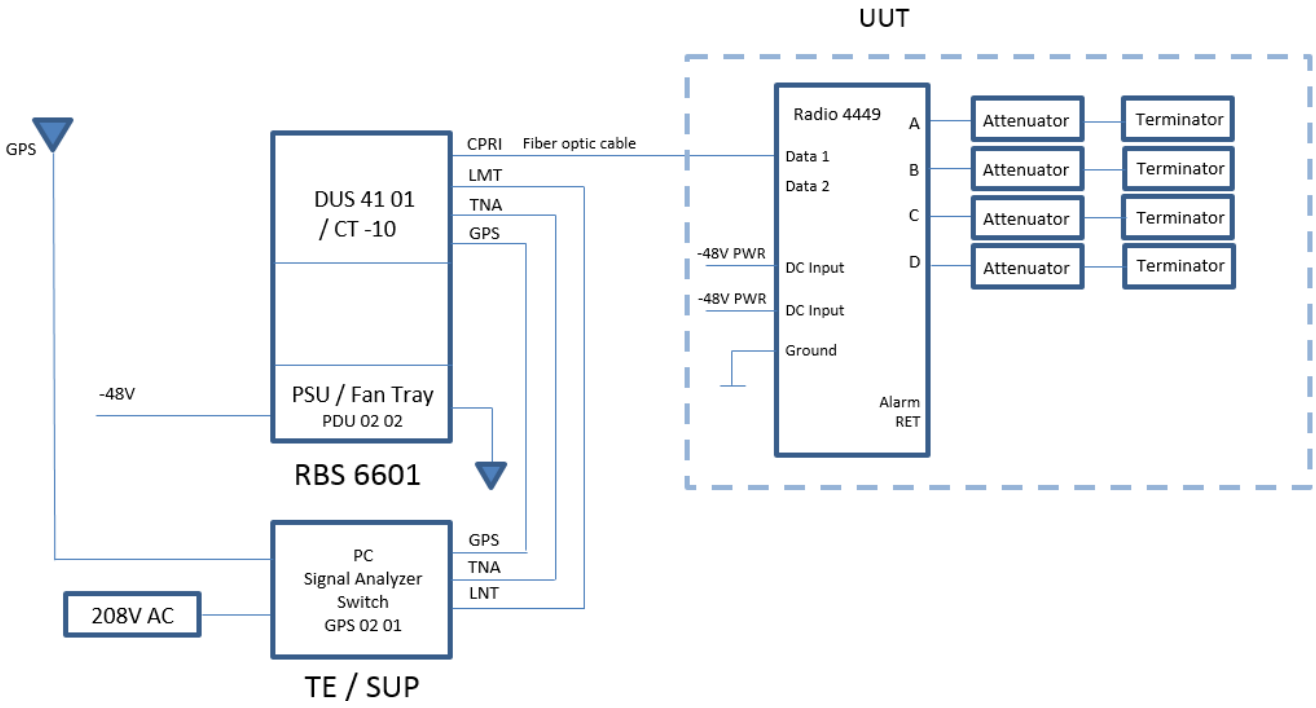


Figure 3.6-3: *EUT Set-up diagram for Radiated Compliance Testing*

Figure 3.6-4: *EUT Set-up for Radiated Compliance Testing*

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
All antenna port measurements	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	3.55

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
DMM	Digital Multimeter	34401A	US36048294	1 year	NCR
Spectrum Analyser	Keysight	PXA N9030A	MY55410202	1 year	13-Sept-19
Network Analyser	Agilent	8722ES	US39175389	1 year	31-May-19
PSU (DC)	Xantrex	XKW60-50	1001425551	NCR	NCR
USB Power Sensor	Keysight	U2044XA	MY58090002	1 year	16-Apr-19
USB Power Sensor	Keysight	U2044XA	MY58040008	1 year	16-Apr-19
USB Power Sensor	Keysight	U2044XA	MY57510012	1 year	15-Apr-19
USB Power Sensor	Keysight	U2044XA	MY57520003	1 year	15-Apr-19
RF Swtich	Ericsson	RARFSW4X1	1	NCR	NCR
Switch Driver	Hewlett Packard	11713A	3748A06076	NCR	NCR
PSU (DC)	Leader	730-3D	9801135	NCR	NCR
CT10	Ericsson	Testing Equipment	T01F311639	NCR	NCR
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	Dec. 9/18
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	Mar 26/19
Biconical antenna (30–300 MHz)	Sunol	BC2	FA002078	1 year	Oct 5/19
Log periodic antenna (200–5000 MHz)	Sunol	LP5	FA002077	1 year	Oct 5/19
Horn antenna (1–18 GHz)	EMCO	3115	FA000825	1 year	Oct. 8/19
50 Ω coax cable	C.C.A.	None	FA002555	1 year	May 1/19
50 Ω coax cable	Huber + Suhner	None	FA002830	1 year	May 8/19

Note: NCR - no calibration required

Section 8. Testing data

8.1 FCC 27.50(c) and RSS-130, 4.4 Maximum output power at RF antenna connector (B12A)

8.1.1 Definitions and limits

FCC:

The following power and antenna height requirements apply to stations transmitting in the 600 MHz band and the 698–746 MHz band:

(3) Fixed and base stations transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section;

(4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section;

ISED:

The transmitter output power shall be measured in terms of average power.
For base and fixed equipment, refer to SRSP-518 for power limits.
The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.
In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

SRSP-518 for power limits

5.1.1.2 For fixed and base stations transmitting in accordance with sections 4.1.1 to 4.1.3 within the frequency range 716–756 MHz with a channel bandwidth greater than 1 MHz, the maximum permissible e.i.r.p. is 1640 watts/MHz (i.e. no more than 1640 watts e.i.r.p. in any 1 MHz band segment) with a HAAT up to 305 metres. The same e.i.r.p. limit also applies to fixed and base stations operating at any frequency in the 700 MHz band in accordance with Section 4.1.4.

8.1.2 Test summary

Test date	October 23, 2018

8.1.3 Observations, settings and special notes

Based on the maximum RF power listed in this report, considerations pertaining to the maximum allowed EIRP (or ERP) and antenna type should be considered for each installation.

Measurement was performed using RMS power meter. Power spectral density was performed using spectrum analyzer with RMS averaging detector and 1 MHz RBW.

8.1.4 Test data

Table 8.1-1: *Output power measurement results for single carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
5M bottom (QPSK)	46.33	42.95	46.33	42.95	46.31	42.76	46.39	43.55
5M bottom (16QAM)	46.33	42.95	46.31	42.76	46.32	42.85	46.37	43.35
5M bottom (64QAM)	46.33	42.95	46.30	42.66	46.28	42.46	46.38	43.45
5M bottom (256QAM)	46.30	42.66	46.28	42.46	46.29	42.56	46.39	43.55
10M bottom (QPSK)	46.27	42.36	46.24	42.07	46.25	42.17	46.39	43.55
5M middle (QPSK)	46.35	43.15	46.32	42.85	46.28	42.46	46.41	43.75
10M middle (QPSK)	46.25	42.17	46.20	41.69	46.22	41.88	46.33	42.95
5M top (QPSK)	46.22	41.88	46.19	41.59	46.18	41.50	46.27	42.36
10M top (QPSK)	46.21	41.78	46.21	41.78	46.18	41.50	46.30	42.66

Table 8.1-2: *Output power measurement results for single carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
5M bottom (QPSK)	48.01	63.24	47.98	62.81
10M bottom (QPSK)	47.98	62.81	47.93	62.09
5M middle (QPSK)	48.00	63.10	47.93	62.09
10M middle (QPSK)	47.98	62.81	47.88	61.38
5M top (QPSK)	47.78	59.98	47.63	57.94
10M top (QPSK)	48.01	63.24	47.98	62.81

Table 8.1-3: *Output power measurement results for single carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port B, dBm	RF Power, Port C, dBm	RF Power, Port D, dBm	Total power, dBm	Total power, W
5M bottom (QPSK)	46.33	46.33	46.31	46.39	52.36	172.21
5M bottom (16QAM)	46.33	46.31	46.32	46.37	52.35	171.92
5M bottom (64QAM)	46.33	46.30	46.28	46.38	52.34	171.52
5M bottom (256QAM)	46.30	46.28	46.29	46.39	52.34	171.23
10M bottom (QPSK)	46.27	46.24	46.25	46.39	52.31	170.16
5M middle (QPSK)	46.35	46.32	46.28	46.41	52.36	172.22
10M middle (QPSK)	46.25	46.20	46.22	46.33	52.27	168.69
5M top (QPSK)	46.22	46.19	46.18	46.27	52.24	167.33
10M top (QPSK)	46.21	46.21	46.18	46.30	52.25	167.72

Table 8.1-4: *Output power measurement results for single carrier 60 W operation (Configuration 2), MIMO 2×2*

Remarks	RF Power, Port A, dBm	RF Power, Port C, dBm	Total power, dBm	Total power, W
5M bottom (QPSK)	48.01	47.98	51.01	126.05
10M bottom (QPSK)	47.98	47.93	50.97	124.89
5M middle (QPSK)	48.00	47.93	50.98	125.18
10M middle (QPSK)	47.98	47.88	50.94	124.18
5M top (QPSK)	47.78	47.63	50.72	117.92
10M top (QPSK)	48.01	47.98	51.01	126.05

Table 8.1-5: *Output power measurement results for single carrier 40 W operation with Guard band IoT (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
10M bottom (QPSK)	46.05	40.27	46.16	41.30	46.17	41.40	46.29	42.56
10M middle (QPSK)	46.08	40.55	46.15	41.21	46.13	41.02	46.26	42.27
10M top (QPSK)	46.16	41.30	46.24	42.07	46.22	41.88	46.28	42.46

Table 8.1-6: *Output power measurement results for single carrier 60 W operation with Guard band IoT (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
10M low (QPSK)	47.90	61.66	47.98	62.81
10M middle (QPSK)	47.85	60.95	47.92	61.94
10M top (QPSK)	47.90	61.66	47.90	61.66

Table 8.1-7: *Output power measurement results for single carrier 40 W operation with Guard band IoT (Configuration 1), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port B, dBm	RF Power, Port C, dBm	RF Power, Port D, dBm	Total power, dBm	Total power, W
10M bottom (QPSK)	46.05	46.16	46.17	46.29	52.19	165.54
10M middle (QPSK)	46.08	46.15	46.13	46.26	52.18	165.05
10M top (QPSK)	46.16	46.24	46.22	46.28	52.25	167.72

Table 8.1-8: *Output power measurement results for single carrier 60 W operation with Guard band IoT (Configuration 2), MIMO 2×2*

Remarks	RF Power, Port A, dBm	RF Power, Port C, dBm	Total power, dBm	Total power, W
10M bottom (QPSK)	47.90	47.98	50.95	124.47
10M middle (QPSK)	47.85	47.92	50.90	122.90
10M top (QPSK)	47.90	47.90	50.91	123.32

Table 8.1-9: *Output power measurement results for multi carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
5M bottom and top	46.15	41.21	46.18	41.50	46.13	41.02	46.30	42.66

Table 8.1-10: *Output power measurement results for multi carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
5M bottom and top	47.88	61.38	47.86	61.09

Table 8.1-11: *Output power measurement results for multi carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port B, dBm	RF Power, Port C, dBm	RF Power, Port D, dBm	Total power, dBm	Total power, W
5M bottom and top	46.15	46.18	46.13	42.66	51.53	142.18

Table 8.1-12: *Output power measurement results for multi carrier 60 W operation (Configuration 2), MIMO 2×2*

Remarks	RF Power, Port A, dBm	RF Power, Port C, dBm	Total power, dBm	Total power, W
5M bottom and top	47.88	47.86	50.88	122.47

Table 8.1-13: *Output power measurement results for multi band single carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
(B5 + B12) 5M bottom	49.14	82.04	49.16	82.41	49.17	82.60	49.30	85.11
(B5 + B12) 10M bottom	49.13	81.85	49.13	81.85	49.11	81.47	49.23	83.75
(B5 + B12) 5M middle	49.19	82.99	49.18	82.79	49.15	82.22	49.29	84.92
(B5 + B12) 10M middle	49.12	81.66	49.12	81.66	49.06	80.54	49.20	83.18
(B5 + B12) 5M top	49.11	81.47	49.12	81.66	49.07	80.72	49.20	83.18
(B5 + B12) 10M top	49.08	80.91	49.04	80.17	49.00	79.43	49.15	82.22

Table 8.1-14: *Output power measurement results for multi band single carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
(B5 + B12) 5M bottom + middle	50.74	118.58	50.65	116.14
(B5 + B12) 10M bottom + middle	50.77	119.40	50.65	116.14
(B5 + B12) 5M top + middle	50.83	121.06	50.65	116.14
(B5 + B12) 10M top + middle	50.81	120.50	50.65	116.14

Table 8.1-15: *Output power measurement results for multi band single carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port B, dBm	RF Power, Port C, dBm	RF Power, Port D, dBm	Total power, dBm	Total power, W
(B5 + B12) 5M bottom	49.14	49.16	49.17	49.30	55.21	332.17
(B5 + B12) 10M bottom	49.13	49.13	49.11	49.23	55.17	328.92
(B5 + B12) 5M middle	49.19	49.18	49.15	49.29	55.22	332.92
(B5 + B12) 10M middle	49.12	49.12	49.06	49.20	55.15	327.03
(B5 + B12) 5M top	49.11	49.12	49.07	49.20	55.15	327.03
(B5 + B12) 10M top	49.08	49.04	49.00	49.15	55.09	322.73

Table 8.1-16: *Output power measurement results for multi band single carrier 60 W operation (Configuration 2), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port C, dBm	Total power, dBm	Total power, W
(B5 + B12) 5M bottom + middle	50.74	50.65	53.71	234.72
(B5 + B12) 10M bottom + middle	50.77	50.65	53.72	235.54
(B5 + B12) 5M top + middle	50.83	50.65	53.75	237.20
(B5 + B12) 10M top + middle	50.81	50.65	53.74	236.65

