



Test Report Serial Number:

45462028 r2.0

Test Report Date:

2 December 2025

Project Number:

1691

EMC Test Report - C2PC

Applicant:



4RF Limited
PO Box 13-506
Wellington 6440
New Zealand

FCC ID:

UIPSQ757M160

Product Model Number / HVIN

SQ757M160

Product Name / PMN

Aprisa SR+

In Accordance With:

FCC 47 CFR Part 27 - Miscellaneous Wireless Communications Service

Licensed Non-Broadcast Station Transmitter (TNB)

Approved By:

Ben Hewson, President

Celltech Labs Inc.
21-364 Lougheed Rd.
Kelowna, BC, V1X 7R8
Canada



Test Lab Certificate: 2470.01



**Industry
Canada**

IC Registration 3874A



FCC Registration Number: 608310

FCC Designation Number: CA3874

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1.0 REVISION HISTORY

Revision History				
Samples Tested By:		Art Voss, P.Eng.		Date(s) of Evaluation:
Report Prepared By:		Art Voss, P.Eng.		18 - 21 November 2025
Report Reviewed By:		Ben Hewson		
Report Revision	Description of Revision	Revised Section	Revised By	Revision Date
1.0	Initial Release	n/a	Art Voss	20 November 2025
2.0	Added FCC Registration Number	Cover	Art Voss	2 December 2025

2.0 CLIENT AND DUT INFORMATION

Client Information	
Applicant Name (FCC)	4RF Limited
Applicant Address (FCC)	PO Box 13-506
	Wellington 6440,
	New Zealand
DUT Information	
Device Identifier(s):	FCC ID: UIPSQ757M160
Device Type:	Digital Transceiver
Device Model(s) / HVIN:	SQ757M160
Device Marketing Name / PMN:	Aprisa SR+
Test Sample Serial No.:	R5310007043
Equipment Class (FCC):	TNB: Licensed Non-Broadcast Station Transmitter
Transmit Frequency Range:	Part 27: 757-758MHz, 787-788MHz
Test Channels:	Programmable
Manuf. Max. Rated Output Power:	10dBm (10mW) to 37dBm (5W), Field-Programmable
Manuf. Max. Rated BW:	Part 27. 12.5kHz, 25kHz, 50kHz, 100kHz
Antenna Type and Gain:	Max: 18dBi (15.85dBd)
Modulation:	QPSK, 16QAM, 64QAM, 256QAM
Mode:	Half Duplex
DUT Power Source:	10 - 30VDC
DUT Dimensions [HxWxD] (mm)	H x W x D: 40mm x 140mm x 210mm.
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

3.0 SCOPE

Preface:

This Certification Report was prepared on behalf of:

4RF Limited

,(the '*Applicant*'), in accordance with the applicable Federal Communications Commission (FCC) CFR 47 and Innovation, Scientific and Economic Development (ISED) Canada rules parts and regulations (the '*Rules*'). The scope of this investigation was limited to only the equipment, devices and accessories (the '*Equipment*') supplied by the *Applicant*. The tests and measurements performed on this *Equipment* were only those set forth in the applicable *Rules* and/or the Test and Measurement Standards they reference. The *Rules* applied and the Test and Measurement Standards used during this evaluation appear in the Normative References section of this report. The limits set forth in the technical requirements of the applicable *Rules* were applied to the measurement results obtained during this evaluation and ,unless otherwise noted, these limits were used as the Pass/Fail criteria. The Pass/Fail statements made in this report apply to only the tests and measurements performed on only the *Equipment* tested during this evaluation. Where applicable and permissible, information including test and measurement data and/or results from previous evaluations of same or similar equipment, devices and/or accessories may be cited in this report.

Device:

The SQ757M160, FCC ID: UIPSQ757M160, is a digital transceiver and was previously certified to Part 27. The transceiver synthesizers are being replaced and are not pin-to-pin compatible. All other aspects of the transmitter with regards to output power, bands of operation, bandwidths and modulations have not been changed from those in the previous filings.

Requirement:

As per FCC KDB 388624 D02v18r07, a C2PC (C2PCPX) using the procedures of FCC KDB 178919 (Notification 202109-001) is being sought.

Application:

This is an application for a C2PC.

Scope:

The scope of this investigation is limited to the evaluation and reporting of the wanted and spurious emissions in accordance with the rule parts cited in Normative References section of this report.

4.0 TEST SUMMARY

TEST SUMMARY					
Section	Description of Test	Procedure Reference	Applicable Rule Part(s) FCC	Test Date	Result
7.0	Conducted Power (Fundamental)	ANSI C63.26-2015	§27.50(b)(1)	18 Nov 2025	Pass
8.0	Occupied Bandwidth	ANSI C63.26-2015	§2.1049	19 Nov 2025	Pass
9.0	Spurious Emissions - Band Edge	ANSI C63.26-2015	§27.53(c)	19 Nov 2025	Pass
10.0	Antenna Port Conducted Spurious	ANSI C63.26-2015	§27.53(c)	20 Nov 2025	Pass
11.0	Radiated Tx Spurious Emissions	ANSI C63.26-2015	§27.53(c)	21 Nov 2025	Pass

Test Station Day Log					
Date	Ambient Temp (°C)	Relative Humidity (%)	Barometric Pressure (kPa)	Test Station	Tests Performed Section(s)
18 Nov 2025	22.5	25	103.2	EMC	7
19 Nov 2025	22.8	26	103.3	EMC	8, 9
20 Nov 2025	22.1	26	103.1	EMC	10
21 Nov 2025	5.0	70	102.2	OATS	11

EMC - EMC Test Bench

OATS - Open Area Test Site

LISN - LISN Test Area

IMM - Immunity Test Area

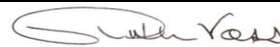
SAC - Semi-Anechoic Chamber

TC - Temperature Chamber

ESD - ESD Test Bench

RI - Radiated Immunity Chamber

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.



Art Voss, P.Eng.
 Technical Manager
 Celltech Labs Inc.

