



Report No.: FR3D2102

RADIO TEST REPORT

FCC ID : Z8H89FT0084

Equipment : 6091HH

Brand Name : Cambium Networks

Model Name : 6091HH

Applicant : Cambium Networks Inc.

3800 Golf Road, Suite 360 Rolling Meadows, IL

60008, USA

Manufacturer : Cambium Networks, Ltd.

Ashburton, TQ13 7UP, UK

Standard : 47 CFR FCC Part 15.407

The product was received on Dec. 20, 2023, and testing was started from Dec. 20, 2023 and completed on Jan. 11, 2024. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB-A12_1 Ver1.4

Page Number : 1 of 27

Issued Date : Feb. 07, 2024

Report Version : 01

Table of Contents

Histo	ry of this test report	3
Sumi	mary of Test Result	4
1	General Description	5
1.1	Information	5
1.2	Applicable Standards	7
1.3	Testing Location Information	7
1.4	Measurement Uncertainty	7
2	Test Configuration of EUT	8
2.1	Test Channel Mode	8
2.2	The Worst Case Measurement Configuration	9
2.3	EUT Operation during Test	9
2.4	Accessories	9
2.5	Support Equipment	10
2.6	Test Setup Diagram	11
3	Transmitter Test Result	14
3.1	AC Power-line Conducted Emissions	14
3.2	Emission Bandwidth	16
3.3	Maximum Output Power	17
3.4	Power Spectral Density	19
3.5	Unwanted Emissions	22
4	Test Equipment and Calibration Data	26

Appendix A. Test Results of AC Power-line Conducted Emissions

Appendix B. Test Results of Emission Bandwidth

Appendix C. Test Results of Maximum Output Power

Appendix D. Test Results of Power Spectral Density

Appendix E. Test Results of Unwanted Emissions

Appendix F. Test Photos

Photographs of EUT v01

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB-A12_1 Ver1.4

Page Number : 2 of 27

Issued Date : Feb. 07, 2024

Report No.: FR3D2102

Report Version : 01

History of this test report

Report No. : FR3D2102

Report No.	Version	Description	Issued Date
FR3D2102	01	Initial issue of report	Feb. 07, 2024

 TEL: 886-3-656-9065
 Page Number : 3 of 27

 FAX: 886-3-656-9085
 Issued Date : Feb. 07, 2024

Summary of Test Result

Report No.: FR3D2102

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Output Power	PASS	-
3.4	15.407(a)	Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	PASS	-

Conformity Assessment Condition:

- 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- 2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

- 1. The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.
- 2. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.

Reviewed by: Sam Chen

Report Producer: Sophia Shiung

TEL: 886-3-656-9065 Page Number : 4 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Ch. Bandwidth (MHz)	Ch. Frequency (MHz)	Ch. Space (MHz)
5725-5850	5	5725.5-5847.5	0.5
5725-5850	10	5730-5845	1
5725-5850	15	5732.5-5842.5	0.5
5725-5850	20	5735-5840	1
5725-5850	30	5740-5835	1
5725-5850	40	5745-5830	1

Report No.: FR3D2102

Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	QPSK5	5	2TX
5.725-5.85GHz	QPSK10	10	2TX
5.725-5.85GHz	QPSK15	15	2TX
5.725-5.85GHz	QPSK20	20	2TX
5.725-5.85GHz	QPSK30	30	2TX
5.725-5.85GHz	QPSK40	40	2TX

Note:

- The 5GHz function uses QPSK modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1 2	Cambium	450B 5GHz	Dish (Directional Ant.)	N/A	24

Note 1: The above information was declared by manufacturer.

Note 2: For 5GHz function (2TX/2RX):

Port 1~2 can be used as transmitting/receiving antenna.

Port 1~2 could transmit/receive simultaneously.

 TEL: 886-3-656-9065
 Page Number : 5 of 27

 FAX: 886-3-656-9085
 Issued Date : Feb. 07, 2024

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T (s)	VBW (Hz)_1/T
QPSK5_Nss 1,(M0)	0.949	0.23	4.744m	300
QPSK10_Nss 1,(M0)	0.968	0.14	4.84m	300
QPSK15_Nss 1,(M0)	0.974	0.11	4.871m	300
QPSK20_Nss 1,(M0)	0.977	0.1	4.887m	300
QPSK30_Nss 1,(M0)	0.981	0.08	n/a (DC>=0.98)	n/a (DC>=0.98)
QPSK40_Nss 1,(M0)	0.982	0.08	n/a (DC>=0.98)	n/a (DC>=0.98)

Report No.: FR3D2102

N	oto:	
IV	OLC.	

- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From PoE			
Beamforming Function	☐ With beamforming ☐ Without beamforming		Without beamforming	
		Outdoor P2M		Indoor P2M
Function	\boxtimes	Fixed P2P	\boxtimes	Client
		Point-to-multipoint	\boxtimes	Point-to-point
Test Software Version	DOS 6.1.7601			

Note: The above information was declared by manufacturer.

TEL: 886-3-656-9065 Page Number : 6 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

1.2 Applicable Standards

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

Report No.: FR3D2102

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 662911 D01 v02r01
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Lo	cation Ir	nformation
•	Testing Lo	Testing Location Ir

Test Lab. : Sporton International Inc. Hsinchu Laboratory

Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

(TAF: 3787) TEL: 886-3-656-9065 FAX: 886-3-656-9085

Test site Designation No. TW3787 with FCC.

Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH02-CB	Mason Chan	21.4~23 / 68~69	Dec. 22, 2023
Radiated < 1GHz	03CH04-CB	Alex Kuo	22.4~23.5 / 55~58	Jan. 08, 2024
Radiated > 1GHz	03CH02-CB	George Fan	21.2~22.3 / 56~59	Dec. 20, 2023~ Dec. 22, 2023
AC Conduction	CO02-CB	Gray Lee	22~23 / 55~56	Jan. 11, 2024

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Parameter	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	3.1 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.1 dB	Confidence levels of 95%
Bandwidth Measurement	2.2%	Confidence levels of 95%

TEL: 886-3-656-9065 Page Number : 7 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode
QPSK5_5MHz_Nss1,(MCS0)_2TX
5727.5MHz
5787MHz
5847.5MHz
QPSK10_10MHz_Nss1,(MCS0)_2TX
5730MHz
5787MHz
5845MHz
QPSK15_15MHz_Nss1,(MCS0)_2TX
5732.5MHz
5787MHz
5842.5MHz
QPSK20_20MHz_Nss1,(MCS0)_2TX
5735MHz
5787MHz
5840MHz
QPSK30_30MHz_Nss1,(MCS0)_2TX
5740MHz
5787MHz
5835MHz
QPSK40_40MHz_Nss1,(MCS0)_2TX
5745MHz
5787MHz
5830MHz

Report No. : FR3D2102

TEL: 886-3-656-9065 Page Number : 8 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	СТХ
1	EUT

Report No.: FR3D2102

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Output Power Power Spectral Density
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests		
Tests Item	Unwanted Emissions	
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.	
Operating Mode < 1GHz	СТХ	
&	After evaluating, EUT in Y axis was the worst case, so the measurement will follow this same test configuration.	
1	EUT in Y axis	

Note: The PoE was for measurement only and would not be marketed. Its information is shown as below:

Equipment	Brand	Model
PoE	PHIHONG	PSA15M-300

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

N/A

TEL: 886-3-656-9065 Page Number : 9 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

2.5 Support Equipment

For AC Conduction:

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
Α	PoE	PHIHONG	PSA15M-300	N/A
В	LAN NB	DELL	E6430	N/A

Report No. : FR3D2102

For Radiated:

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
Α	LAN NB	DELL	E4300	N/A
В	PoE	PHIHONG	PSA15M-300	N/A

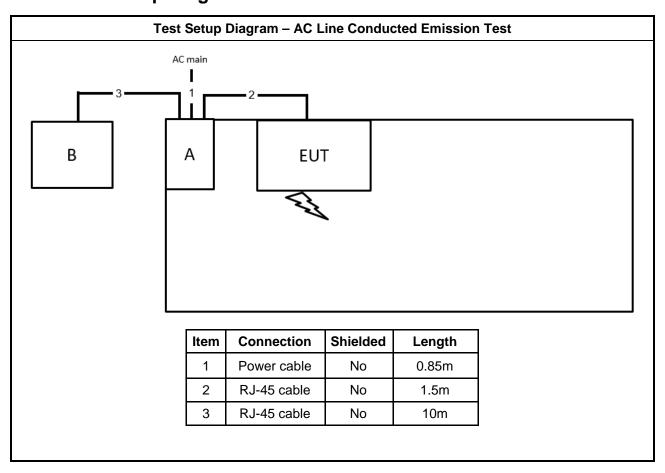
For RF Conducted:

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
Α	NB	DELL	E4300	N/A
В	PoE	PHIHONG	PSA15M-300	N/A

 TEL: 886-3-656-9065
 Page Number : 10 of 27

 FAX: 886-3-656-9085
 Issued Date : Feb. 07, 2024

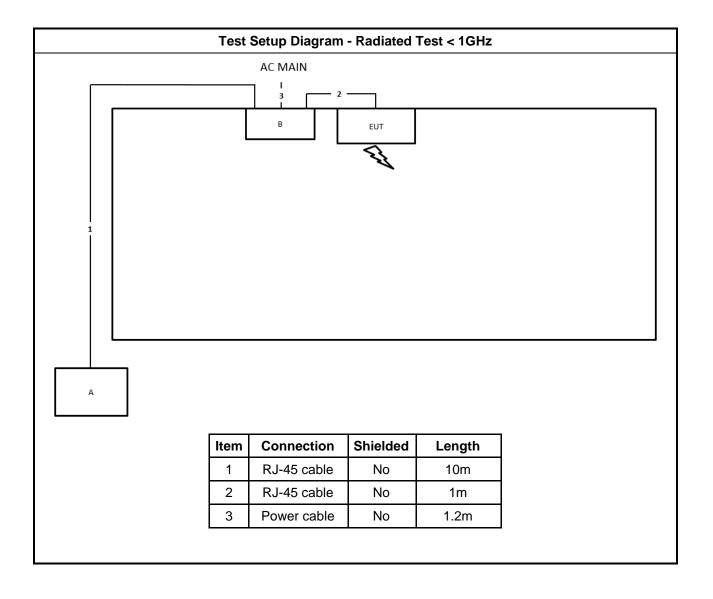
2.6 Test Setup Diagram



Report No. : FR3D2102

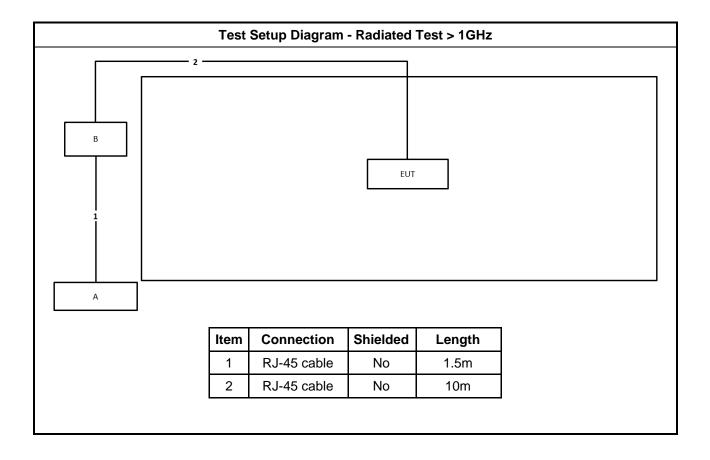
TEL: 886-3-656-9065 Page Number : 11 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

Report No. : FR3D2102



TEL: 886-3-656-9065 Page Number : 12 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

Report No. : FR3D2102



TEL: 886-3-656-9065 Page Number : 13 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

Report No.: FR3D2102

3.1.2 Measuring Instruments

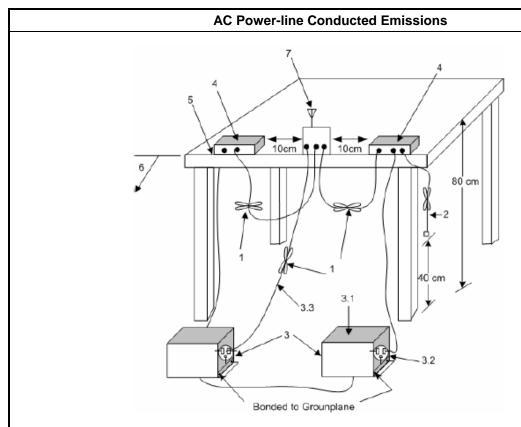
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

	Test Method
\boxtimes	Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

TEL: 886-3-656-9065 Page Number : 14 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.1.4 Test Setup



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

Report No.: FR3D2102

- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non-EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

TEL: 886-3-656-9065 Page Number : 15 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit
UNI	I Devices
	For the 5.15-5.25 GHz band, N/A
	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
	For the $5.47-5.725$ GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
	For the 5.725-5.85 GHz band, 26 dB emission bandwidth ,N/A. 6 dB emission bandwidth ≥ 500kHz.
LE-	LAN Devices
	For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.