Table 8.1-17: *Output power measurement results for multi band multi carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
(B5) 3C 5M + (B12) 2C 5M	48.79	75.68	48.78	75.51	48.67	73.62	48.87	77.09

Table 8.1-18: *Output power measurement results for multi band multi carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
(B5) 3C 5M + (B12) 2C 5M	50.57	114.02	50.44	110.66

Table 8.1-19: *Output power measurement results for multi band multi carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port B, dBm	RF Power, Port C, dBm	RF Power, Port D, dBm	Total power, dBm	Total power, W
(B5) 3C 5M + (B12) 2C 5M	48.79	48.78	48.67	48.87	54.80	301.90

Table 8.1-20: *Output power measurement results for multi band multi carrier 60 W operation (Configuration 2), MIMO 4×4*

Remarks	RF Power, Port A, dBm	RF Power, Port C, dBm	Total power, dBm	Total power, W
(B5) 3C 5M + (B12) 2C 5M	50.57	50.44	53.52	224.69

Table 8.1-21: *Power spectral density measurement results for single carrier 40 W operation (Configuration 1)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port B, dBm/MHz	RF power density, Port C, dBm/MHz	RF power density, Port D, dBm/MHz	Total power density MIMO 4×4, dBm/MHz
5M bottom (QPSK)	39.88	39.86	39.58	39.89	45.82
5M bottom (16QAM)	40.37	40.31	40.14	40.33	46.31
5M bottom (64QAM)	40.11	39.85	39.74	39.74	45.88
5M bottom (256QAM)	40.04	39.94	39.77	40.10	45.98
10M bottom (QPSK)	37.49	37.24	37.12	37.52	43.37
5M middle (QPSK)	39.99	39.76	39.67	39.99	45.88
10M middle (QPSK)	37.38	37.04	37.10	37.08	43.17
5M top (QPSK)	39.90	39.60	39.83	39.97	45.85
10M top (QPSK)	37.24	37.45	37.11	37.35	43.31

Table 8.1-22: *Power spectral density measurement results for single carrier 60 W operation (Configuration 2)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port C, dBm/MHz	Total RF power density MIMO 2×2, dBm/MHz
5M bottom (QPSK)	41.73	41.55	44.65
10M bottom (QPSK)	39.19	38.51	41.87
5M middle (QPSK)	41.65	41.35	44.51
10M middle (QPSK)	38.91	38.71	41.82
5M top (QPSK)	38.83	38.28	41.57
10M top (QPSK)	41.73	41.55	44.65

Table 8.1-23: *Power spectral density measurement results for single carrier 40 W operation with Guard band IoT (Configuration 1)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port B, dBm/MHz	RF power density, Port C, dBm/MHz	RF power density, Port D, dBm/MHz	Total power density MIMO 4×4, dBm/MHz
10M bottom (QPSK)	37.27	37.16	37.04	37.42	43.25
10M middle (QPSK)	37.21	36.99	37.01	37.01	43.08
10M top (QPSK)	37.19	37.48	37.15	37.33	43.31

Table 8.1-24: *Power spectral density measurement results for single carrier 60 W operation with Guard band IoT (Configuration 2)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port C, dBm/MHz	Total power density MIMO 2×2, dBm/MHz
10M low (QPSK)	39.11	38.56	41.85
10M middle (QPSK)	38.78	38.75	41.78
10M top (QPSK)	38.95	38.55	41.76

Table 8.1-25: *Power spectral density measurement results for multi carrier 40 W operation (Configuration 1)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port B, dBm/MHz	RF power density, Port C, dBm/MHz	RF power density, Port D, dBm/MHz	Total power density MIMO 4×4, dBm/MHz
5M bottom and top	37.15	37.08	36.80	37.00	43.03

Table 8.1-26: *Power spectral density measurement results for multi carrier 60 W operation (Configuration 2)*

Remarks	RF power density, Port A, dBm/MHz	RF power density, Port C, dBm/MHz	Total power density MIMO 2×2, dBm/MHz
5M bottom and top	38.88	38.53	41.72

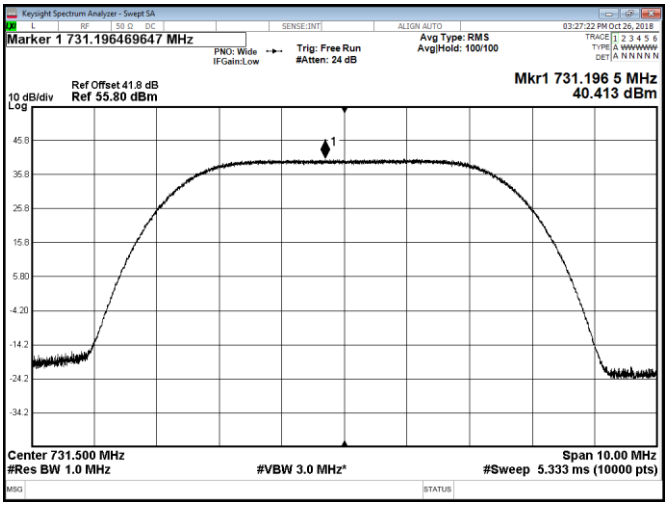


Figure 8.1-1: *PSD for 5 MHz channel single carrier, sample plot*

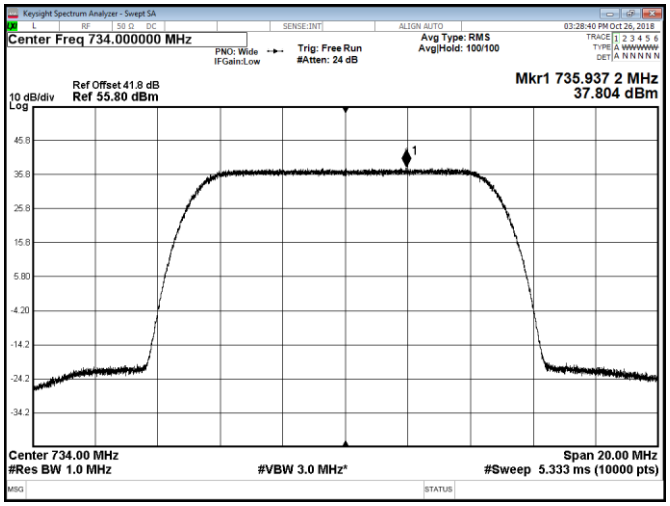


Figure 8.1-2: *PSD for 10 MHz channel single carrier, sample plot*

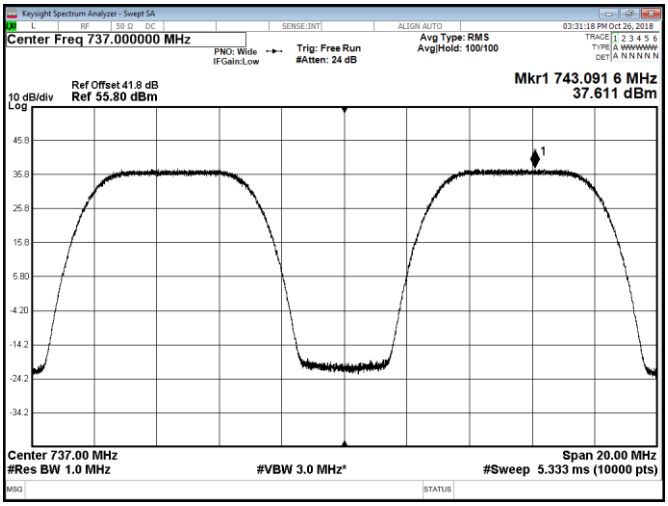


Figure 8.1-3: *PSD for 5 MHz channel multi carrier, sample plot*

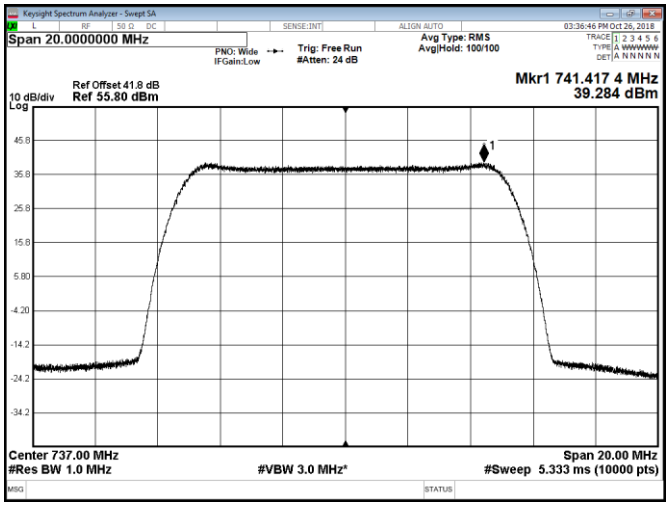


Figure 8.1-4: *PSD for 10 MHz channel single carrier with IoT, sample plot*

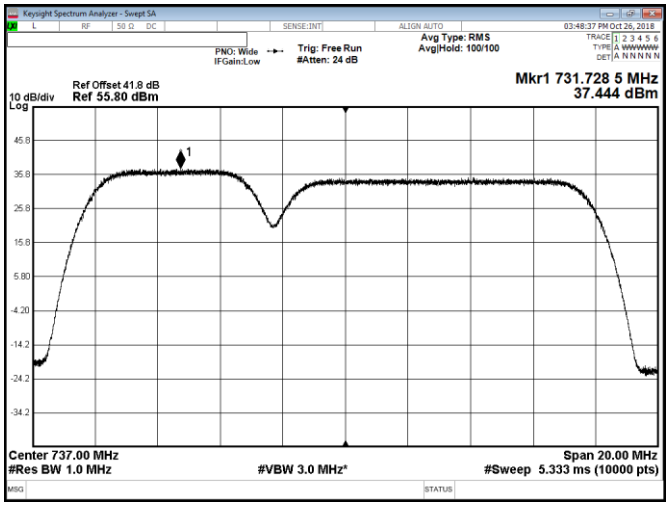


Figure 8.1-5: *PSD for 5 MHz and 10 MHz channel multi carrier, sample plot*

Table 8.1-27: *Complementary Cumulative Distribution Function (CCDF) of the PAPR reduction measurement results for 40 W operation (Configuration 1)*

Remarks	0.1% CCDF at Ant A, dB	0.1% CCDF at Ant B, dB	0.1% CCDF at Ant C, dB	0.1% CCDF at Ant D, dB	Highest 0.1% CCDF level, dB	PAPR reduction limit, dB	Margin, dB
5M bottom (QPSK)	7.30	7.31	7.33	7.38	7.38	13.00	5.62
5M bottom (16QAM)	7.29	7.30	7.31	7.36	7.36	13.00	5.64
5M bottom (64QAM)	7.30	7.32	7.33	7.39	7.39	13.00	5.61
5M bottom (256QAM)	7.33	7.33	7.32	7.36	7.36	13.00	5.64
10M bottom (QPSK)	7.35	7.36	7.41	7.36	7.41	13.00	5.59
5M middle (QPSK)	7.28	7.27	7.28	7.29	7.29	13.00	5.71
10M middle (QPSK)	7.30	7.30	7.29	7.30	7.30	13.00	5.70
5M top (QPSK)	7.28	7.28	7.29	7.30	7.30	13.00	5.70
10M top (QPSK)	7.30	7.29	7.30	7.30	7.30	13.00	5.70

Table 8.1-28: *Complementary Cumulative Distribution Function (CCDF) of the PAPR reduction measurement results for 60 W operation (Configuration 2)*

Remarks	0.1% CCDF at Ant A, dB	0.1% CCDF at Ant C, dB	Highest 0.1% CCDF level, dB	PAPR reduction limit, dB	Margin, dB
5M bottom (QPSK)	7.34	7.29	7.34	13.00	5.66
10M bottom (QPSK)	7.30	7.29	7.30	13.00	5.70
5M middle (QPSK)	7.28	7.30	7.30	13.00	5.70
10M middle (QPSK)	7.30	7.30	7.30	13.00	5.70
5M top (QPSK)	7.33	7.34	7.34	13.00	5.66
10M top (QPSK)	7.33	7.35	7.35	13.00	5.65
10M bottom + IoT	7.29	7.29	7.29	13.00	5.71
10M middle + IoT	7.29	7.28	7.29	13.00	5.71
10M top + IoT	7.34	7.29	7.34	13.00	5.66

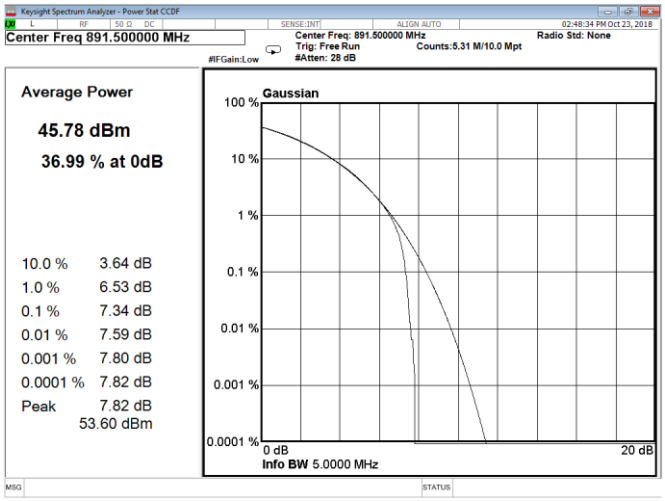


Figure 8.1-6: *CCDF for 5 MHz channel, sample plot*

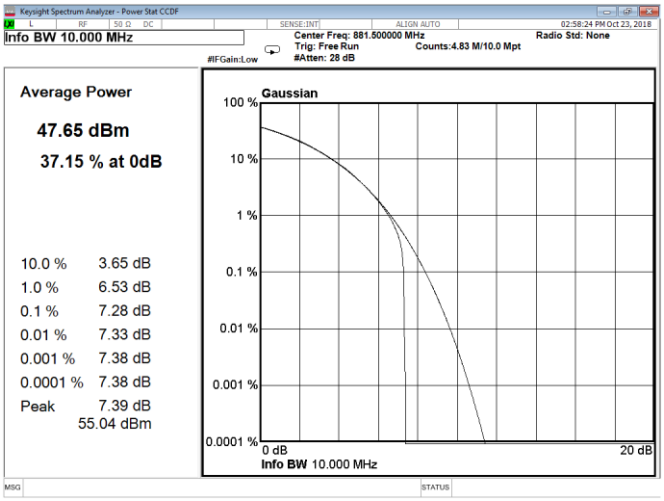


Figure 8.1-7: *CCDF for 10 MHz channel, sample plot*

8.2 FCC 22.913(a) and RSS-132 5.4 Maximum ERP (B5)

8.2.1 Definitions and limits

FCC:
Licensees in the Cellular Radiotelephone Service are subject to the effective radiated power (ERP) limits and other requirements in this Section. See also §22.169.