20 November 2025
 Date



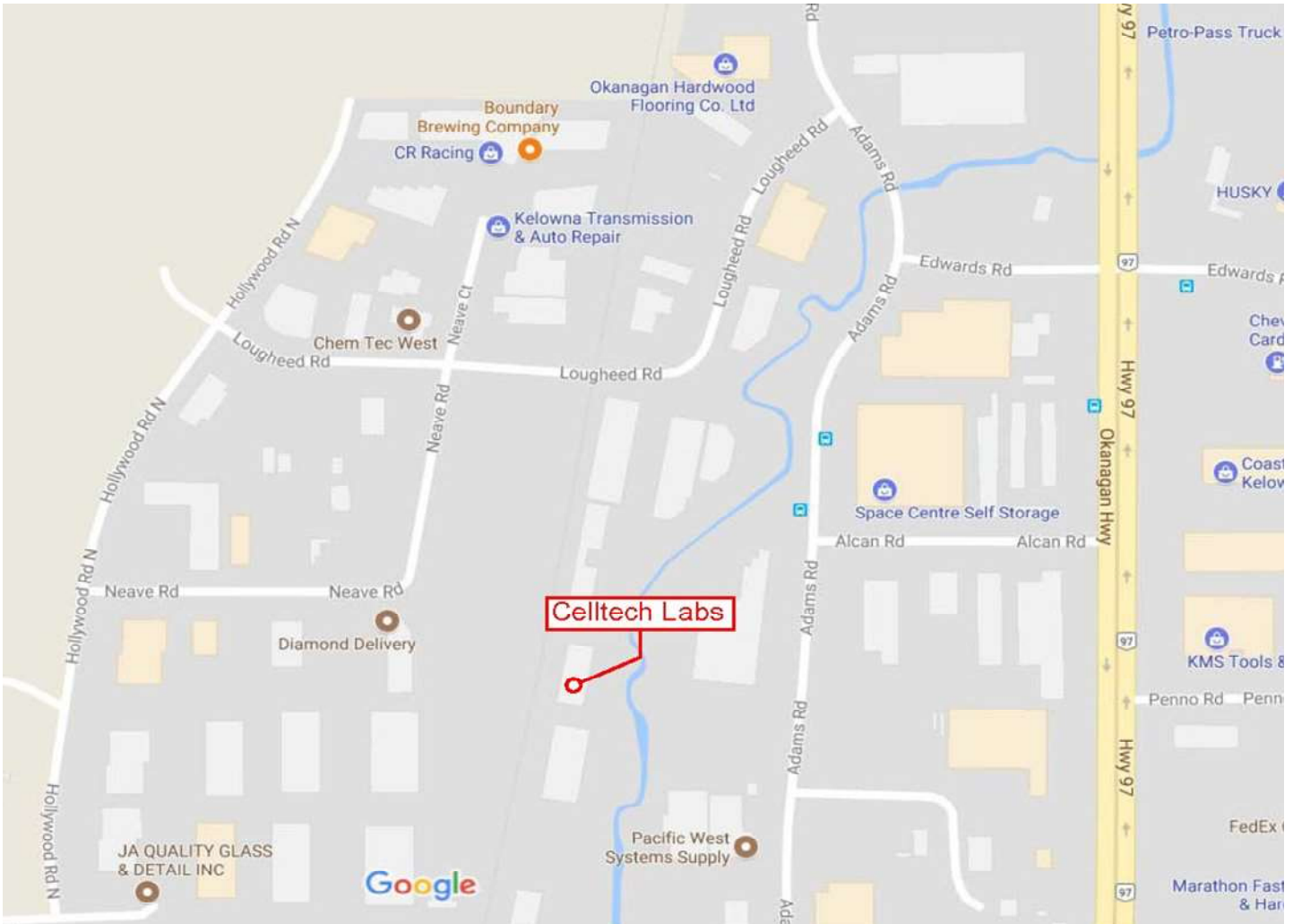
5.0 NORMATIVE REFERENCES

Normative References	
ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories
ANSI C63.4-2014	American National Standard of Procedures for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electric and Electronic Equipment in the Range of 9kHz to 40GHz
ANSI C63.26-2015	American National Standard of Procedures for Compliance Testing of Transmitters Used in Licensed Radio Services
CFR	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations Subpart (2.1091): Radiofrequency radiation exposure evaluation: mobile devices.
CFR	Code of Federal Regulations Title 47: Telecommunication Part 27: Miscellaneous Wireless Communications Services Sub Part C: Technical Standards

6.0 FACILITIES AND ACCREDITATIONS

Facility and Accreditation:

The facilities used to evaluate this device outlined in this report are located at 21-364 Lougheed Road, Kelowna, British Columbia, Canada V1X 7R8. The radiated emissions site (OATS) conforms to the requirements set forth in ANSI C63.4 and is filed and listed with the FCC under Test Firm Registration Number CA3874 and Industry Canada under Test Site File Number IC 3874A. Celltech is accredited to ISO 17025, through accrediting body A2LA and with certificate 2470.01.



7.0 CONDUCTED POWER

Test Procedure

Normative Reference	FCC 47 CFR §2.1046, §27.50(b)(1)
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Limits

47 CFR §27.50	§ 27.50 Power Limits and Duty Cycle (b) The following power and antenna height limits apply to transmitters operating in the 746-758 MHz, 775-788 MHz and 805-806 MHz bands: (1) Fixed and base stations transmitting a signal in the 757-758 and 775-776 MHz bands must not exceed an effective radiated power (ERP) of 1000 watts...
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Test Setup

Appendix A	Figure A.1
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Measurement Procedure

The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA Detector was set to RMS and set to measure the channel power with the channel bandwidth set to 100kHz. The output power of the DUT was set to the manufacturer's highest rated setting for each modulation type and to the center frequency of each transmission band. All modulations (QPSK, 16 QAM, and 64 QAM) were investigated.

See Appendix D for Conducted Power Measurement Plots

Table 7.1 – Summary of Conducted Power Measurements, 12.5kHz Channel Bandwidth

Conducted Power Measurement Results:									
Frequency Band (MHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Meas. Detector	Measured Power ⁽¹⁾ [P _{Meas}] (dBm)	Antenna Gain [G] (dBd)	ERP Power [P _{erp}] (dBm)	Limit [P _{Lim}] (dBm)	Margin (dB)
757-758	757.5	12.50	QPSK	RMS	36.57	15.85	52.42	60	7.6
			16QAM		33.67		49.52		10.5
			64QAM		32.30		48.15		11.9
			256QAM		31.60		47.45		12.6
787-788	787.5		QPSK		36.20		52.05		8.0
			16QAM		33.16		49.01		11.0
			64QAM		32.26		48.11		11.9
			256QAM		31.43		47.28		12.7
Result:									Complies
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF)									
Approximate Path Loss (worst case) = 0.6dB @1GHz									
ERP [P _{erp}] = [P _{meas}] + [G](dBd)									
Margin = [P _{lim}] - [P _{erp}]									
The Gain of the ZDAP750-10-60D used for compliance to§27.50(b) and §27.53(f) is assumed for this calculation									
Note: Maximum Output Power is field-programable.									

Table 7.2 – Summary of Conducted Power Measurements, 25Hz Channel Bandwidth

Conducted Power Measurement Results:									
Frequency Band (MHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Meas. Detector	Measured Power ⁽¹⁾ [P _{Meas}] (dBm)	Antenna Gain [G] (dBd)	ERP Power [P _{erp}] (dBm)	Limit [P _{Lim}] (dBm)	Margin (dB)
757-758	757.5	25.00	QPSK	RMS	36.40	15.85	52.25	60	7.8
			16QAM		33.64		49.49		10.5
			64QAM		32.28		48.13		11.9
			256QAM		31.99		47.84		12.2
787-788	787.5		QPSK		35.99		51.84		8.2
			16QAM		33.47		49.32		10.7
			64QAM		32.03		47.88		12.1
			256QAM		31.27		47.12		12.9
Result:									Complies
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF)									
Approximate Path Loss (worst case) = 0.6dB @1GHz									
ERP [P _{erp}] = [P _{meas}] + [G](dBd)									
Margin = [P _{lim}] - [P _{erp}]									
The Gain of the ZDAP750-10-60D used for compliance to§27.50(b) and §27.53(f) is assumed for this calculation									
Note: Maximum Output Power is field-programable.									

Table 7.3 – Summary of Conducted Power Measurements, 50Hz Channel Bandwidth

Conducted Power Measurement Results:									
Frequency Band (MHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Meas. Detector	Measured Power ⁽¹⁾ [P _{Meas}] (dBm)	Antenna Gain [G] (dBd)	ERP Power [P _{erp}] (dBm)	Limit [P _{Lim}] (dBm)	Margin (dB)
757-758	757.5	50.00	QPSK	RMS	36.71	15.85	52.56	60	7.4
			16QAM		34.39		50.24		9.8
			64QAM		33.43		49.28		10.7
			256QAM		32.54		48.39		11.6
787-788	787.5		QPSK		36.62		52.47		7.5
			16QAM		34.09		49.94		10.1
			64QAM		33.20		49.05		11.0
			256QAM		32.19		48.04		12.0
Result:									Complies
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF)									
Approximate Path Loss (worst case) = 0.6dB @1GHz									
ERP [P _{erp}] = [P _{meas}] + [G](dBd)									
Margin = [P _{lim}] - [P _{erp}]									
The Gain of the ZDAP750-10-60D used for compliance to§27.50(b) and §27.53(f) is assumed for this calculation									
Note: Maximum Output Power is field-programable.									

Table 7.4 – Summary of Conducted Power Measurements, 100Hz Channel Bandwidth

Conducted Power Measurement Results:									
Frequency Band (MHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Meas. Detector	Measured Power ⁽¹⁾ [P _{Meas}] (dBm)	Antenna Gain [G] (dBd)	ERP Power [P _{erp}] (dBm)	Limit [P _{Lim}] (dBm)	Margin (dB)
757-758	757.5	100.00	QPSK	RMS	36.09	15.85	51.94	60	8.1
			16QAM		34.12		49.97		10.0
			64QAM		33.09		48.94		11.1
			256QAM		32.29		48.14		11.9
787-788	787.5		QPSK		35.95		51.80		8.2
			16QAM		33.97		49.82		10.2
			64QAM		32.96		48.81		11.2
			256QAM		32.11		47.96		12.0
Result:									Complies
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF)									
Approximate Path Loss (worst case) = 0.6dB @1GHz									
ERP [P _{erp}] = [P _{meas}] + [G](dBd)									
Margin = [P _{lim}] - [P _{erp}]									
The Gain of the ZDAP750-10-60D used for compliance to§27.50(b) and §27.53(f) is assumed for this calculation									
Note: Maximum Output Power is field-programable.									