Report No.: FR3D2102

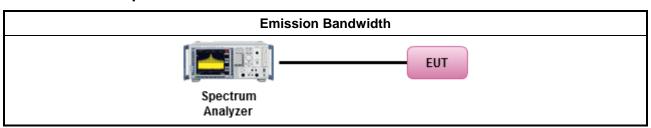
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

	Test Method		
•	For the emission bandwidth shall be measured using one of the options below:		
	⊠ ı	Refer as FCC KDB 789033 D02, clause C for EBW and clause D for OBW measurement.	
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.	
		Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.	

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

TEL: 886-3-656-9065 Page Number : 16 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.3 Maximum Output Power

3.3.1 Limit

	Maximum Output Power Limit
UNI	Il Devices
	For the 5.15-5.25 GHz band:
	 Outdoor AP: the maximum conducted output power (Pout) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 - (G_{TX} - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]
	■ Indoor AP: the maximum conducted output power (P _{Out}) shall not exceed the lesser of 1 W. If G _{TX} > 6 dBi, then P _{Out} = 30 - (G _{TX} - 6)
	Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$.
	Mobile or Portable Client: the maximum conducted output power (P _{Out}) shall not exceed the lesser of 250 mW. If G _{TX} > 6 dBi, then P _{Out} = 24 - (G _{TX} - 6).
	For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.
	For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.
\boxtimes	For the 5.725-5.85 GHz band:
	Point-to-multipoint systems (P2M): the maximum conducted output power (P _{Out}) shall not exceed the lesser of 1 W. If G _{TX} > 6 dBi, then P _{Out} = 30 − (G _{TX} − 6).
	 Point-to-point systems (P2P): the maximum conducted output power (Pout) shall not exceed the lesser of 1 W.
LE-	LAN Devices
	For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
	For the 5.725-5.85 GHz band:
	 Point-to-multipoint systems (P2M): the maximum conducted output power (Pout) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 - (G_{TX} - 6).
	 Point-to-point systems (P2P): the maximum conducted output power (Pout) shall not exceed the lesser of 1 W.
	t = maximum conducted output power in dBm, = the maximum transmitting antenna directional gain in dBi.

Report No. : FR3D2102

 TEL: 886-3-656-9065
 Page Number : 17 of 27

 FAX: 886-3-656-9085
 Issued Date : Feb. 07, 2024

3.3.2 Measuring Instruments

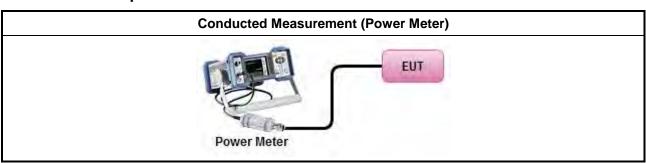
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

		Took Mathaul								
	1	Test Method								
	Average over on/off periods with duty factor									
	Refer as FCC KDB 789033 D02, clause E Method SA-2 (spectral trace averaging).									
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)								
	Wid	eband RF power meter and average over on/off periods with duty factor								
	\boxtimes	Refer as FCC KDB 789033 D02, clause E Method PM-G (using an RF average power meter).								
\boxtimes	For	conducted measurement.								
	•	If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.								
	•	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$								
	For	radiated measurement.								
	•	Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"								
	•	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.								
	•	Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.								