(a) Maximum ERP. The ERP of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(1) Except as described in paragraphs (a)(2), (3), and (4) of this section, the ERP of base stations and repeaters must not exceed—

(i) 500 watts per emission; or

(ii) 400 watts/MHz (PSD) per sector.

(2) Except as described in paragraphs (a)(3) and (4) of this section, for systems operating in areas more than 72 kilometers (45 miles) from international borders that:

(i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or

(ii) Extend coverage into Unserved Area on a secondary basis (see §22.949), the ERP of base transmitters and repeaters must not exceed—

(A) 1000 watts per emission; or

(B) 800 watts/MHz (PSD) per sector.

(3) Provided that they also comply with paragraphs (b) and (c) of this section, licensees are permitted to operate their base transmitters and repeaters with an ERP greater than 400 watts/MHz (PSD) per sector, up to a maximum ERP of 1000 watts/MHz (PSD) per sector unless they meet the conditions in paragraph (a)(4) of this section.

(4) Provided that they also comply with paragraphs (b) and (c) of this section, licensees of systems operating in areas more than 72 kilometers (45 miles) from international borders that:

(i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or

(ii) Extend coverage into Unserved Area on a secondary basis (see §22.949), are permitted to operate base transmitters and repeaters with an ERP greater than 800 watts/MHz (PSD) per sector, up to a maximum of 2000 watts/MHz (PSD) per sector.
ISED:
The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.
In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.
SRSP-503 for base station e.i.r.p. limits
5.1.1 Base stations for digital systems are limited to 1640 watts maximum equivalent isotropically radiated power (EIRP) with an antenna height above average terrain (HAAT) up to 150 m, except in urban areasFootnote 3 where they are limited to a maximum allowable EIRP of 820 watts.

8.2.2 Test summary

Test date	October 23, 2018

8.2.3 Observations, settings and special notes

Based on the maximum RF power listed in this report, considerations pertaining to the maximum allowed EIRP and antenna type should be considered for each installation.
Measurement was performed using RMS power meter.

8.2.4 Test data

Table 8.2-1: *Output power measurement results for single carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
5M bottom (QPSK)	46.20	41.69	46.28	42.46	46.33	42.95	46.35	43.15
5M bottom (16QAM)	46.22	41.88	46.29	42.56	46.33	42.95	46.36	43.25
5M bottom (64QAM)	46.22	41.88	46.27	42.36	46.26	42.27	46.33	42.95
5M bottom (256QAM)	46.19	41.59	46.21	41.78	46.22	41.88	46.31	42.76
10M bottom (QPSK)	46.19	41.59	46.27	42.36	46.16	41.30	46.37	43.35
5M middle (QPSK)	46.30	42.66	46.28	42.46	46.22	41.88	46.27	42.36
10M middle (QPSK)	46.25	42.17	46.32	42.85	46.19	41.59	46.31	42.76
5M top (QPSK)	46.22	41.88	46.24	42.07	46.19	41.59	46.30	42.66
10M top (QPSK)	46.23	41.98	46.29	42.56	46.15	41.21	46.32	42.85

Table 8.2-2: *Output power measurement results for single carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
5M bottom (QPSK)	47.96	62.52	47.90	61.66
10M bottom (QPSK)	47.97	62.66	47.88	61.38
5M middle (QPSK)	48.04	63.68	47.90	61.66
10M middle (QPSK)	48.03	63.53	47.89	61.52
10M top (QPSK)	47.73	59.29	47.58	57.28

Table 8.2-3: *Output power measurement results for single carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	Power, Port A, dBm	Power, Port B, dBm	Power, Port C, dBm	Power, Port D, dBm	Total MIMO power, dBm	Total MIMO power, W
5M bottom (QPSK)	46.20	46.28	46.33	46.35	52.31	170.25
5M bottom (16QAM)	46.22	46.29	46.33	46.36	52.32	170.64
5M bottom (64QAM)	46.22	46.27	46.26	46.33	52.29	169.46
5M bottom (256QAM)	46.19	46.21	46.22	46.31	52.25	168.01
10M bottom (QPSK)	46.19	46.27	46.16	46.37	52.27	168.61
5M middle (QPSK)	46.30	46.28	46.22	46.27	52.29	169.36
10M middle (QPSK)	46.25	46.32	46.19	46.31	52.29	169.37
5M top (QPSK)	46.22	46.24	46.19	46.30	52.26	168.20
10M top (QPSK)	46.23	46.29	46.15	46.32	52.27	168.60

Table 8.2-4: *Output power measurement results for single carrier 60 W operation (Configuration 2), MIMO 2×2*

Remarks	Power, Port A, dBm	Power, Port C, dBm	Total MIMO power, dBm	Total MIMO power, W
5M bottom (QPSK)	47.96	47.90	50.94	124.18
10M bottom (QPSK)	47.97	47.88	50.94	124.04
5M middle (QPSK)	48.04	47.90	50.98	125.34
10M middle (QPSK)	48.03	47.89	50.97	125.05
10M top (QPSK)	47.73	47.58	50.67	116.57

Table 8.2-5: *Output power measurement results for multi carrier 40 W operation (Configuration 1)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port B, dBm	RF Power, Port B, W	RF Power, Port C, dBm	RF Power, Port C, W	RF Power, Port D, dBm	RF Power, Port D, W
5M 2C	45.69	37.07	45.74	37.50	45.72	37.33	45.76	37.67
10M 2C	46.01	39.90	46.11	40.83	46.07	40.46	46.11	40.83
5M 3C	45.72	37.33	45.8	38.02	45.79	37.93	45.82	38.19

Table 8.2-6: *Output power measurement results for multi carrier 60 W operation (Configuration 2)*

Remarks	RF Power, Port A, dBm	RF Power, Port A, W	RF Power, Port C, dBm	RF Power, Port C, W
5M 2C	47.94	62.23	47.93	62.09
10M 2C	47.95	62.37	47.87	61.24
5M 3C	47.51	56.36	47.48	55.98

Table 8.2-7: *Output power measurement results for multi carrier 40 W operation (Configuration 1), MIMO 4×4*

Remarks	Power, Port A, dBm	Power, Port B, dBm	Power, Port C, dBm	Power, Port D, dBm	Total MIMO power, dBm	Total MIMO power, W
5M 2C	45.69	45.74	45.72	45.76	51.75	149.56
10M 2C	46.01	46.11	46.07	46.11	52.10	162.02
5M 3C	45.72	45.80	45.79	45.82	51.80	151.47

Table 8.2-8: *Output power measurement results for multi carrier 60 W operation (Configuration 2), MIMO 2×2*

Remarks	Power, Port A, dBm	Power, Port C, dBm	Total MIMO power, dBm	Total MIMO power, W
5M 2C	47.94	47.93	50.95	124.32
10M 2C	47.95	47.87	50.92	123.61
5M 3C	47.51	47.48	50.51	112.34

Table 8.2-9: *Complementary Cumulative Distribution Function (CCDF) of the PAPR reduction measurement results for 40 W operation (Configuration 1)*

Remarks	0.1% CCDF at Ant A, dB	0.1% CCDF at Ant B, dB	0.1% CCDF at Ant C, dB	0.1% CCDF at Ant D, dB	Highest 0.1% CCDF level, dB	PAPR reduction limit, dB	Margin, dB
5M bottom (QPSK)	7.36	7.34	7.35	7.34	7.36	13.00	5.64
5M bottom (16QAM)	7.30	7.30	7.35	7.38	7.38	13.00	5.62
5M bottom (64QAM)	7.33	7.34	7.38	7.34	7.38	13.00	5.62
5M bottom (256QAM)	7.35	7.34	7.36	7.37	7.37	13.00	5.63
10M bottom (QPSK)	7.38	7.38	7.41	7.42	7.42	13.00	5.58
5M middle (QPSK)	7.27	7.28	7.29	7.29	7.29	13.00	5.71
10M middle (QPSK)	7.28	7.28	7.29	7.29	7.29	13.00	5.71
5M top (QPSK)	7.34	7.34	7.39	7.36	7.39	13.00	5.61
10M top (QPSK)	7.43	7.39	7.42	7.38	7.43	13.00	5.57

Table 8.2-10: *Complementary Cumulative Distribution Function (CCDF) of the PAPR reduction measurement results for 60 W operation (Configuration 2)*

Remarks	0.1% CCDF at Ant A, dB	0.1% CCDF at Ant C, dB	Highest 0.1% CCDF level, dB	PAPR reduction limit, dB	Margin, dB
5M bottom (QPSK)	7.32	7.36	7.36	13.00	5.64
10M bottom (QPSK)	7.42	7.38	7.42	13.00	5.58
5M middle (QPSK)	7.33	7.29	7.33	13.00	5.67
10M middle (QPSK)	7.28	7.29	7.29	13.00	5.71
10M top (QPSK)	7.43	7.43	7.43	13.00	5.57

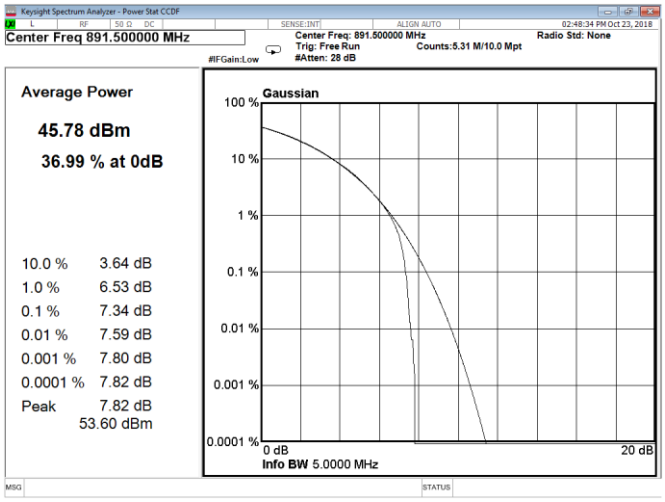


Figure 8.2-1: *CCDF for 5 MHz channel, sample plot*

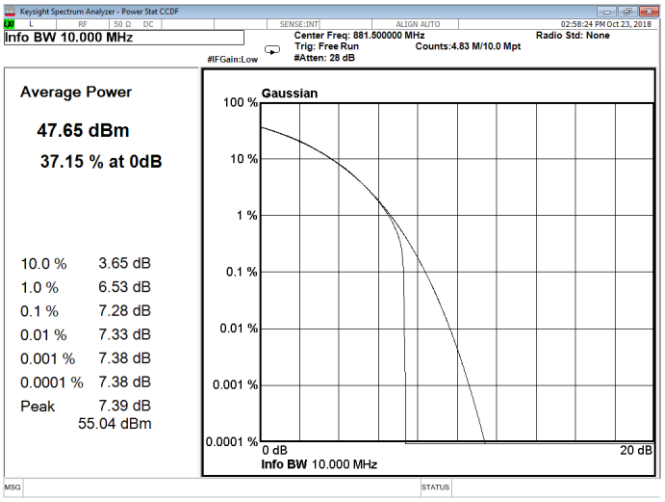


Figure 8.2-2: *CCDF for 10 MHz channel, sample plot*

8.3 FCC 27.53 and RSS-130 4.6 Spurious emissions at RF antenna connector (B12A)

8.3.1 Definitions and limits

FCC:
(g) For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.
ISED:
The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

8.3.2 Test summary

Test date	October 24, 2018

8.3.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
All measurements were performed using a RMS detector.
For compensation of 40 W MIMO 4×4 application limit lines were adjusted by 6 dB[1] to −19 dBm
For compensation of 60 W MIMO 2×2 application limit lines were adjusted by 3 dB[2] to −16 dBm
[1] 10 × Log_{10}(4) = −6 dB
[2] 10 × Log_{10}(2) = −3 dB

8.3.4 Test data

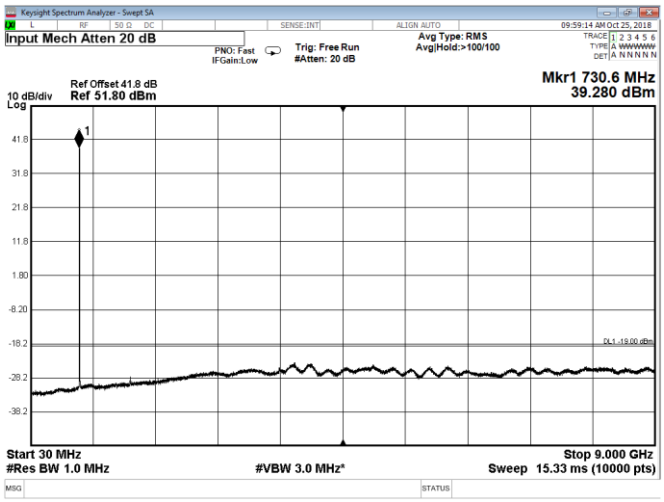


Figure 8.3-1: *Conducted spurious emissions for 5 MHz low channel with 40 W configuration at Port A*