Note:
The Aprisa SR+ must be professionally installed by trained technicians. The output power is adjustable from 10dBm to 37dBm (QPSK).

8.0 OCCUPIED BANDWIDTH

Test Conditions

Normative Reference	FCC 47 CFR §2.1049, KDB 971168 D01v02r02
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Limits

47 CFR §2.1049	§ 2.1049 Measurements required: Occupied Bandwidth. The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured...
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Test Setup

Appendix A	Figure A.1
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Measurement Procedure

The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA Detector was set to RMS with the RBW set to < the OBW of the DUT. The output power of the DUT was set to the manufacturer's highest rated setting for each modulation type and set to the center frequency of each transmission band. All modulations (QPSK, 16 QAM, and 64 QAM) were investigated. The SA trace was set to Max Hold and the SA set to measure the 99% Occupied Bandwidth.

See Appendix E for Occupied Bandwidth Measurement Plots

Table 8.1 – Summary of Occupied Bandwidth Measurements, 12.5kHz Channel Bandwidth

99% Occupied Bandwidth Results:					
Frequency Band (kHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Measured Occupied Bandwidth (kHz)	Emission Designator
757-758	757.50	12.5	QPSK	11.9	11K9G1D
			16QAM	12.0	12K0D1D
			64QAM	11.8	11K8D1D
			256QAM	11.9	11K9D1D
787-788	787.50		QPSK	11.9	11K9G1D
			16QAM	12.0	12K0D1D
			64QAM	11.9	11K9D1D
			256QAM	11.9	11K9D1D
Result:				Complies	

Table 8.2 – Summary of Occupied Bandwidth Measurements, 25kHz Channel Bandwidth

99% Occupied Bandwidth Results:					
Frequency Band (kHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Measured Occupied Bandwidth (kHz)	Emission Designator
757-758	757.50	25.0	QPSK	24.3	24K3G1D
			16QAM	24.4	24K4D1D
			64QAM	24.2	24K2D1D
			256QAM	24.1	24K1D1D
787-788	787.50		QPSK	24.3	24K3G1D
			16QAM	24.3	24K3D1D
			64QAM	23.9	23K9D1D
			256QAM	24.2	24K2D1D
Result:				Complies	

Table 8.3 – Summary of Occupied Bandwidth Measurements, 50kHz Channel Bandwidth

99% Occupied Bandwidth Results:					
Frequency Band (kHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Measured Occupied Bandwidth (kHz)	Emission Designator
757-758	757.50	50.0	QPSK	48.6	48K6G1D
			16QAM	48.3	48K3D1D
			64QAM	48.3	48K3D1D
			256QAM	48.7	48K7D1D
787-788	787.50		QPSK	48.4	48K4G1D
			16QAM	48.7	48K7D1D
			64QAM	48.3	48K3D1D
			256QAM	48.7	48K7D1D
Result:				Complies	

Table 8.4 – Summary of Occupied Bandwidth Measurements, 100kHz Channel Bandwidth

99% Occupied Bandwidth Results:					
Frequency Band (kHz)	Channel Frequency (MHz)	Channel Bandwidth (kHz)	Modulation	Measured Occupied Bandwidth (kHz)	Emission Designator
757-758	757.50	100.0	QPSK	87.8	87K8G1D
			16QAM	86.9	86K9D1D
			64QAM	87.1	87K1D1D
			256QAM	86.6	86K6D1D
787-788	787.50		QPSK	87.1	87K1G1D
			16QAM	87.1	87K1D1D
			64QAM	86.6	86K6D1D
			256QAM	87.4	87K4D1D
Result:				Complies	

9.0 BAND EDGE COMPLIANCE

Test Procedure

Normative Reference	FCC 47 CFR §2.1046, §27.53(c), KDB 971168 D02
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Limits

47 CFR §27.53	§ 27.53(c) Emission Limits (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following: (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB; (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB; (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations; (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed; (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
	KDB 971168 D02 In general, scaling of RBW is appropriate only when the signal is noise-like and is relatively flat across the spectrum under measurement.

Test Setup	Appendix A	Figure A.1
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Measurement Procedure

The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA Detector was set to RMS with the RBW set to 3kHz. RBW Scaling was used per KDB 971168 D02. The output power of the DUT was set to the manufacturer's highest rated setting for each modulation type. The DUT frequency was set to the lowest and highest channel setting in each channel Group. All modulations (QPSK, 16 QAM, and 64 QAM) were investigated. An emission mask of the above limits was used to determine compliance.

See Appendix F for Band Edge Measurement Plots

Table 9.1 – Summary of Band Edge Emissions, 12.5kHz Channel Bandwidth

Emissions Mask Results														
Channel Band (MHz)	Channel Bandwidth (kHz)	Band Edge	Maks ID	Channel Freq (MHz)	Modulation	Fundamental Power [Pfund] (dBm)	Mask Offset ⁽²⁾ [Offset] (dB)	Emission Freq (MHz)	Emission Power ⁽¹⁾ [P _{em}] (dBm)	Corrected Emission [P _{corr}] ⁽³⁾ (dBm)	Attenuation [Att] (dBm)	Limit [Lim] (dB)	Margin (dB)	Mask Results
757-758	12.5	Lower	§27.53(c)(1)	757.01250	QPSK	37	-13	757	-27.59	-17.59	54.59	43.00	11.59	PASS
					16QAM	35	-15		-31.27	-21.27	56.27		13.27	PASS
					64QAM	34	-16		-31.09	-21.09	55.09		12.09	PASS
					256QAM	33	-17		-32.06	-22.06	55.06		12.06	PASS
		Upper		757.98750	QPSK	37	-13	758	-32.85	-22.85	59.85		16.85	PASS
					16QAM	35	-15		-35.95	-25.95	60.95		17.95	PASS
					64QAM	34	-16		-36.93	-26.93	60.93		17.93	PASS
					256QAM	33	-17		-38.60	-28.60	61.60		18.60	PASS
787-788	12.5	Lower	§27.53(c)(2)	787.01250	QPSK	37	-13	787	-27.71	-17.71	54.71	43.00	11.71	PASS
					16QAM	35	-15		-30.88	-20.88	55.88		12.88	PASS
					64QAM	34	-16		-32.34	-22.34	56.34		13.34	PASS
					256QAM	33	-17		-32.12	-22.12	55.12		12.12	PASS
		Upper		787.98750	QPSK	37	-13	788	-33.07	-23.07	60.07		17.07	PASS
					16QAM	35	-15		-35.99	-25.99	60.99		17.99	PASS
					64QAM	34	-16		-36.35	-26.35	60.35		17.35	PASS
					256QAM	33	-17		-37.85	-27.85	60.85		17.85	PASS
Result:													Complies	
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF) Approximate Path Loss (worst case) = 0.6dB @1GHz														
(2) Mask Offset [Offset] if the difference between the Fundamental Power [Pfund] and the Instrument Reference Level [RL]. [RL] = 50dBm [Offset] = [P _{fund}] - [RL]														
Attenuation [Att] = Fundamental Power [P _{fund}] - Emission Power [P _{corr}]														
(3) Corrected Emission: The measurement RBW was 3kHz, the required RBW is 30kHz. The Corrected Emission [P _{corr}] is given by [P _{em}] + 10Log ₁₀ (RBW required / RBW Meas) [P _{corr}] = [P _{em}] + 10Log ₁₀ (30kHz/3kHz) = [P _{em}] + 10dB														