Report No.: FR3D2102

3.3.4 Test Setup



3.3.5 Test Result of Maximum Output Power

Refer as Appendix C

TEL: 886-3-656-9065 Page Number : 18 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.4 Power Spectral Density

3.4.1 Limit

	Peak Power Spectral Density Limit
UN	II Devices
	For the 5.15-5.25 GHz band:
	 Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 6 dBi, then P_{Out} = 17 - (G_{TX} - 6).
	Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G _{TX} > 6 dBi, then P _{Out} = 17 − (G _{TX} − 6).
	■ Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of $17 dBm/MHz$. If $G_{TX} > 23 dBi$, then $P_{Out} = 17 - (G_{TX} - 23)$.
	 Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 - (G_{TX} - 6)
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If $G_{TX} >$ 6 dBi, then PPSD= 11 $-$ ($G_{TX} -$ 6).
	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If $G_{TX} > 6$ dBi, then PPSD= 11 – ($G_{TX} - 6$).
\boxtimes	For the 5.725-5.85 GHz band:
	 Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G_{TX} > 6 dBi, then PPSD= 30 – (G_{TX} – 6).
	Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
Ė	LAN Devices
	For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) ≤ 10 dBm/MHz.
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz.
	 e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below: -13 dBW/MHz for 0° ≤ θ < 8°; -13 - 0.716 (θ-8) dBW/MHz for 8° ≤ θ < 40° -35.9 - 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ > 45°
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz.
	For the 5.725-5.85 GHz band:
	Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) \leq 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= $30 - (G_{TX} - 6)$.
	 Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
pov	SD = peak power spectral density that he same method as used to determine the conducted output wer shall be used to determine the power spectral density. And power spectral density in dBm/MHz = the maximum transmitting antenna directional gain in dBi.

Report No.: FR3D2102

3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

TEL: 886-3-656-9065 Page Number : 19 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024



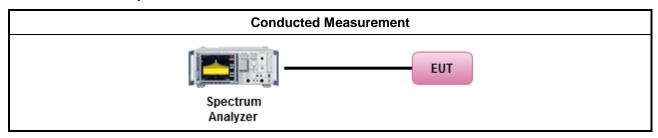
3.4.3 Test Procedures

		Test Method						
•	outp func	c power spectral density procedures that the same method as used to determine the conducted ut power shall be used to determine the peak power spectral density and use the peak search tion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density be measured using below options:						
		Refer as FCC KDB 789033 D02, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth						
	[duty cycle ≥ 98% or external video / power trigger]							
	Refer as FCC KDB 789033 D02, clause E Method SA-1 (spectral trace averaging).							
		Refer as FCC KDB 789033 D02, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)						
	duty	cycle < 98% and average over on/off periods with duty factor						
	\boxtimes	Refer as FCC KDB 789033 D02, clause E Method SA-2 (spectral trace averaging).						
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)						
	For o	conducted measurement.						
	•	If the EUT supports multiple transmit chains using options given below:						
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.						
		Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,						
		Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.						
	•	If multiple transmit chains, EIRP PPSD calculation could be following as methods: PPSD _{total} = PPSD ₁ + PPSD ₂ + + PPSD _n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = PPSD _{total} + DG						
	For r	adiated measurement.						
	•	Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"						
	•	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.						
	•	Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.						

Report No.: FR3D2102

TEL: 886-3-656-9065 Page Number : 20 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.4.4 Test Setup



Report No. : FR3D2102

3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

TEL: 886-3-656-9065 Page Number : 21 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

3.5 Unwanted Emissions

3.5.1 Transmitter Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit									
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)						
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300						
0.490~1.705	24000/F(kHz)	33.8 - 23	30						
1.705~30.0	30	29	30						
30~88	100	40	3						
88~216	150	43.5	3						
216~960	200	46	3						
Above 960	500	54	3						

Report No.: FR3D2102

- Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT
- Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

TEL: 886-3-656-9065 Page Number : 22 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

Un-restricted band emissions above 1GHz Limit								
Operating Band	Limit							
☐ 5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]							
☐ 5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]							
☐ 5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]							
⊠ 5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.							

Report No.: FR3D2102

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. For the transmitter unwanted emissions shall be measured using following options below: Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands. Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands. Refer as FCC KDB 789033 D02, G)6) Method AD (Trace Averaging). Refer as FCC KDB 789033 D02, G)6) Method VB (Reduced VBW). Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time. Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions. Refer as FCC KDB 789033 D02, clause G)5) measurement procedure peak limit. Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.