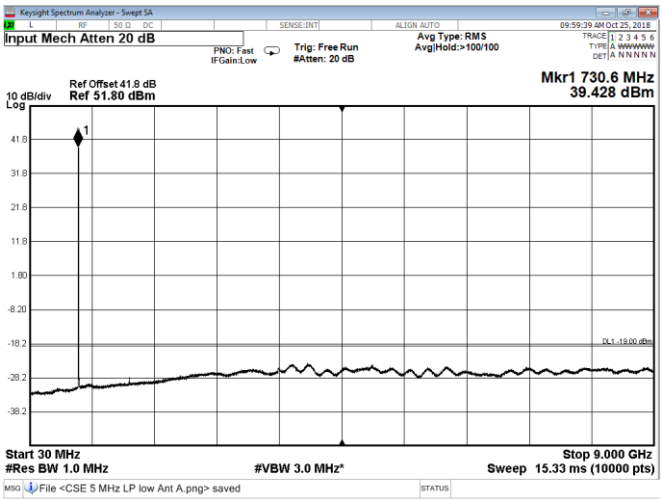


Figure 8.3-2: *Conducted spurious emissions for 5 MHz low channel with 40 W configuration at Port B*

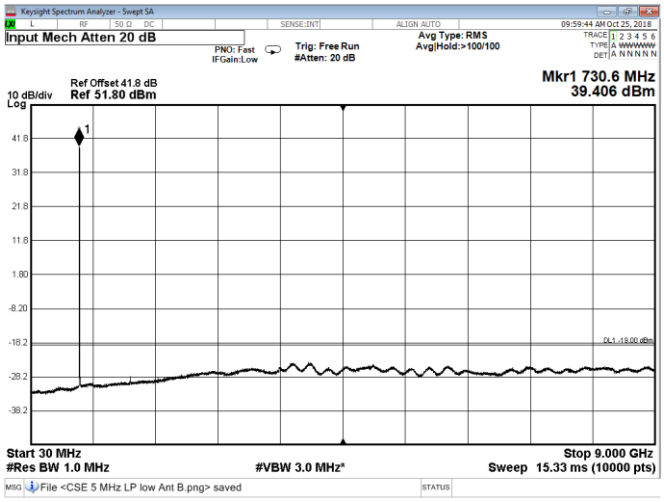


Figure 8.3-3: *Conducted spurious emissions for 5 MHz low channel with 40 W configuration at Port C*

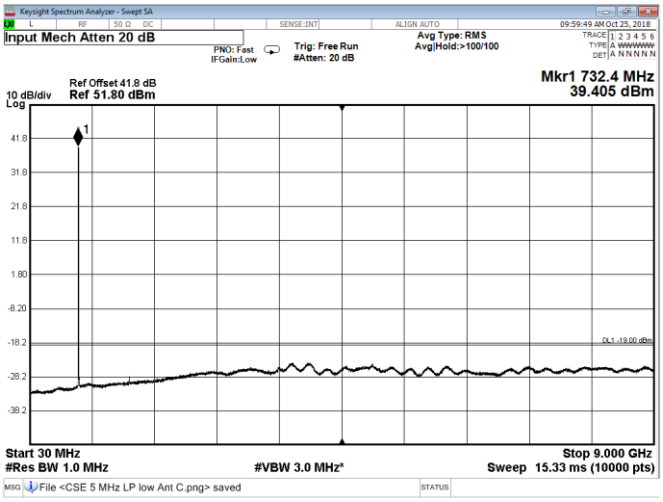


Figure 8.3-4: *Conducted spurious emissions for 5 MHz low channel with 40 W configuration at Port D*

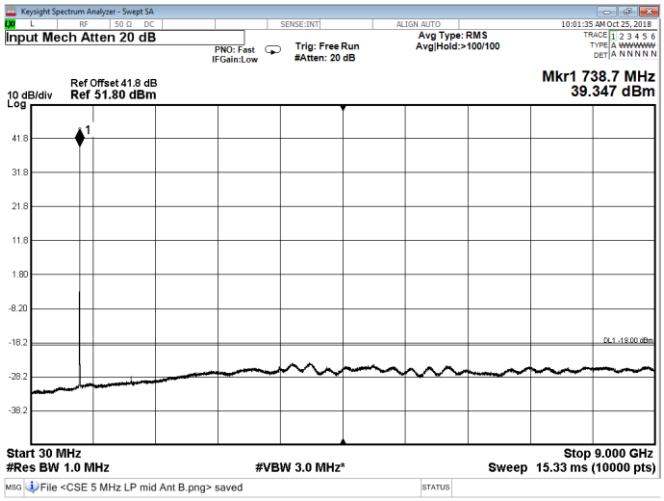


Figure 8.3-5: *Conducted spurious emissions for 5 MHz mid channel with 40 W configuration at Port A*

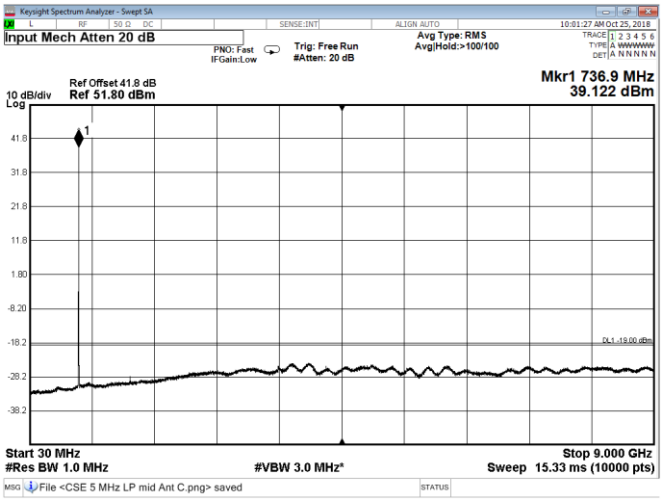


Figure 8.3-6: *Conducted spurious emissions for 5 MHz mid channel with 40 W configuration at Port B*

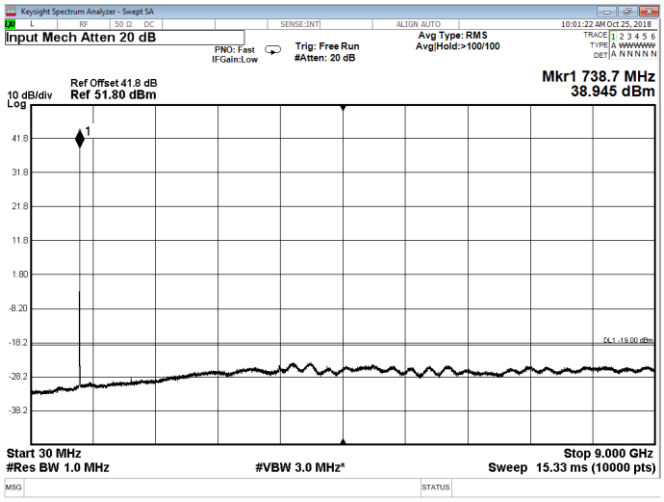


Figure 8.3-7: *Conducted spurious emissions for 5 MHz mid channel with 40 W configuration at Port C*

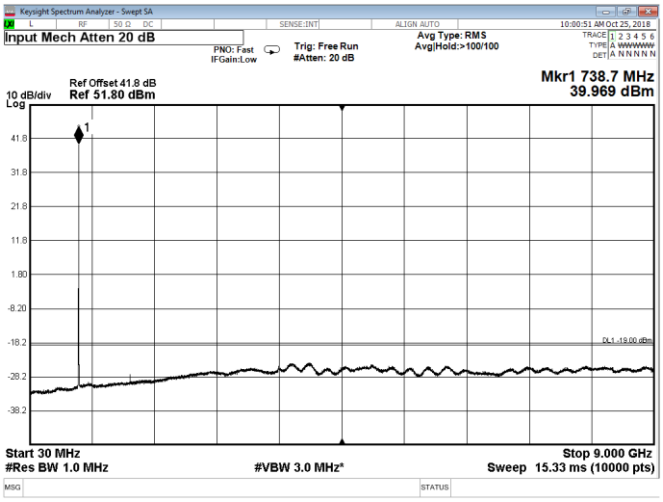


Figure 8.3-8: *Conducted spurious emissions for 5 MHz mid channel with 40 W configuration at Port D*

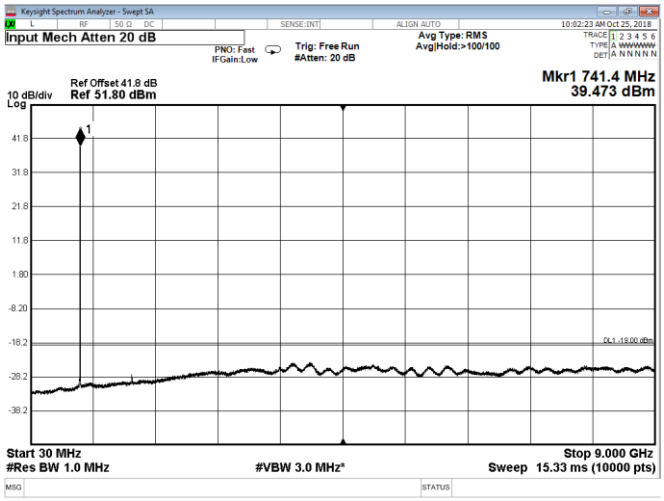


Figure 8.3-9: *Conducted spurious emissions for 5 MHz high channel with 40 W configuration at Port A*

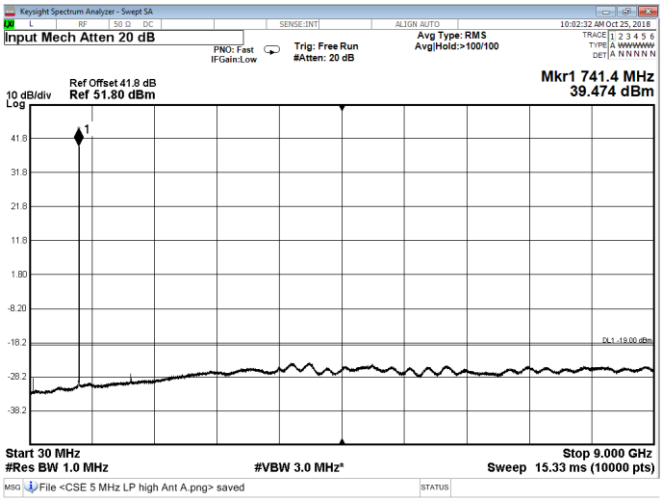


Figure 8.3-10: *Conducted spurious emissions for 5 MHz high channel with 40 W configuration at Port B*

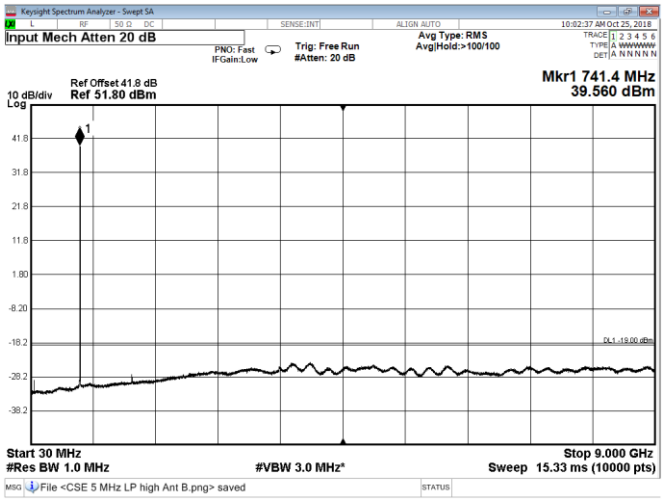


Figure 8.3-11: *Conducted spurious emissions for 5 MHz high channel with 40 W configuration at Port C*

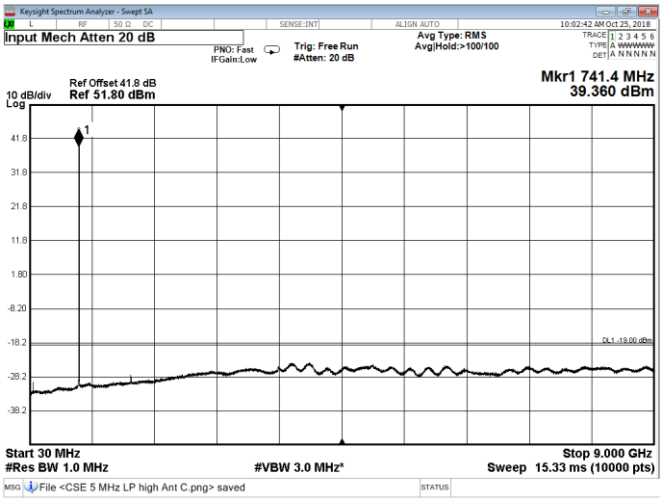


Figure 8.3-12: *Conducted spurious emissions for 5 MHz high channel with 40 W configuration at Port D*

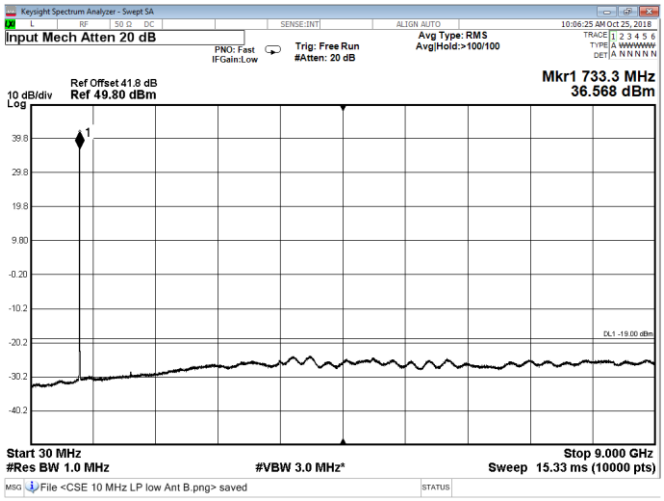


Figure 8.3-13: *Conducted spurious emissions for 10 MHz low channel with 40 W configuration at Port A*