Table 9.2 – Summary of Band Edge Emissions, 25kHz Channel Bandwidth

Emissions Mask Results														
Channel Band (MHz)	Channel Bandwidth (kHz)	Band Edge	Maks ID	Channel Freq (MHz)	Modulation	Fundamental Power [Pfund] (dBm)	Mask Offset ⁽²⁾ [Offset] (dB)	Emission Freq (MHz)	Emission Power ⁽¹⁾ [P _{em}] (dBm)	Corrected Emission [P _{corr}] ⁽³⁾ (dBm)	Attenuation [Att] (dBm)	Limit [Lim] (dB)	Margin (dB)	Mask Results
757-758	25.0	Lower	§27.53(c)(1)	757.01875	QPSK	37	-13	757	-20.94	-10.94	47.94	43.00	4.94	PASS
					16QAM	35	-15		-23.69	-13.69	48.69		5.69	PASS
					64QAM	34	-16		-25.83	-15.83	49.83		6.83	PASS
					256QAM	33	-17		-25.46	-15.46	48.46		5.46	PASS
		Upper		757.98125	QPSK	37	-13	758	-27.74	-17.74	54.74		11.74	PASS
					16QAM	35	-15		-31.88	-21.88	56.88		13.88	PASS
					64QAM	34	-16		-33.31	-23.31	57.31		14.31	PASS
					256QAM	33	-17		-34.05	-24.05	57.05		14.05	PASS
787-788		Lower	§27.53(c)(2)	787.01875	QPSK	37	-13	787	-21.97	-11.97	48.97	43.00	5.97	PASS
					16QAM	35	-15		-24.47	-14.47	49.47		6.47	PASS
					64QAM	34	-16		-25.52	-15.52	49.52		6.52	PASS
					256QAM	33	-17		-26.20	-16.20	49.20		6.20	PASS
		Upper		787.98125	QPSK	37	-13	788	-28.30	-18.30	55.30		12.30	PASS
					16QAM	35	-15		-30.75	-20.75	55.75		12.75	PASS
					64QAM	34	-16		-32.62	-22.62	56.62		13.62	PASS
					256QAM	33	-17		-33.65	-23.65	56.65		13.65	PASS
Result:													Complies	
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF) Approximate Path Loss (worst case) = 0.6dB @1GHz														
(2) Mask Offset [Offset] if the difference between the Fundamental Power [Pfund] and the Instrument Reference Level [RL]. [RL] = 50dBm [Offset] = [P _{fund}] - [RL]														
Attenuation [Att] = Fundamental Power [P _{fund}] - Emission Power [P _{corr}]														
(3) Corrected Emission: The measurement RBW was 3kHz, the required RBW is 30kHz. The Corrected Emission [P _{corr}] is given by [P _{em}] + 10Log ₁₀ (RBW required / RBW Meas) [P _{corr}] = [P _{em}] + 10Log ₁₀ (30kHz/3kHz) = [P _{em}] + 10dB														

Table 9.3 – Summary of Band Edge Emissions, 50kHz Channel Bandwidth

Emissions Mask Results														
Channel Band (MHz)	Channel Bandwidth (kHz)	Band Edge	Maks ID	Channel Freq (MHz)	Modulation	Fundamental Power [Pfund] (dBm)	Mask Offset ⁽²⁾ [Offset] (dB)	Emission Freq (MHz)	Emission Power ⁽¹⁾ [P _{em}] (dBm)	Corrected Emission [P _{corr}] ⁽³⁾ (dBm)	Attenuation [Att] (dBm)	Limit [Lim] (dB)	Margin (dB)	Mask Results
757-758	50.0	Lower	§27.53(c)(1)	757.03750	QPSK	37	-13	757	-36.01	-26.01	63.01	43.00	20.01	PASS
					16QAM	35	-15		-38.48	-28.48	63.48		20.48	PASS
					64QAM	34	-16		-39.92	-29.92	63.92		20.92	PASS
					256QAM	33	-17		-39.97	-29.97	62.97		19.97	PASS
		Upper		757.98125	QPSK	37	-13	758	-36.95	-26.95	63.95		20.95	PASS
					16QAM	35	-15		-39.51	-29.51	64.51		21.51	PASS
					64QAM	34	-16		-40.06	-30.06	64.06		21.06	PASS
					256QAM	33	-17		-40.05	-30.05	63.05		20.05	PASS
787-788	50.0	Lower	§27.53(c)(2)	787.03750	QPSK	37	-13	787	-36.42	-26.42	63.42	43.00	20.42	PASS
					16QAM	35	-15		-39.14	-29.14	64.14		21.14	PASS
					64QAM	34	-16		-39.20	-29.20	63.20		20.20	PASS
					256QAM	33	-17		-41.06	-31.06	64.06		21.06	PASS
		Upper		787.98125	QPSK	37	-13	788	-36.94	-26.94	63.94		20.94	PASS
					16QAM	35	-15		-38.36	-28.36	63.36		20.36	PASS
					64QAM	34	-16		-40.30	-30.30	64.30		21.30	PASS
					256QAM	33	-17		788	-40.57	-30.57		63.57	20.57
Result:													Complies	
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF) Approximate Path Loss (worst case) = 0.6dB @1GHz														
(2) Mask Offset [Offset] if the difference between the Fundamental Power [Pfund] and the Instrument Reference Level [RL]. [RL] = 50dBm [Offset] = [P _{fund}] - [RL] Attenuation [Att] = Fundamental Power [P _{fund}] - Emission Power [P _{corr}]														
(3) Corrected Emission: The measurement RBW was 3kHz, the required RBW is 30kHz. The Corrected Emission [P _{corr}] is given by [P _{em}] + 10Log ₁₀ (RBW required / RBW Meas) [P _{corr}] = [P _{em}] + 10Log ₁₀ (30kHz/3kHz) = [P _{em}] + 10dB														

Table 9.4 – Summary of Band Edge Emissions, 100kHz Channel Bandwidth

Emissions Mask Results														
Channel Band (MHz)	Channel Bandwidth (kHz)	Band Edge	Maks ID	Channel Freq (MHz)	Modulation	Fundamental Power [Pfund] (dBm)	Mask Offset ⁽²⁾ [Offset] (dB)	Emission Freq (MHz)	Emission Power ⁽¹⁾ [P _{em}] (dBm)	Corrected Emission [P _{corr}] ⁽³⁾ (dBm)	Attenuation [Att] (dBm)	Limit [Lim] (dB)	Margin (dB)	Mask Results
757-758	100.0	Lower	§27.53(c)(1)	757.06250	QPSK	37	-13	757	-38.11	-28.11	65.11	43.00	22.11	PASS
					16QAM	35	-15		-39.51	-29.51	64.51		21.51	PASS
					64QAM	34	-16		-41.50	-31.50	65.50		22.50	PASS
					256QAM	33	-17		-40.98	-30.98	63.98		20.98	PASS
		Upper		757.93750	QPSK	37	-13	758	-36.90	-26.90	63.90		20.90	PASS
					16QAM	35	-15		-39.81	-29.81	64.81		21.81	PASS
					64QAM	34	-16		-40.68	-30.68	64.68		21.68	PASS
					256QAM	33	-17		-40.36	-30.36	63.36		20.36	PASS
787-788	100.0	Lower	§27.53(c)(2)	787.06250	QPSK	37	-13	787	-37.84	-27.84	64.84	43.00	21.84	PASS
					16QAM	35	-15		-39.63	-29.63	64.63		21.63	PASS
					64QAM	34	-16		-40.74	-30.74	64.74		21.74	PASS
					256QAM	33	-17		-41.14	-31.14	64.14		21.14	PASS
		Upper		787.93750	QPSK	37	-13	788	-37.59	-27.59	64.59		21.59	PASS
					16QAM	35	-15		-39.39	-29.39	64.39		21.39	PASS
					64QAM	34	-16		-40.24	-30.24	64.24		21.24	PASS
					256QAM	33	-17		-40.82	-30.82	63.82		20.82	PASS
Result:													Complies	
(1) Path Loss, including cable, attenuator and connectors, accounted for in the instrument's Transducer Factor (TDF) Approximate Path Loss (worst case) = 0.6dB @1GHz														
(2) Mask Offset [Offset] if the difference between the Fundamental Power [Pfund] and the Instrument Reference Level [RL]. [RL] = 50dBm [Offset] = [Pfund] - [RL]														
Attenuation [Att] = Fundamental Power [Pfund] - Emission Power [Pcorr]														
(3) Corrected Emission: The measurement RBW was 3kHz, the required RBW is 30kHz. The Corrected Emission [Pcorr] is given by [Pem] + 10Log ₁₀ (RBW required / RBW Meas) [Pcorr] = [Pem] + 10Log ₁₀ (30kHz/3kHz) = [Pem] + 10dB														

10.0 CONDUCTED SPURIOUS EMISSIONS – ANTENNA PORT

Test Procedure

Normative Reference	FCC 47 CFR §2.1046, §27.53(c)
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Limits

47 CFR §27.53	§ 27.53(c) Emission Limits
	(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following:
	(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
	(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
	(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Test Setup

Appendix A	Figure A.1
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Measurement Procedure

The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA Detector was set to RMS with the RBW set to 100kHz for frequencies below 1GHz and 1MHz for frequencies above 1GHz. The output power of the DUT was set to the manufacturer's highest rated power setting. The spectrum was evaluated to the 10th harmonic.