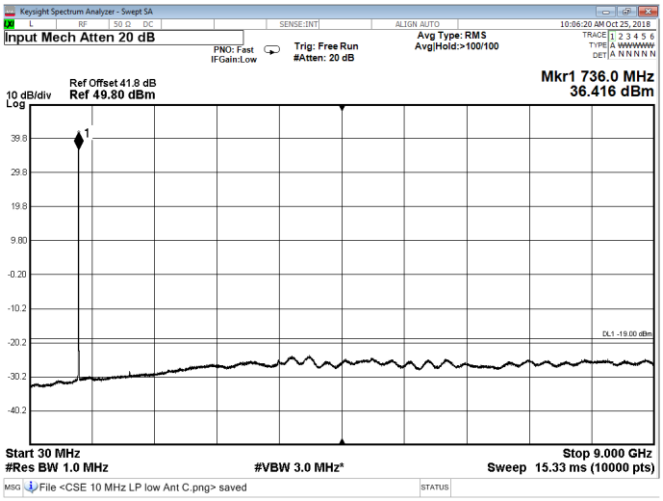


Figure 8.3-14: *Conducted spurious emissions for 10 MHz low channel with 40 W configuration at Port B*

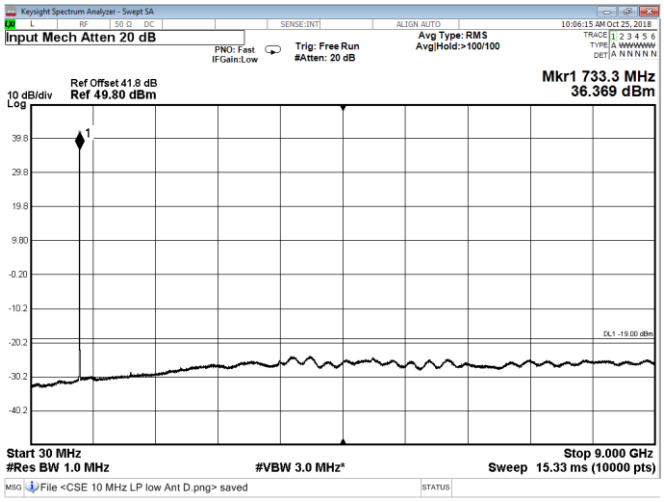


Figure 8.3-15: *Conducted spurious emissions for 10 MHz low channel with 40 W configuration at Port C*

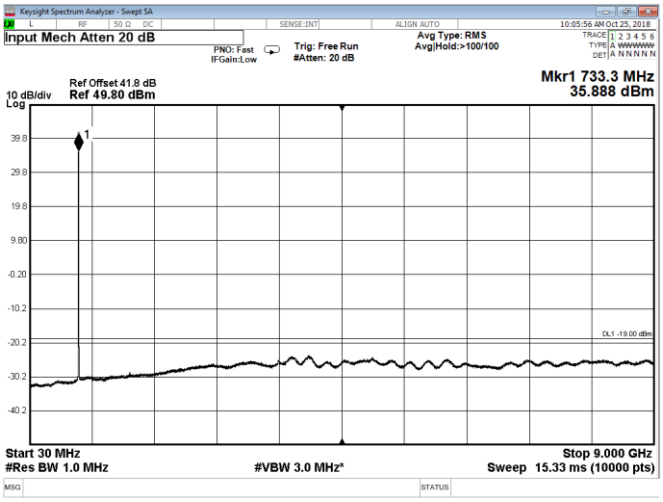


Figure 8.3-16: *Conducted spurious emissions for 10 MHz low channel with 40 W configuration at Port D*

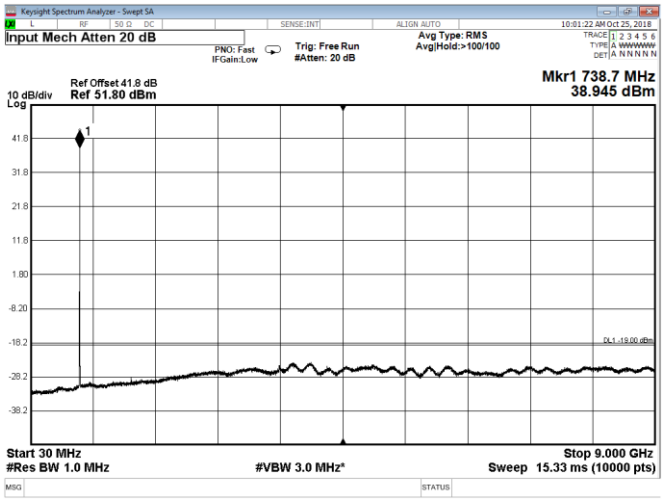


Figure 8.3-17: *Conducted spurious emissions for 10 MHz mid channel with 40 W configuration at Port A*

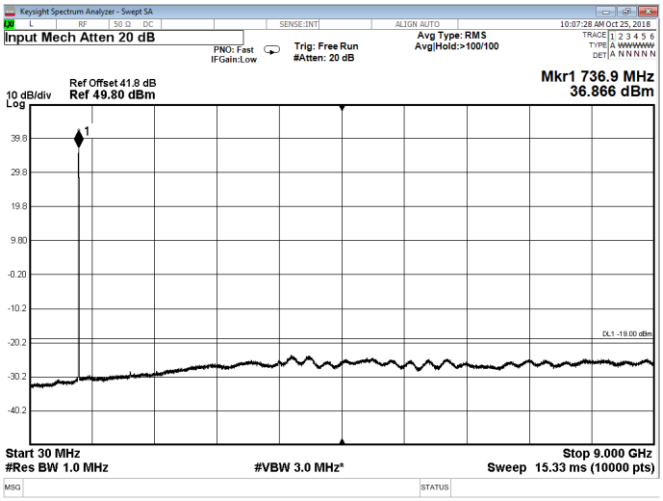


Figure 8.3-18: *Conducted spurious emissions for 10 MHz mid channel with 40 W configuration at Port B*

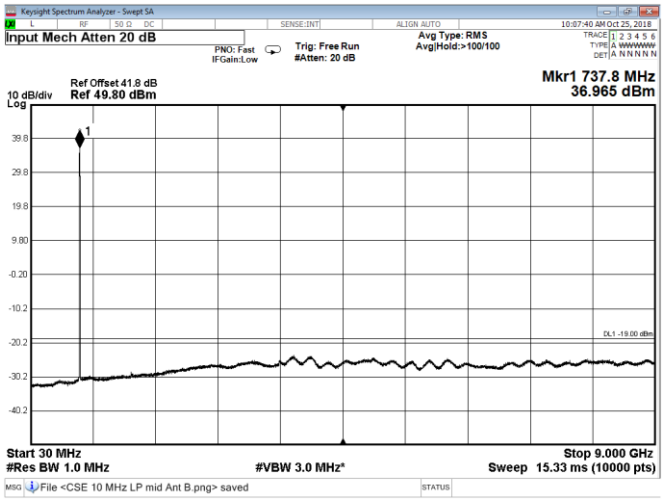


Figure 8.3-19: *Conducted spurious emissions for 10 MHz mid channel with 40 W configuration at Port C*

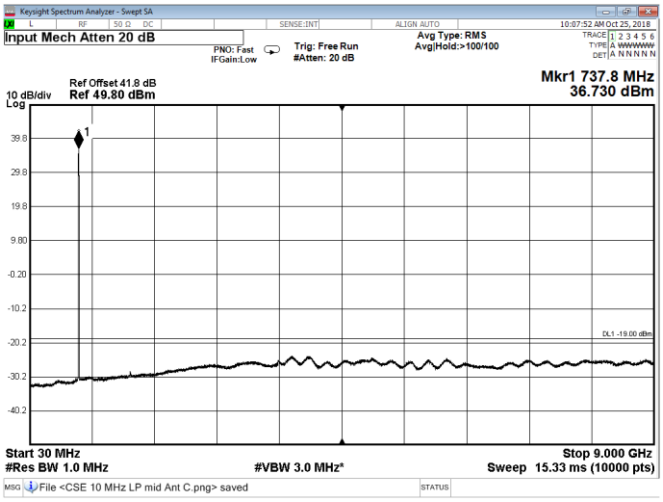


Figure 8.3-20: *Conducted spurious emissions for 10 MHz mid channel with 40 W configuration at Port D*

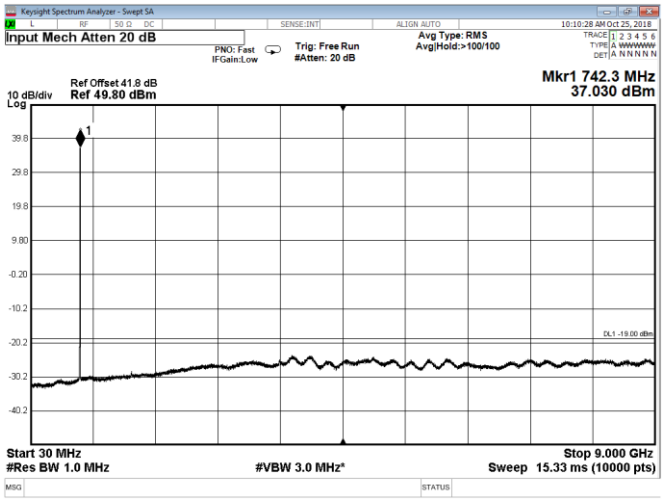


Figure 8.3-21: *Conducted spurious emissions for 10 MHz high channel with 40 W configuration at Port A*

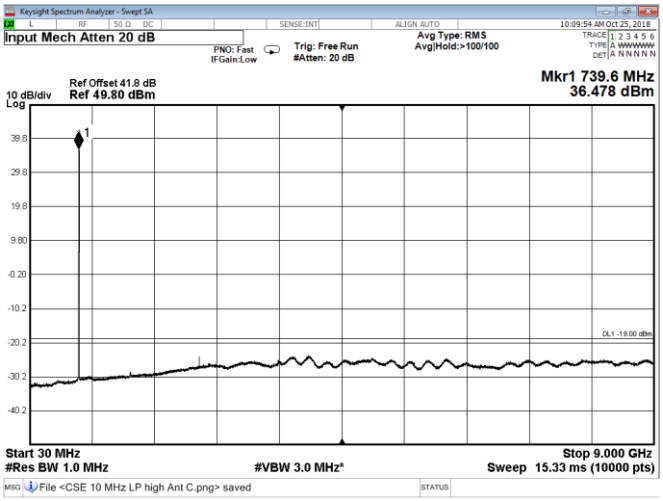


Figure 8.3-22: *Conducted spurious emissions for 10 MHz high channel with 40 W configuration at Port B*

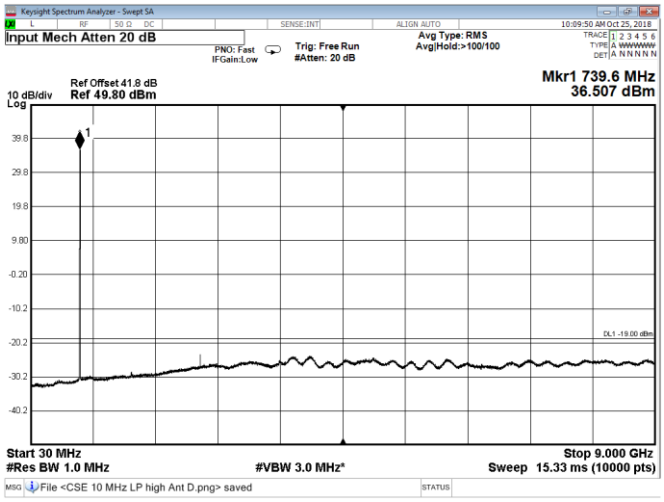


Figure 8.3-23: *Conducted spurious emissions for 10 MHz high channel with 40 W configuration at Port C*

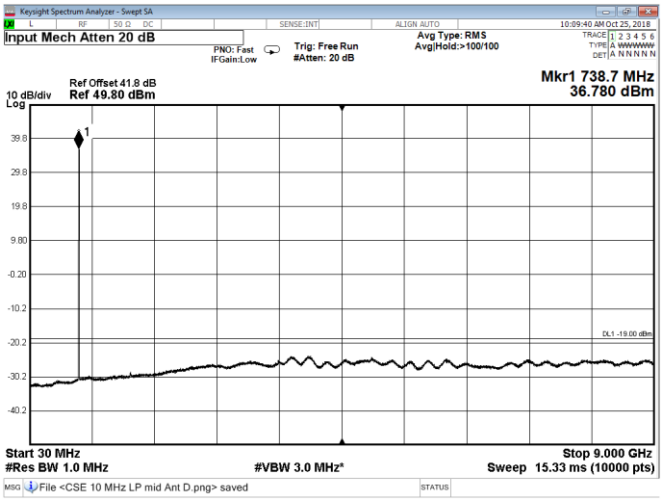


Figure 8.3-24: *Conducted spurious emissions for 10 MHz high channel with 40 W configuration at Port D*