See Appendix G for Antenna Port Conducted Spurious Emissions Plots

Table 10.1 – Summary of Conducted Spurious Emissions, 757-758 MHz Band

Conducted Spurious Emissions Measurement Results:							
Frequency (MHz)	Modulation	Emission Power [P _{Em}] (dBm)	Emission Frequency (MHz)	Fundamental Measurment [P _{Fund}] (dBm)	Attenuation [Atten] (dB)	Limit (dB)	Margin (dB)
757.50	QPSK	ND	ND	37.00	n/a	43	n/a
Results:						Complies	

Attenuation [Atten] = [P_{Fund}] - [P_{Em}]

Margin = Attenuation - Limit

ND = None Detected

n/a = Not Applicable

Table 10.2 – Summary of Conducted Spurious Emissions, 787-788 MHz Band

Conducted Spurious Emissions Measurement Results:							
Frequency (MHz)	Modulation	Emission Power [P _{Em}] (dBm)	Emission Frequency (MHz)	Fundamental Measurment [P _{Fund}] (dBm)	Attenuation [Atten] (dB)	Limit (dB)	Margin (dB)
787.50	QPSK	ND	ND	37.00	n/a	43	n/a
Results:						Complies	

Attenuation [Atten] = [P_{Fund}] - [P_{Em}]

Margin = Attenuation - Limit

ND = None Detected

n/a = Not Applicable

11.0 RADIATED TX EMISSIONS

Test Procedure

Normative Reference	FCC 47 CFR §2.1046, §27.53(c)
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Limits

47 CFR §27.53	§ 27.53(c) Emission Limits
	(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following:
	(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
	(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
	(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

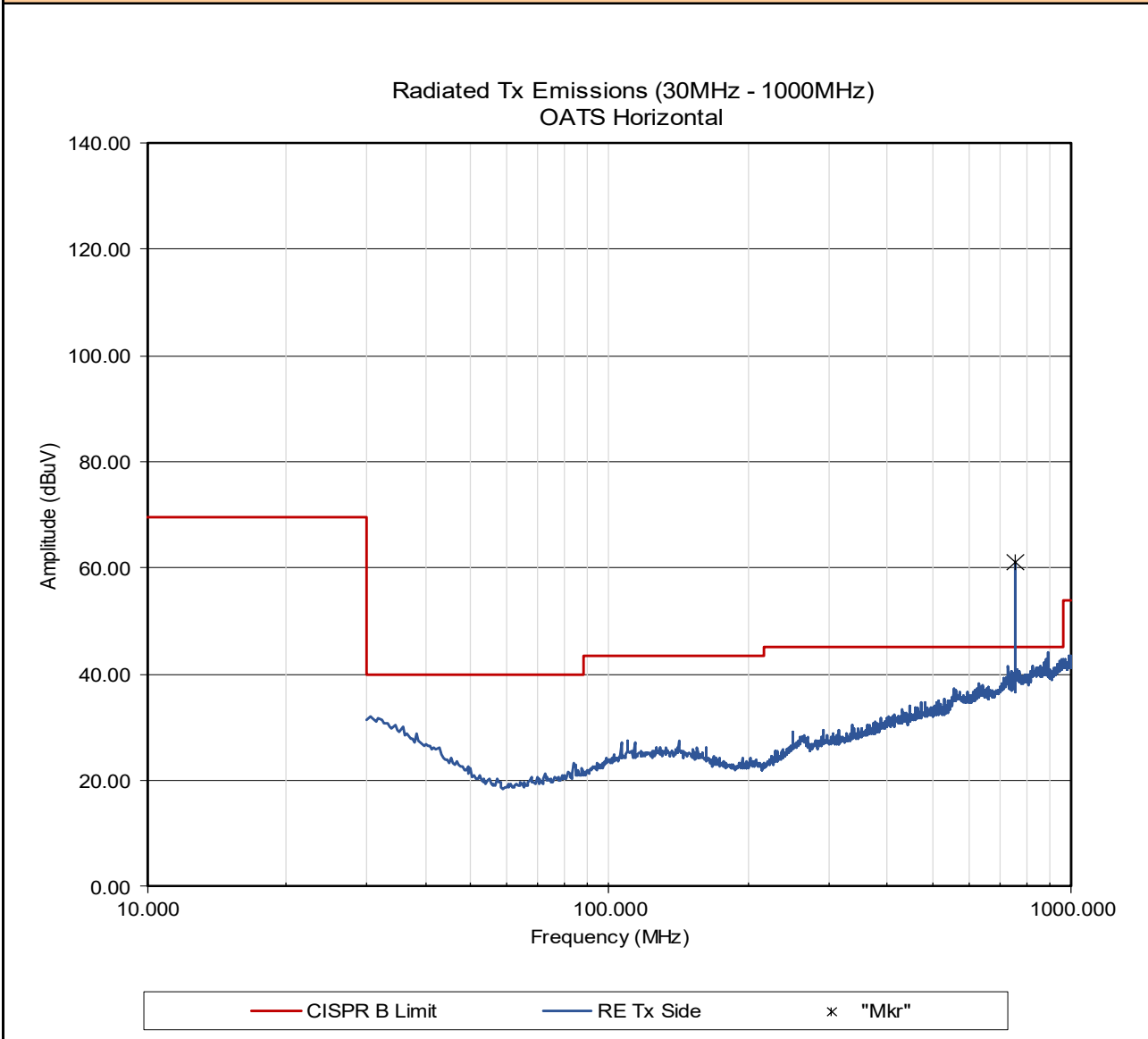
Test Setup	Appendix A	Figure A.1
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Measurement Procedure

The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA Detector was set to RMS with the RBW set to 100kHz for frequencies below 1GHz and 1MHz for frequencies above 1GHz. The output power of the DUT was set to the manufacturer's highest rated power setting. The spectrum was evaluated to the 10th harmonic.

Plot 11.1 – Radiated Tx Emissions, 30-1000MHz, Horizontal

Radiated Tx Emissions:



Marker = Fundamental

Modulation: **QPSK**

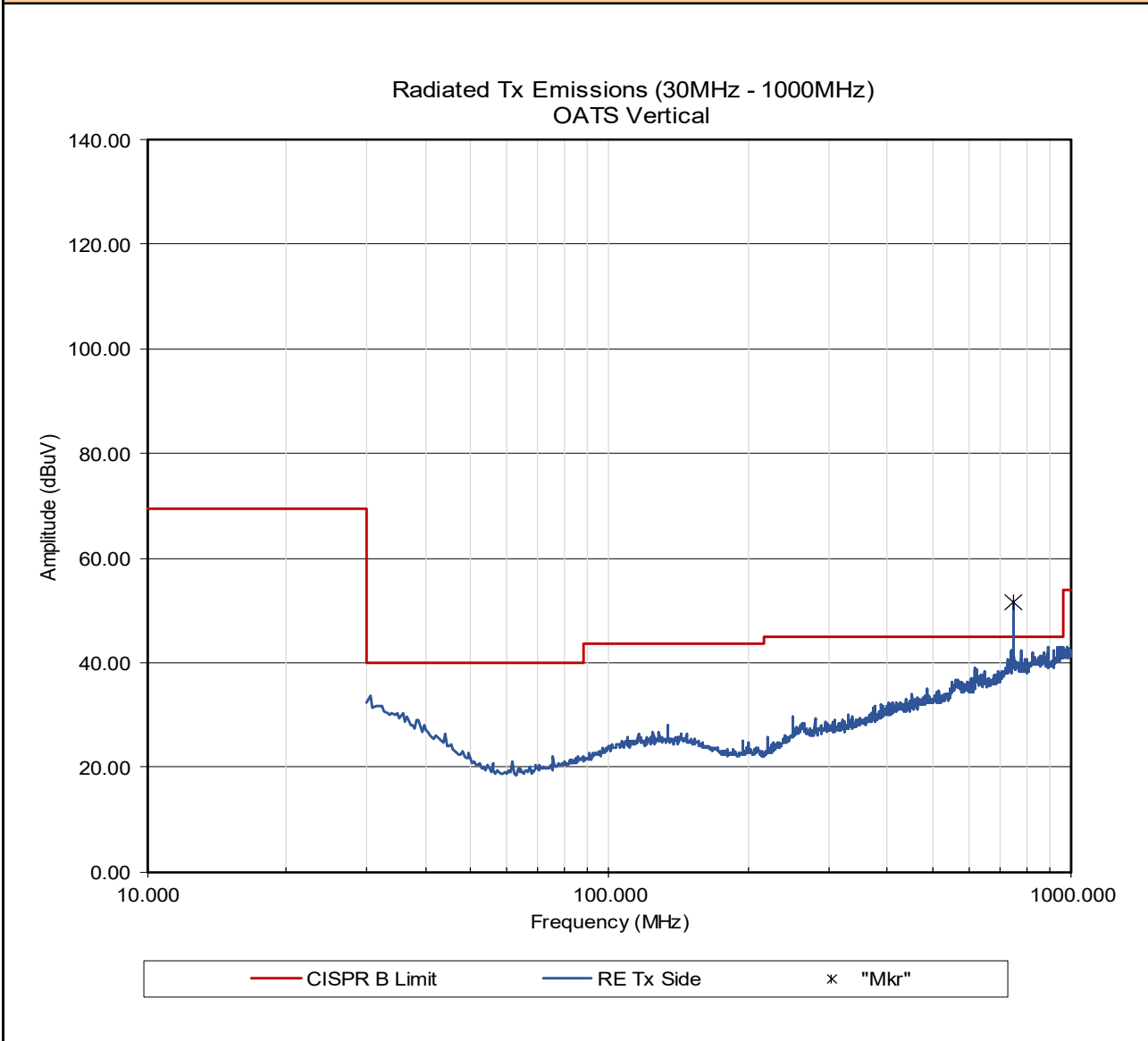
Channel Frequency: **757.5** MHz

Emission Frequency: **ND** MHz

Emission Amplitude: **ND** dBuV

Plot 11.2 – Radiated Tx Emissions, 30-1000MHz, Vertical

Radiated Tx Emissions:



Marker = Fundamental

Modulation: **QPSK**

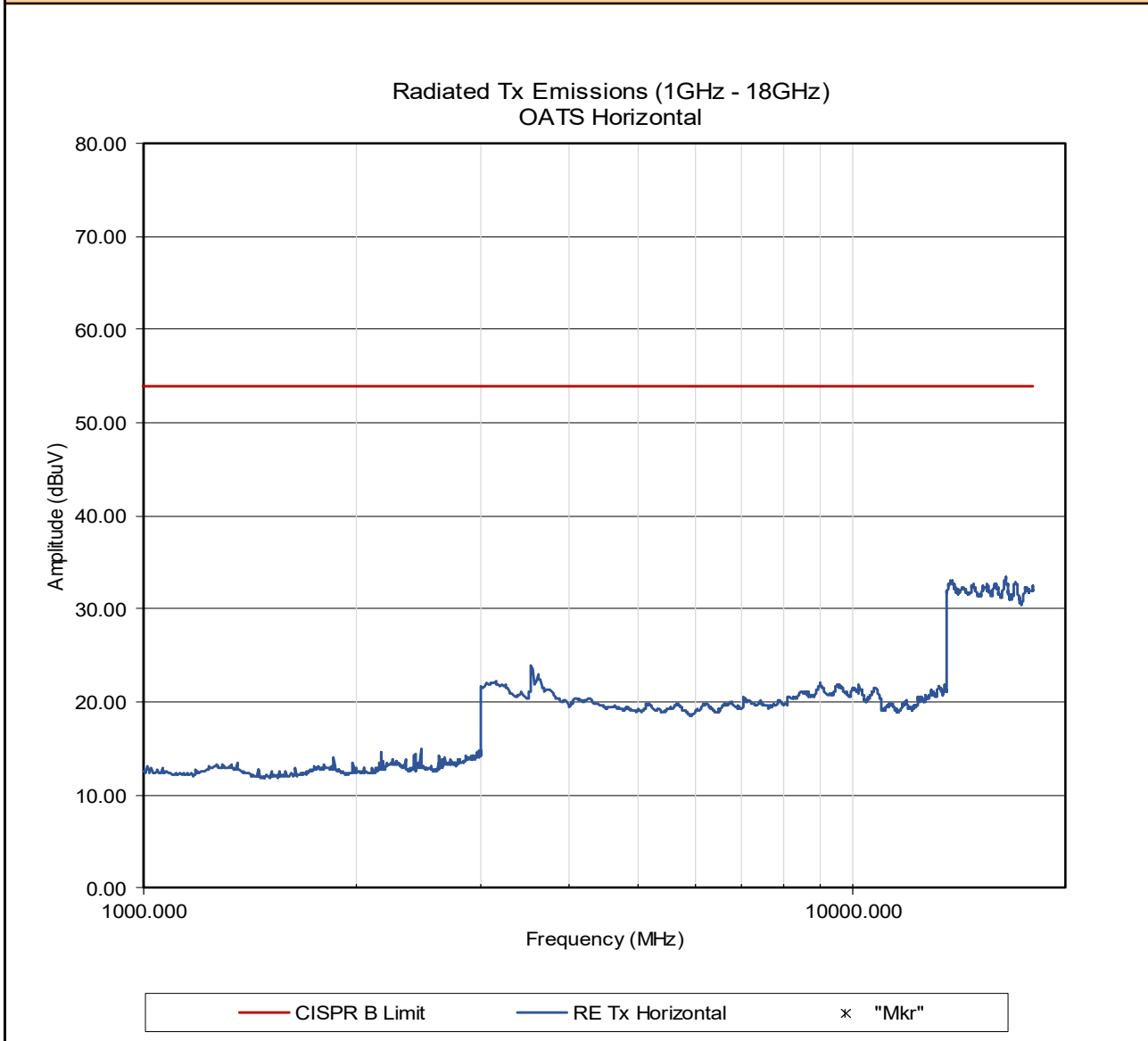
Channel Frequency: **757.5** MHz

Emission Frequency: **ND** MHz

Emission Amplitude: **ND** dBuV

Plot 11.3 – Radiated Tx Emissions, 1 – 18GHz, Horizontal

Radiated Tx Emissions:



Modulation: QPSK

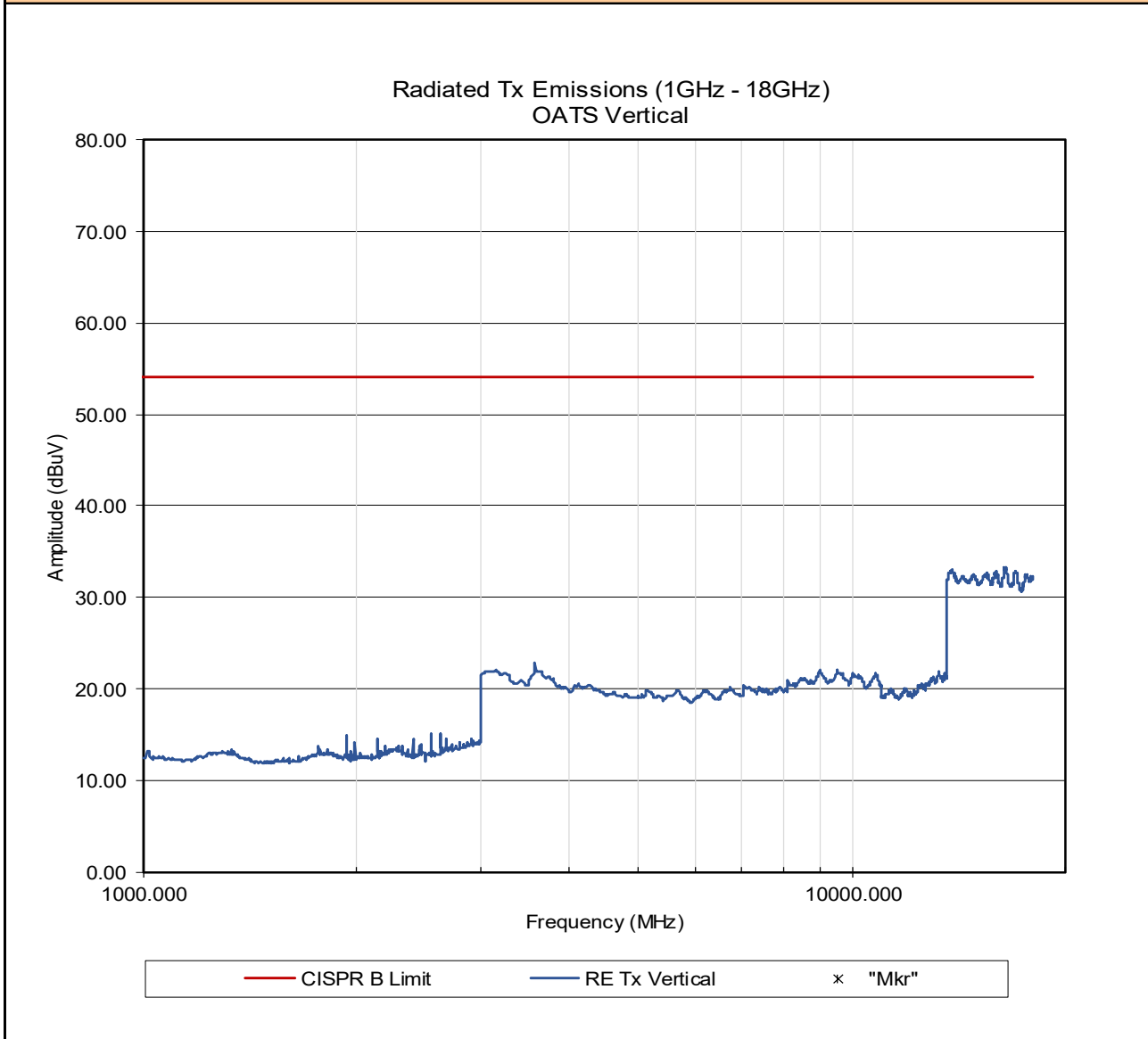
Emission Frequency: ND MHz

Channel Frequency: 757.5 MHz

Emission Amplitude: ND dBuV

Plot 11.4 – Radiated Tx Emissions, 1 – 18GHz, Vertical

Radiated Tx Emissions:



Modulation: **QPSK**
Emission Frequency: **ND** MHz

Channel Frequency: **757.5** MHz
Emission Amplitude: **ND** dBuV

Table 11.1 – Summary of Radiated Tx Emissions

Conducted Spurious Emissions Measurement Results:								
Frequency (MHz)	Modulation	Polarization	Emission Power [P _{Em}] (dBm)	Emission Frequency (MHz)	Fundamental Measurement [P _{Fund}] (dBm)	Attenuation [Atten] (dB)	Limit (dB)	Margin (dB)
757.50	QPSK	Horizontal	ND	ND	37.00	n/a	43	n/a
757.50	QPSK	Vertical	ND	ND	37.00	n/a	43	n/a
Results:							Complies	

Attenuation [Atten] = [P_{Fund}] - [P_{Em}]

Margin = Attenuation - Limit

ND = None Detected

n/a = Not Applicable

APPENDIX A – TEST SETUP DRAWINGS AND CONDITIONS

Table A.1 – Setup - Conducted Measurements Equipment

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00241	R&S	FSU40	Spectrum Analyzer

Figure A.1 – Test Setup Conducted Measurements

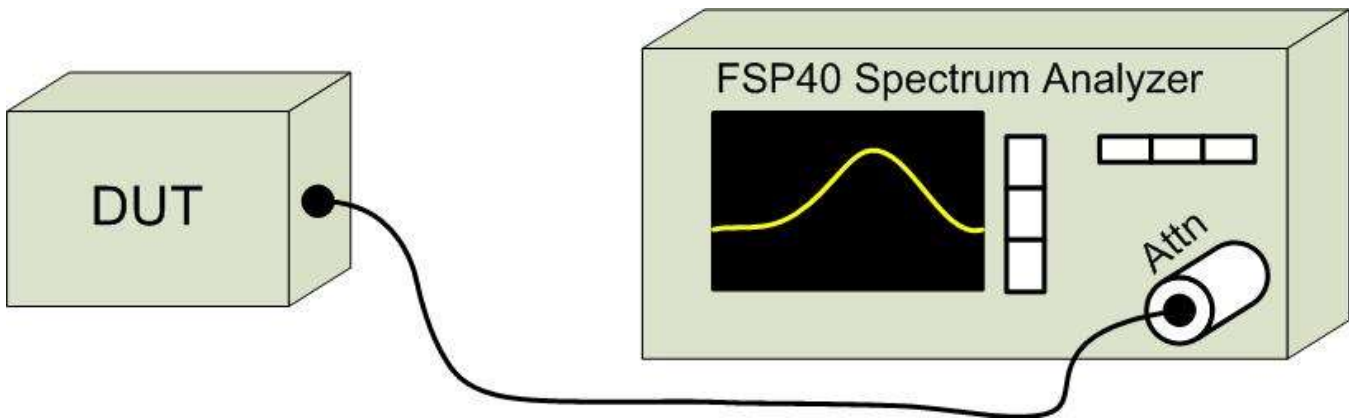


Table A.2 – Setup - Radiated Emissions Equipment

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00072	EMCO	2075	Mini-mast
00073	EMCO	2080	Turn Table
00071	EMCO	2090	Multi-Device Controller
00241	R&S	FSU40	Spectrum Analyzer
00050	Chase	CBL-6111A	Bilog Antenna
00275	Coaxis	LMR400	25m Cable
00276	Coaxis	LMR400	4m Cable
00278	TILE	34G3	TILE Test Software
00034	ETS	3115	Double Ridged Guide Horn