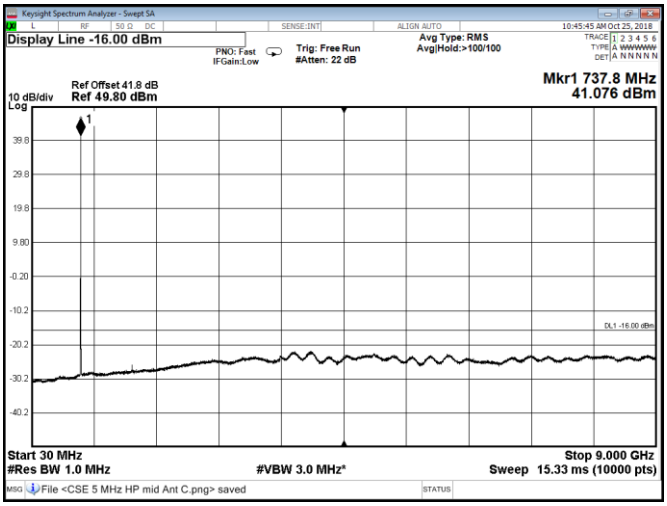


Figure 8.3-25: *Conducted spurious emissions for 5 MHz mid channel with 60 W configuration at Port A*

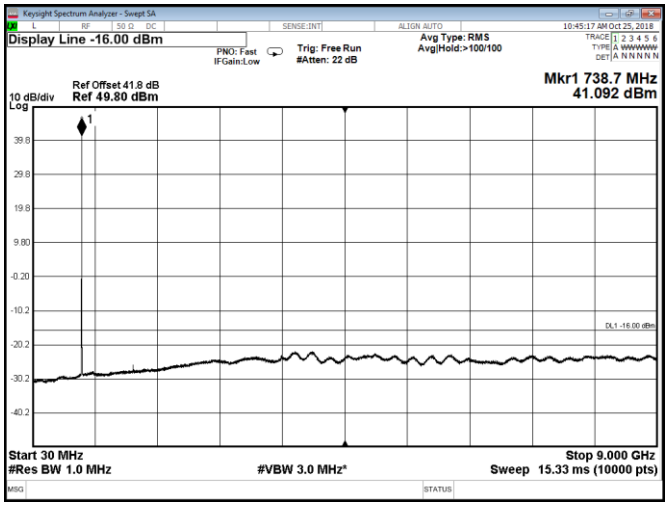


Figure 8.3-26: *Conducted spurious emissions for 5 MHz mid channel with 60 W configuration at Port C*

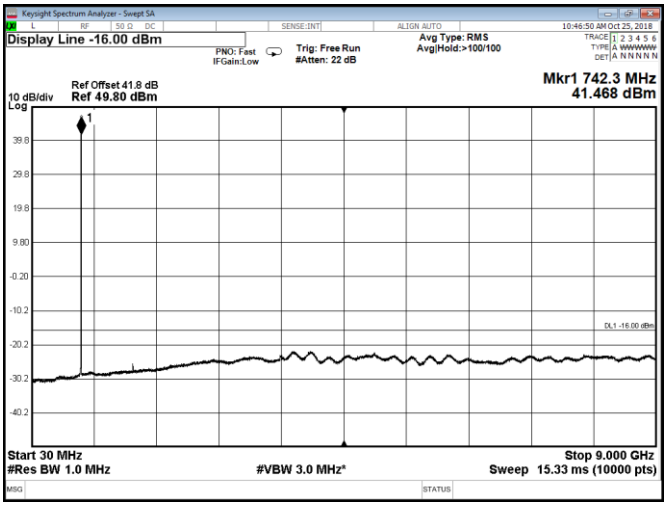


Figure 8.3-27: *Conducted spurious emissions for 5 MHz high channel with 60 W configuration at Port A*

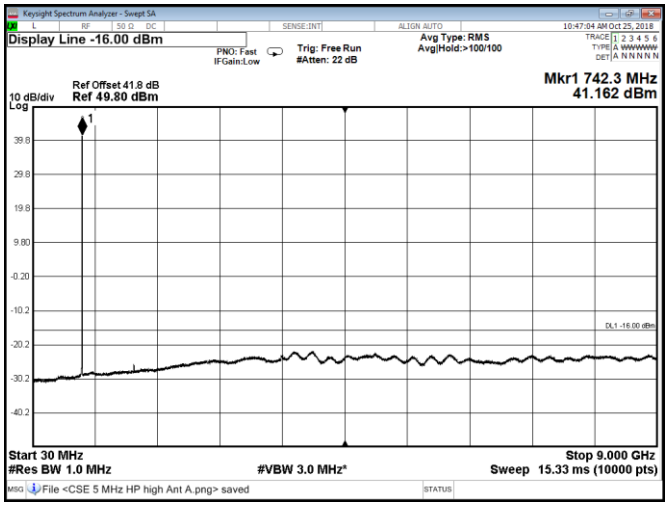


Figure 8.3-28: *Conducted spurious emissions for 5 MHz high channel with 60 W configuration at Port C*

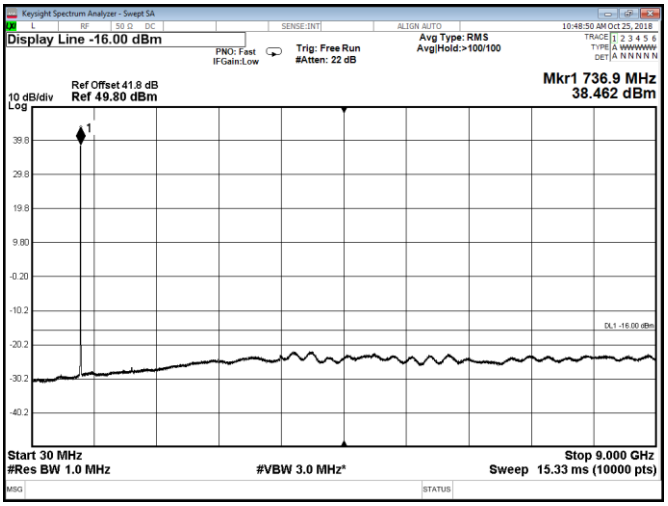


Figure 8.3-29: *Conducted spurious emissions for 10 MHz low channel with 60 W configuration at Port A*

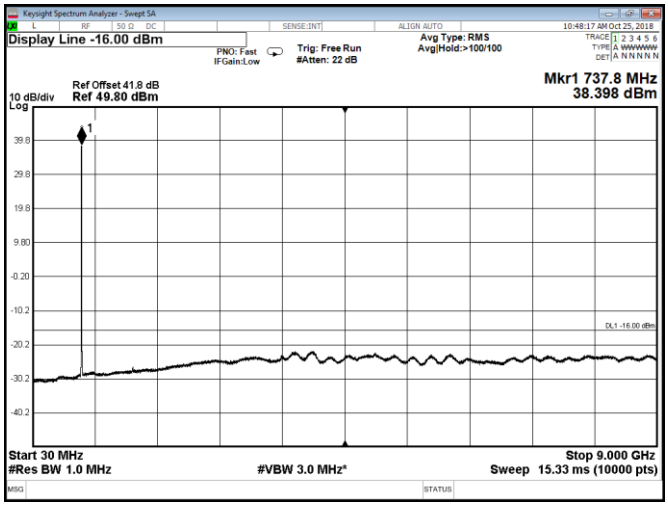


Figure 8.3-30: *Conducted spurious emissions for 10 MHz low channel with 60 W configuration at Port C*

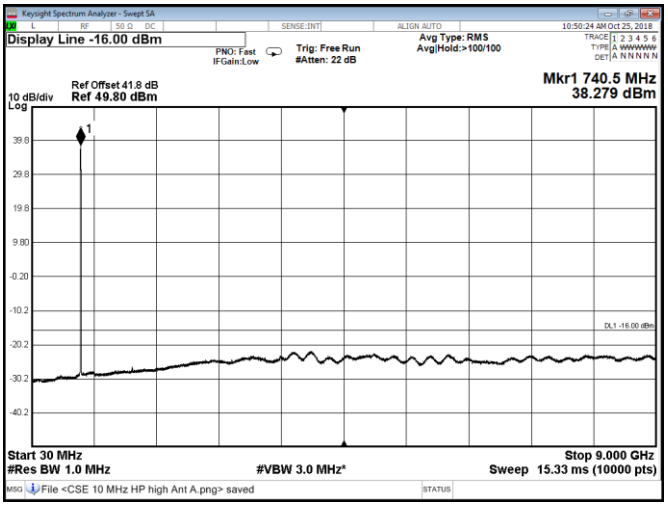


Figure 8.3-31: *Conducted spurious emissions for 10 MHz mid channel with 60 W configuration at Port A*

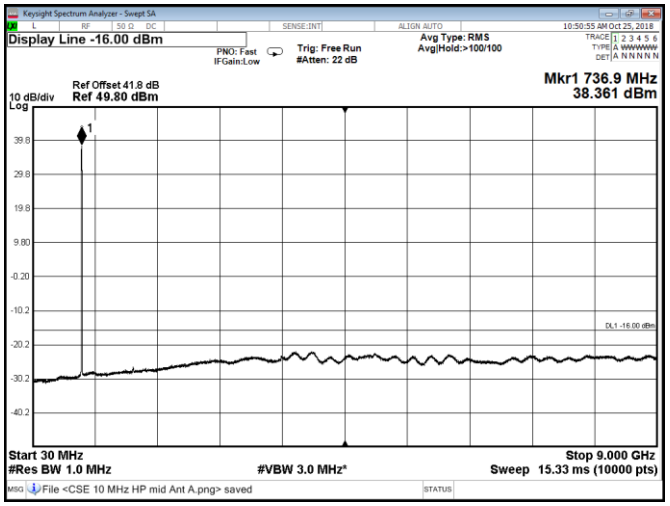


Figure 8.3-32: *Conducted spurious emissions for 10 MHz mid channel with 60 W configuration at Port C*

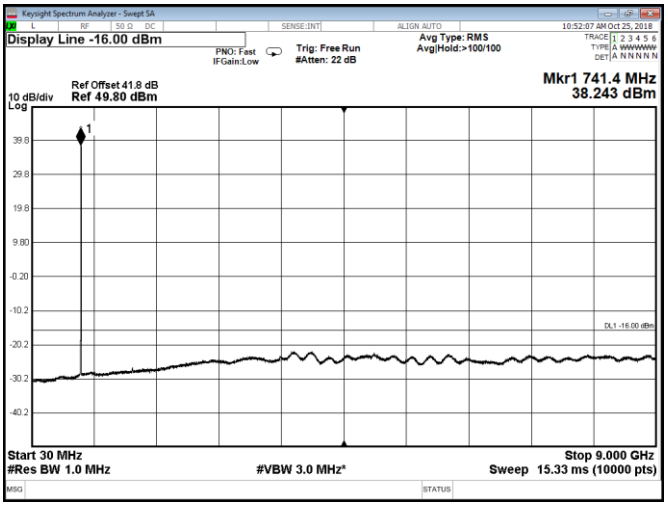


Figure 8.3-33: *Conducted spurious emissions for 10 MHz high channel with 60 W configuration at Port A*

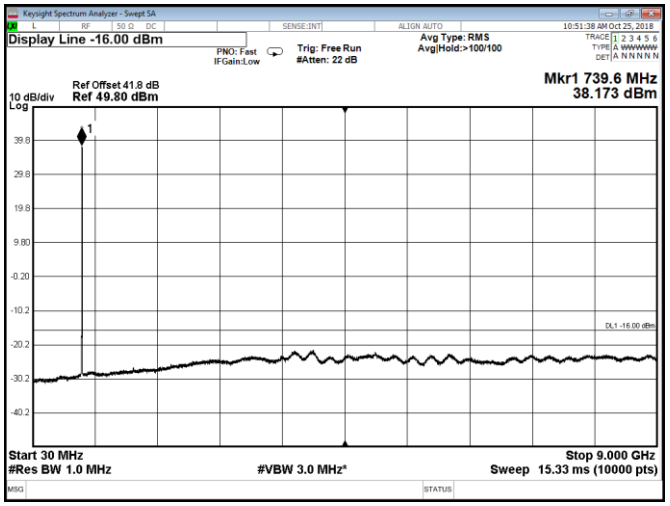


Figure 8.3-34: *Conducted spurious emissions for 10 MHz high channel with 60 W configuration at Port C*

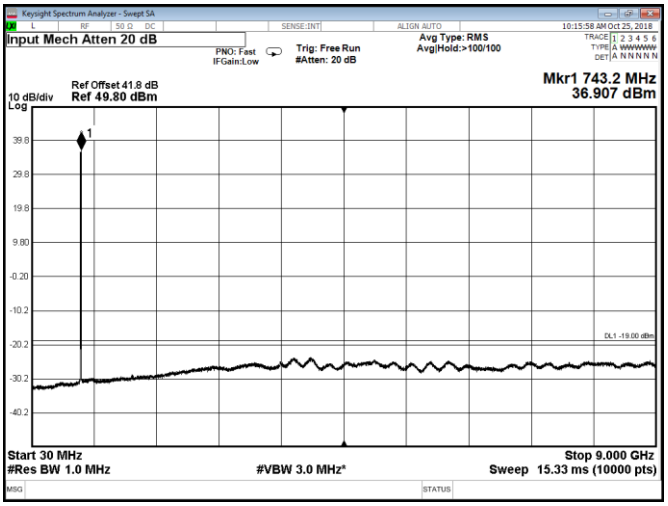


Figure 8.3-35: *Conducted spurious emissions for MC 2×5 MHz channels with 40 W configuration at Port A*

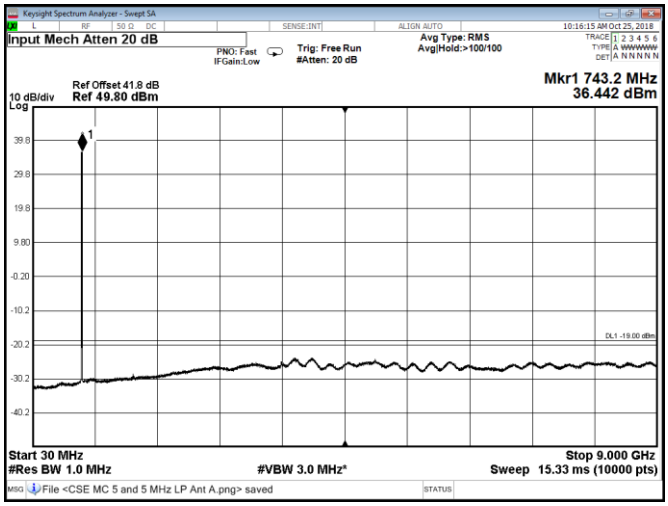


Figure 8.3-36: *Conducted spurious emissions for MC 2×5 MHz channels with 40 W configuration at Port B*

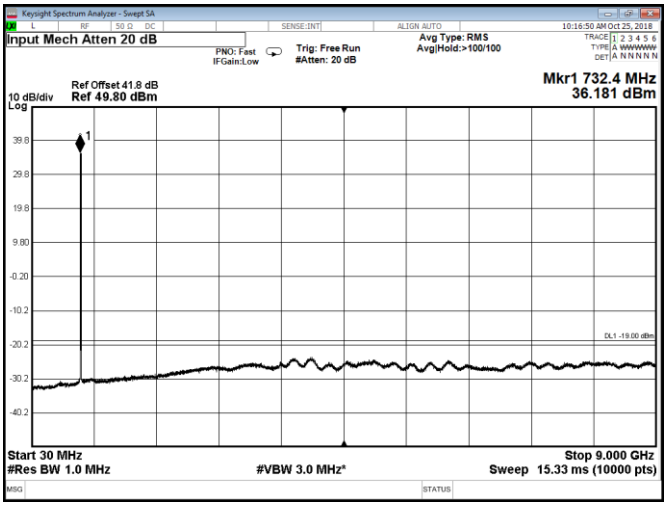


Figure 8.3-37: *Conducted spurious emissions for MC 2×5 MHz channels with 40 W configuration at Port C*

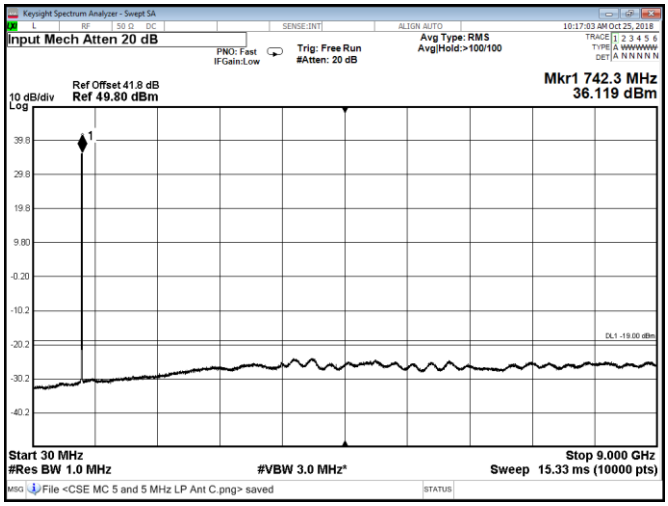


Figure 8.3-38: *Conducted spurious emissions for MC 2×5 MHz channels with 40 W configuration at Port D*

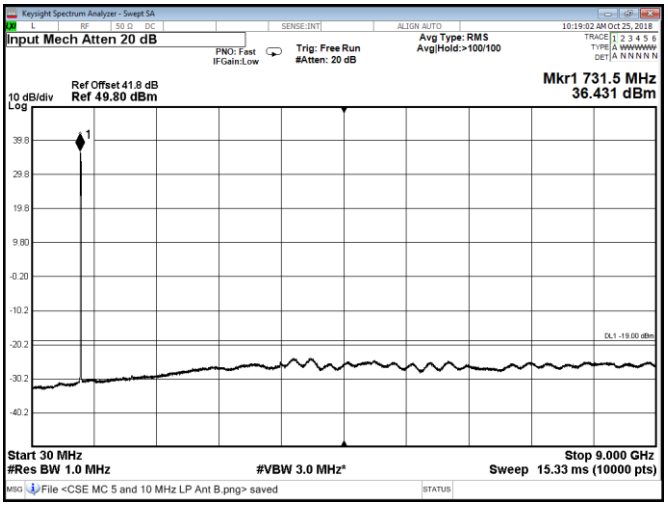


Figure 8.3-39: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 40 W configuration at Port A*

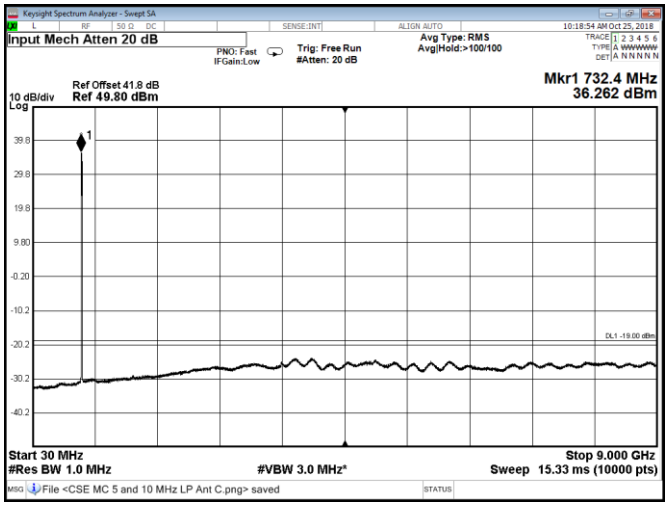


Figure 8.3-40: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 40 W configuration at Port B*

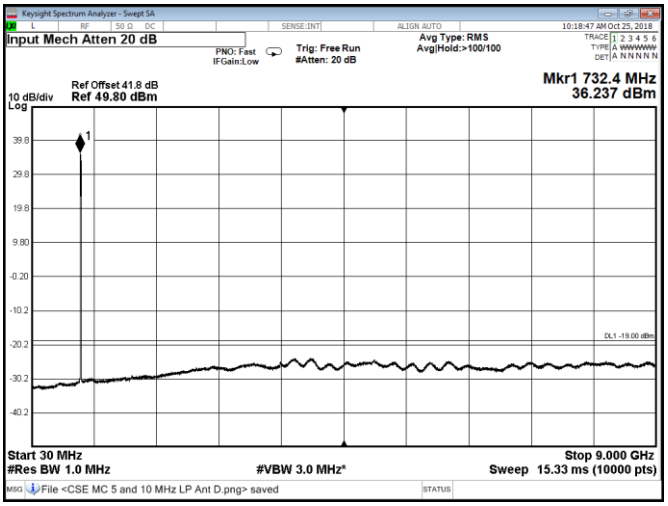


Figure 8.3-41: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 40 W configuration at Port C*

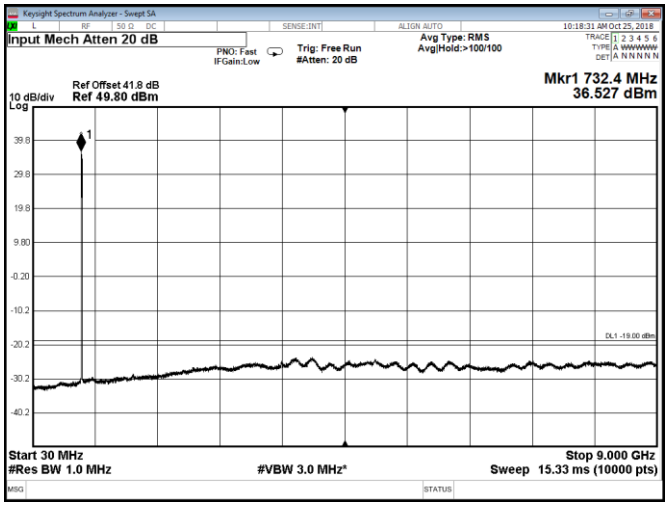


Figure 8.3-42: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 40 W configuration at Port D*

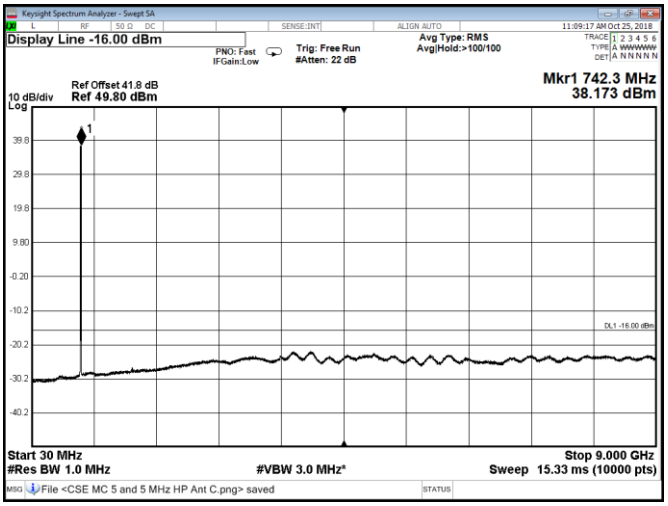


Figure 8.3-43: *Conducted spurious emissions for MC 2×5 MHz channels with 60 W configuration at Port A*

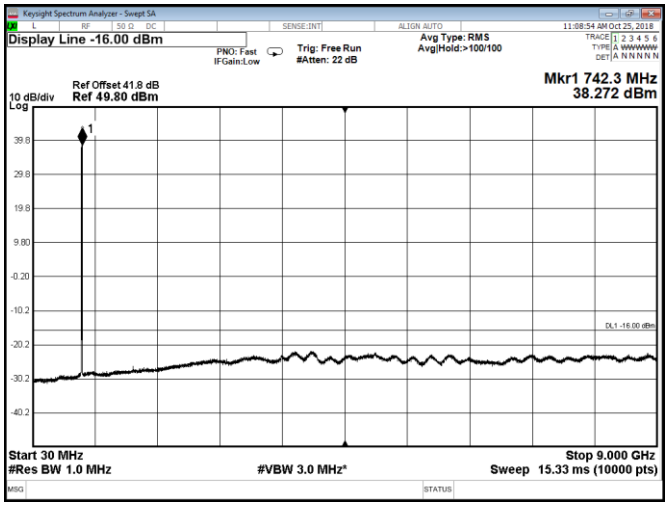


Figure 8.3-44: *Conducted spurious emissions for MC 2×5 MHz channels with 60 W configuration at Port C*

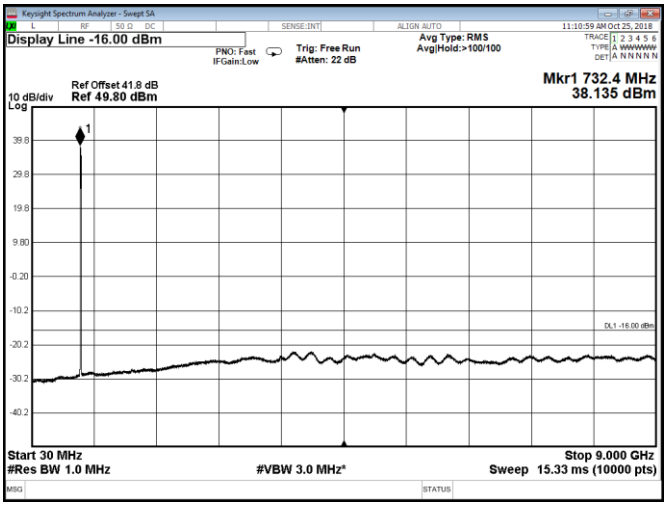


Figure 8.3-45: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 60 W configuration at Port A*

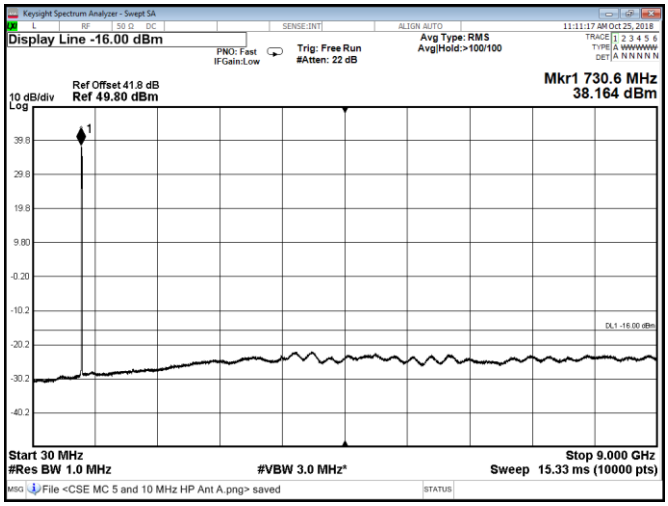


Figure 8.3-46: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels with 60 W configuration at Port C*

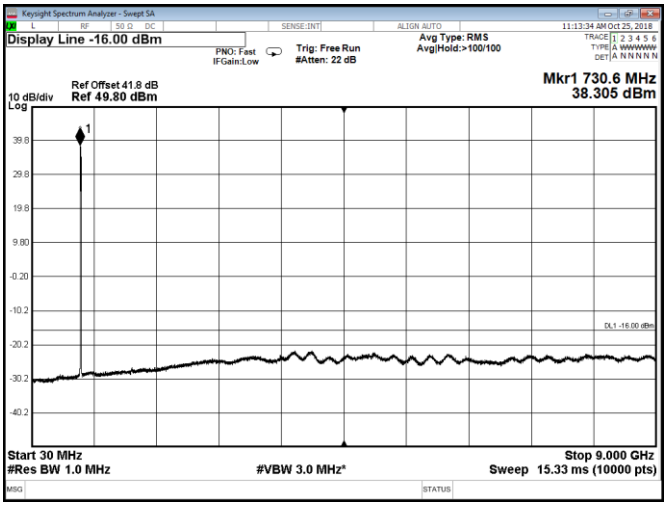


Figure 8.3-47: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels and IoT with 60 W configuration at Port A*