CNR: Calibration Not Required

COU: Calibrate On Use

Figure A.2 – Test Setup Radiated Measurements 30MHz – 1GHz

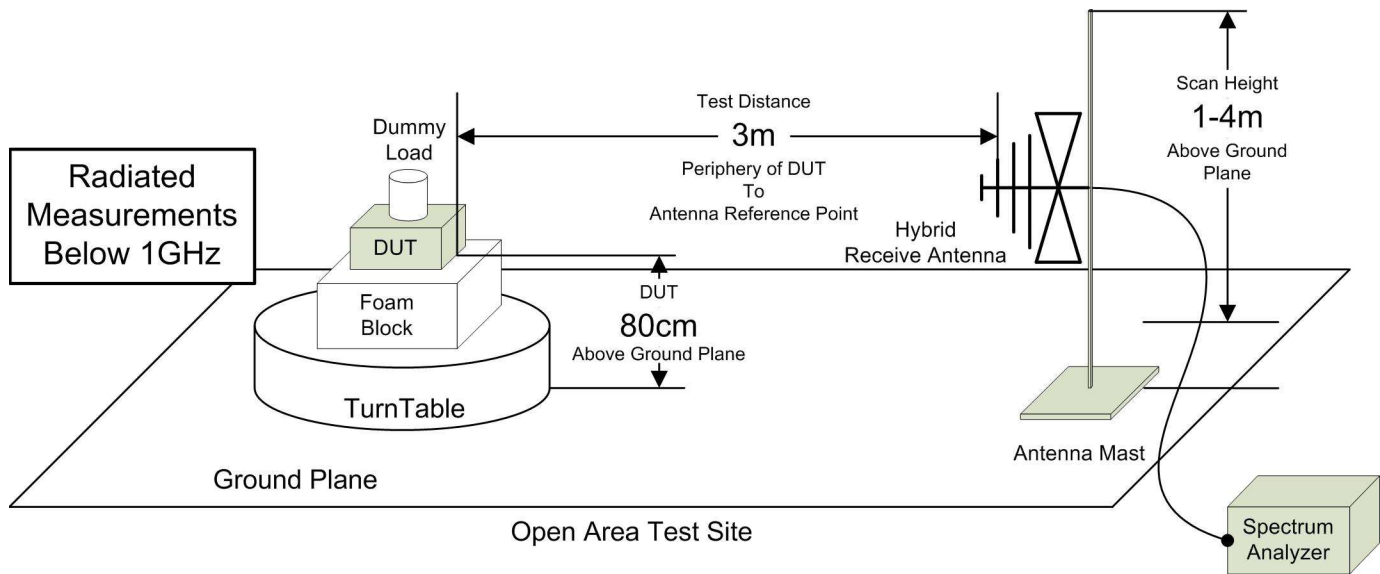


Figure A.3 – Test Setup Radiated Measurements 30MHz – 1GHz, Signal Substitution

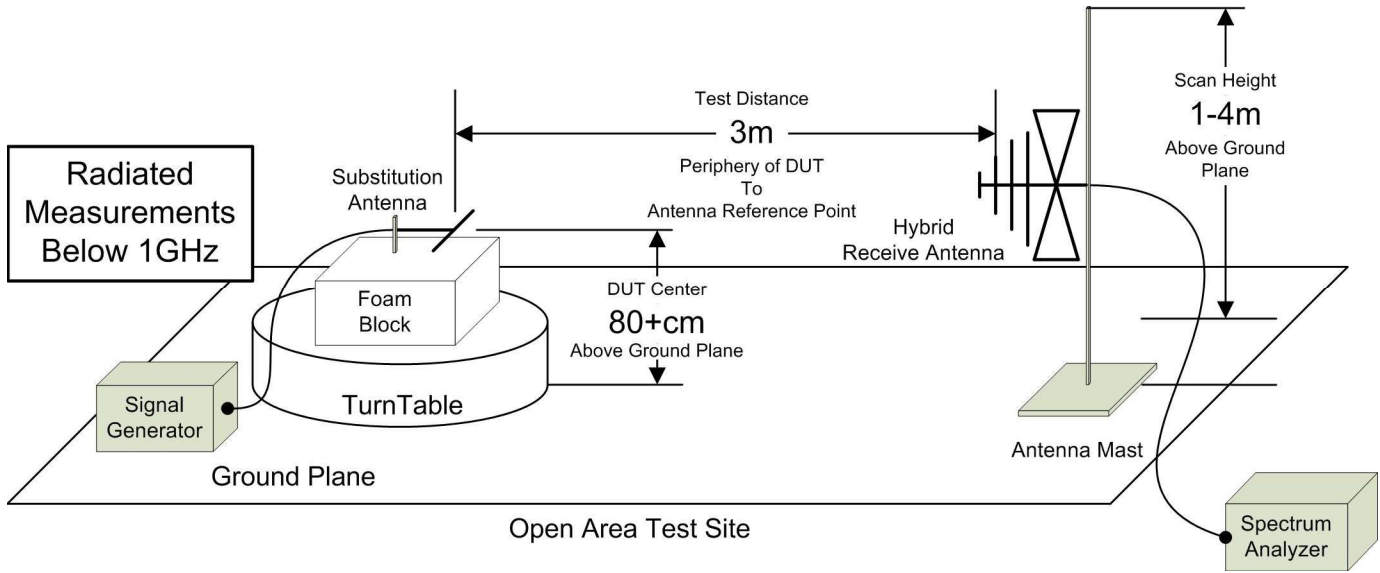
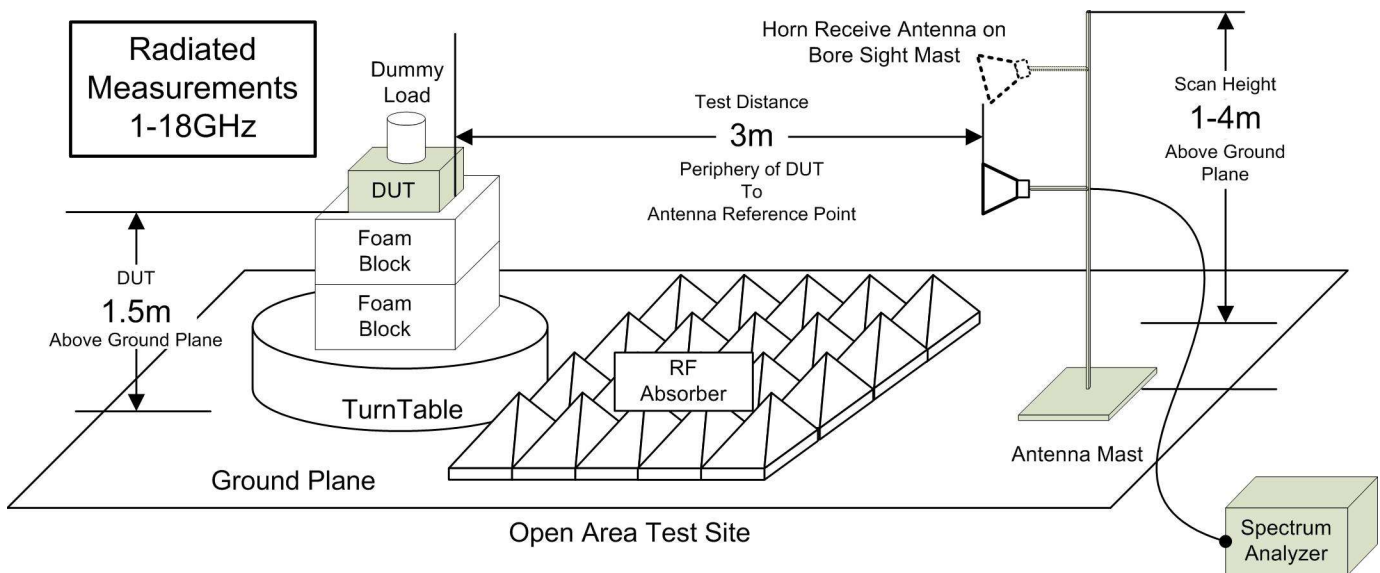


Figure A.4 – Test Setup Radiated Measurements 1 – 18GHz,



APPENDIX B – EQUIPMENT LIST AND CALIBRATION

Equipment List							
Asset Number	Manufacturer	Model Number	Serial Number	Description	Last Calibrated	Calibration Interval	Calibration Due
00050	Chase	CBL-6111A	1607	Bilog Antenna	16 Nov 2023	Triennial	16 Nov 2026
00035	ETS	3115	6276	Double Ridged Guide Horn	27 Mar 2025	Triennial	27 Mar 2028
00241	R&S	FSU40	100500	Spectrum Analyzer	6 Sep 2024	Triennial	6 Sep 2027
00005	HP	8648D	3847A00611	Signal Generator	28 Jun 2023	Triennial	28 Jun 2026
00250	Circuit Test	DMR-1800	TE182	Digital Multi-Meter - DVM	26 Jun 2023	Triennial	26 Jun 2026
00071	EMCO	2090	9912-1484	Multi-Device Controller	n/a	n/a	n/a
00072	EMCO	2075	0001-2277	Mini-mast	n/a	n/a	n/a
00073	EMCO	2080	0002-1002	Turn Table	n/a	n/a	n/a
00263	Koaxis	KP10-1.00M-TD	263	1m Armoured Cable	COU	n/a	COU
00263B	Koaxis	KP10-1.00M-TD	263B	1m Armoured Cable	COU	n/a	COU
00065	Pasternack	PE7014-30	n/a	30dB, 5W Attenuator	COU	n/a	COU
00130	Pasternack	PE7019-30	n/a	30dB, 50W Attenuator	COU	n/a	COU
00275	TMS	LMR400	n/a	25m Cable	COU	n/a	COU
00278	TILE	34G3	n/a	TILE Test Software	NCR	n/a	NCR

NCR: No Calibration Required

COU: Calibrate On Use

APPENDIX C – MEASUREMENT INSTRUMENT UNCERTAINTY

CISPR 16-4 Measurement Uncertainty (U_{LAB})

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence interval using a coverage factor of $k=2$

30MHz - 200MHz

$$U_{LAB} = 5.14\text{dB} \quad U_{CISPR} = 6.3\text{dB}$$

200MHz - 1000MHz

$$U_{LAB} = 5.90\text{dB} \quad U_{CISPR} = 6.3\text{dB}$$

1GHz - 6GHz

$$U_{LAB} = 4.80\text{dB} \quad U_{CISPR} = 5.2\text{dB}$$

6GHz - 18GHz

$$U_{LAB} = 5.1\text{dB} \quad U_{CISPR} = 5.5\text{dB}$$

If the calculated uncertainty U_{lab} is **less** than U_{CISPR} then:

- | | |
|---|---|
| 1 | Compliance is deemed to occur if NO measured disturbance exceeds the disturbance limit |
| 2 | Non-Compliance is deemed to occur if ANY measured disturbance EXCEEDS the disturbance limit |

If the calculated uncertainty U_{lab} is **greater** than U_{CISPR} then:

- | | |
|---|--|
| 3 | Compliance is deemed to occur if NO measured disturbance, increased by ($U_{lab} - U_{CISPR}$), exceeds the disturbance limit |
| 4 | Non-Compliance is deemed to occur if ANY measured disturbance, increased by ($U_{lab} - U_{CISPR}$), EXCEEDS the disturbance limit |

APPENDIX D – CONDUCTED POWER MEASUREMENT PLOTS

APPENDIX E – OCCUPIED BANDWIDTH MEASUREMENT PLOTS

APPENDIX F – BAND EDGE MEASUREMENT PLOTS

APPENDIX G – CONDUCTED SPURIOUS MEASUREMENT PLOTS

APPENDIX H – RADIATED TX MEASUREMENT PLOTS

END OF REPORT