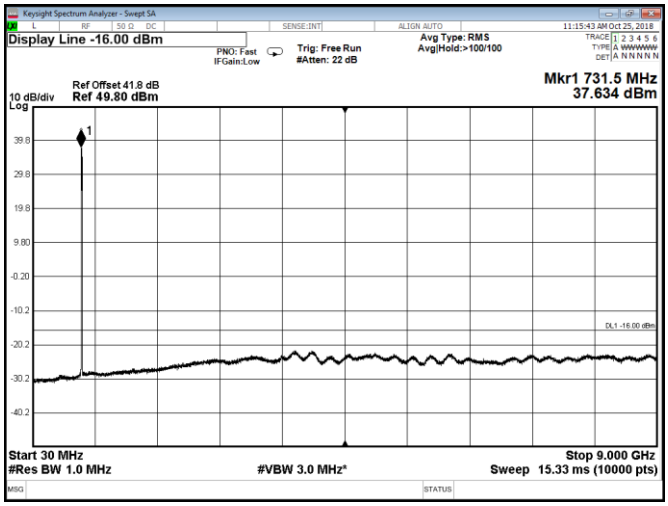


Figure 8.3-48: *Conducted spurious emissions for MC 5 MHz and 10 MHz channels and IoT with 60 W configuration at Port C*

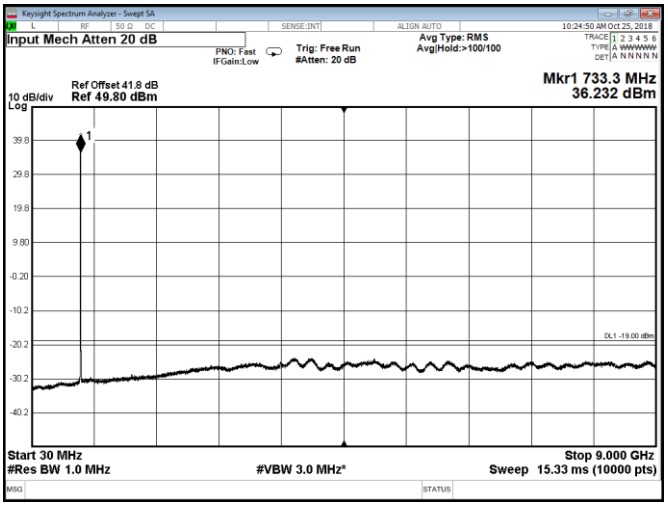


Figure 8.3-49: *Conducted spurious emissions for 10 MHz low channel with IoT, with 40 W configuration at Port A*

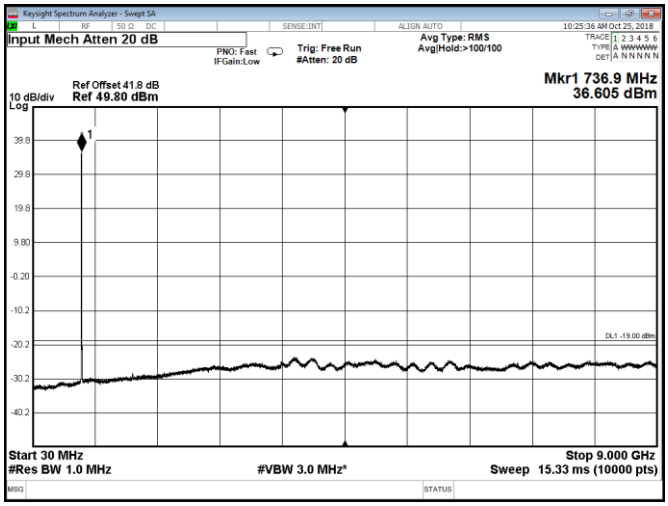


Figure 8.3-50: *Conducted spurious emissions for 10 MHz low channel with IoT, with 40 W configuration at Port B*

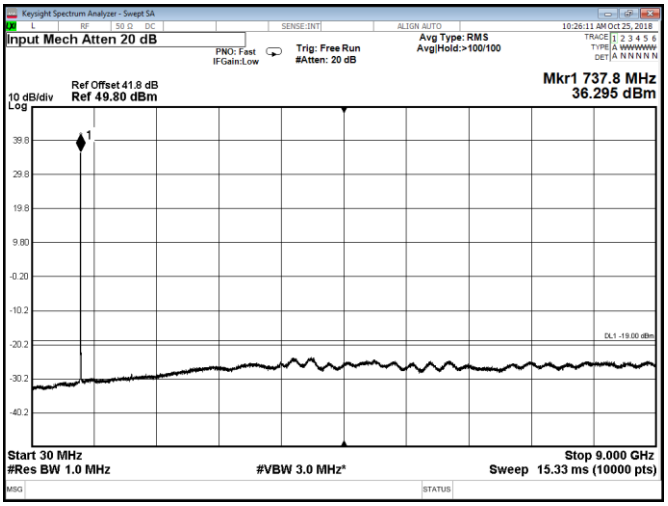


Figure 8.3-51: *Conducted spurious emissions for 10 MHz low channel with IoT, with 40 W configuration at Port C*

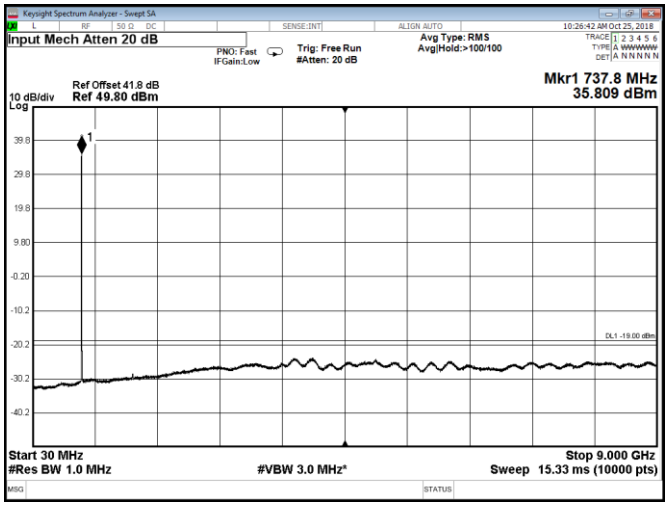


Figure 8.3-52: *Conducted spurious emissions for 10 MHz low channel with IoT, with 40 W configuration at Port D*

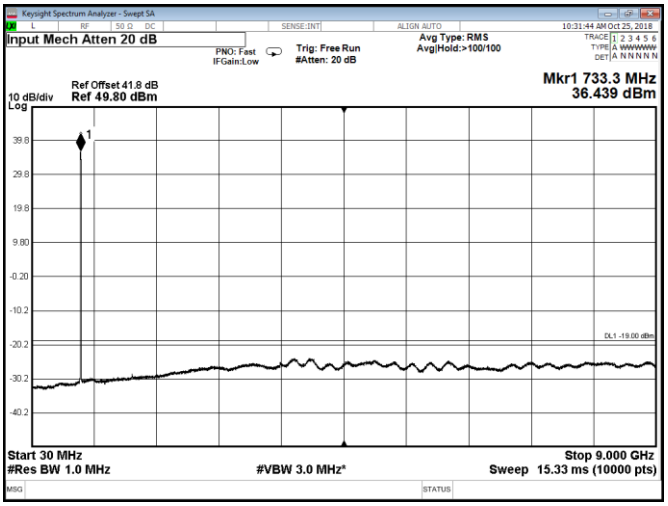


Figure 8.3-53: *Conducted spurious emissions for 10 MHz mid channel with 2×IoT, with 40 W configuration at Port A*

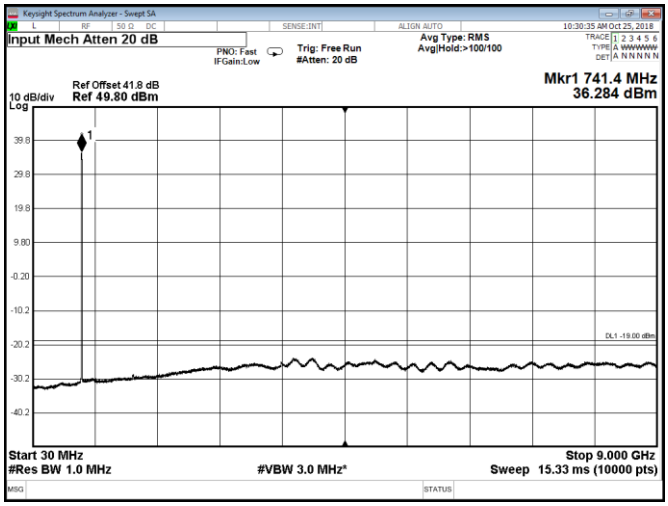


Figure 8.3-54: *Conducted spurious emissions for 10 MHz mid channel with 2×IoT, with 40 W configuration at Port B*

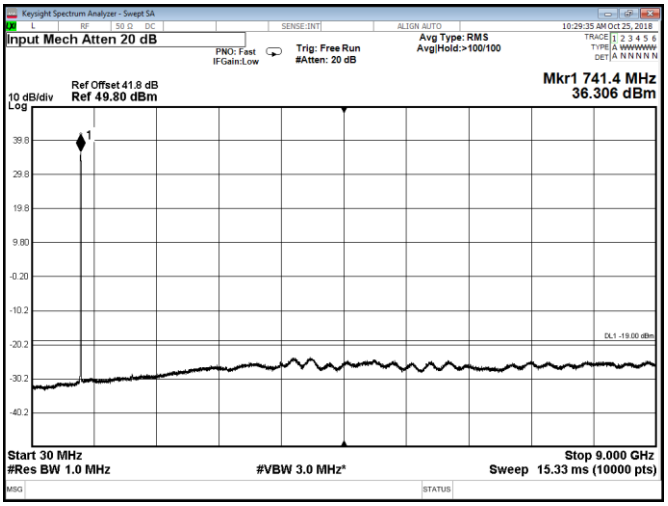


Figure 8.3-55: *Conducted spurious emissions for 10 MHz mid channel with 2×IoT, with 40 W configuration at Port C*

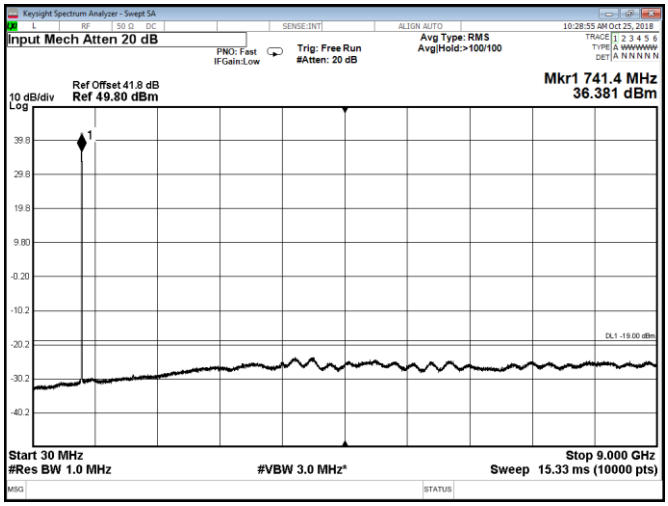


Figure 8.3-56: *Conducted spurious emissions for 10 MHz mid channel with 2×IoT, with 40 W configuration at Port D*

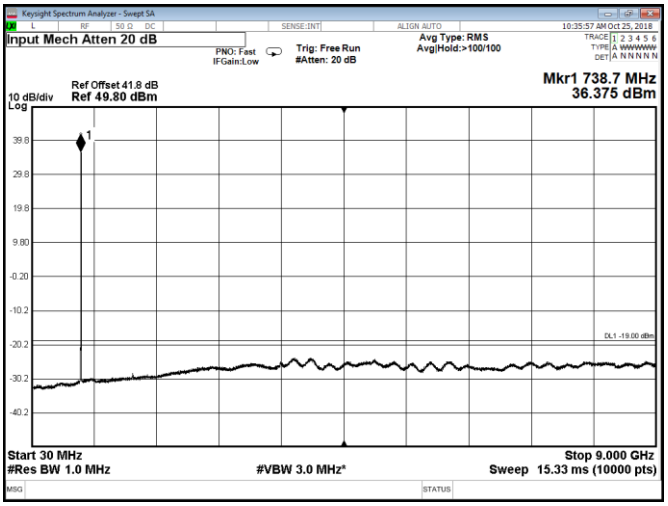


Figure 8.3-57: *Conducted spurious emissions for 10 MHz high channel with IoT, with 40 W configuration at Port A*

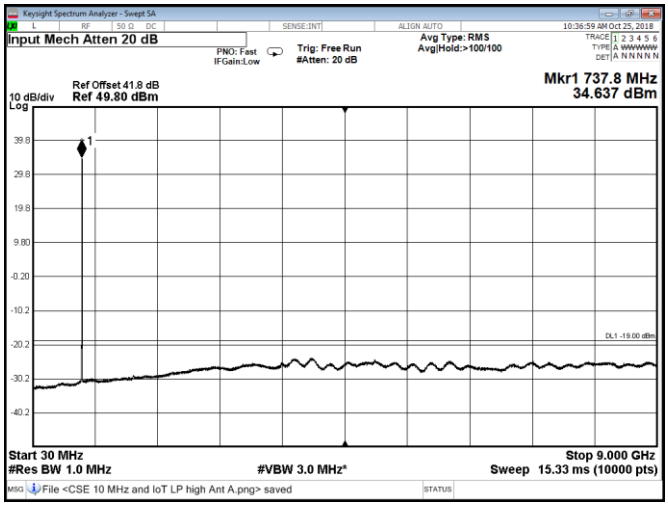


Figure 8.3-58: *Conducted spurious emissions for 10 MHz high channel with IoT, with 40 W configuration at Port B*