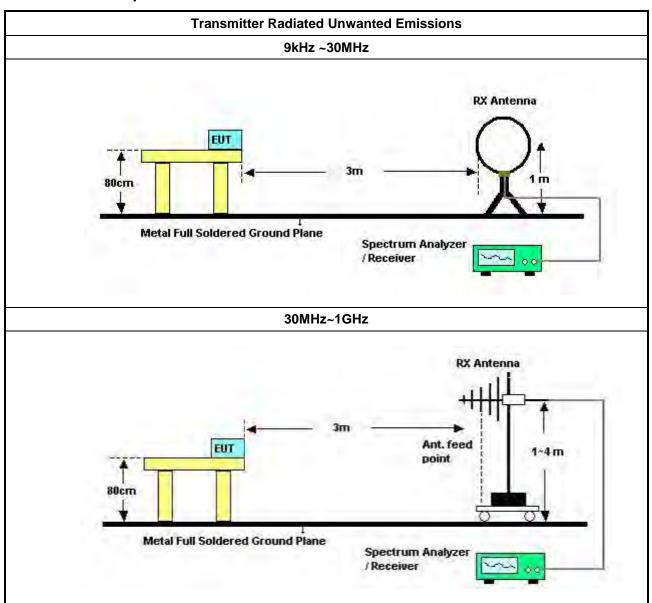
TEL: 886-3-656-9065 Page Number : 23 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

Report No. : FR3D2102

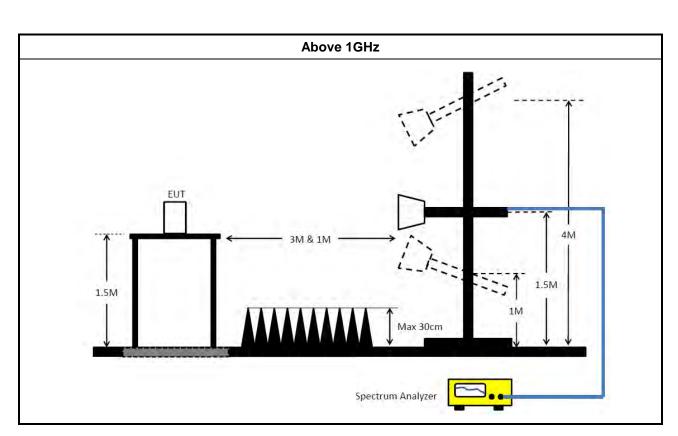
Test Method

- For radiated measurement.
 - Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
- The any unwanted emissions level shall not exceed the fundamental emission level.
- All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.5.4 Test Setup



TEL: 886-3-656-9065 Page Number : 24 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024



Report No.: FR3D2102

3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.5.6 Transmitter Unwanted Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

TEL: 886-3-656-9065 Page Number : 25 of 27
FAX: 886-3-656-9085 Issued Date : Feb. 07, 2024

4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Apr. 06, 2023	Apr. 05, 2024	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 27, 2023	Apr. 26, 2024	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	May 18, 2023	May 17, 2024	Conduction (CO02-CB)
COND Cable	Woken	Cable	2	0.15MHz ~ 30MHz	Oct. 17, 2023	Oct. 16, 2024	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F-N	00378	9kHz ~ 30MHz	Oct. 17, 2023	Oct. 16, 2024	Conduction (CO02-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30 MHz	Oct. 13, 2023	Oct. 12, 2024	Radiation (03CH04-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 01, 2023	Jul. 31, 2024	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 07, 2023	Oct. 06, 2024	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ 26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Mar. 21, 2023	Mar. 20, 2024	Radiation (03CH04-CB
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 13, 2023	Jun. 12, 2024	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz – 1GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 25, 2023	Mar. 24, 2024	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH02-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 24, 2023	Nov. 23, 2024	Radiation (03CH02-CB)
Signal Analyzer	R&S	FSV40	101903	9kHz ~ 40GHz	May 29, 2023	May 28, 2024	Radiation (03CH02-CB)

TEL: 886-3-656-9065 FAX: 886-3-656-9085

Report Template No.: CB-A12_1 Ver1.4

Page Number : 26 of 27 Issued Date : Feb. 07, 2024

Report No.: FR3D2102

Report Version : 01

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 06, 2023	Dec. 05, 2024	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Aug. 14, 2023	Aug. 13, 2024	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 19, 2023	Oct. 18, 2024	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 19, 2023	Oct. 18, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
Switch	SPTCB	SP-SWI	SWI-02	1 – 26.5 GHz	Oct. 03, 2023	Oct. 02, 2024	Conducted (TH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH02-CB)

Report No. : FR3D2102

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.

 TEL: 886-3-656-9065
 Page Number : 27 of 27

 FAX: 886-3-656-9085
 Issued Date : Feb. 07, 2024



Conducted Emissions at Powerline

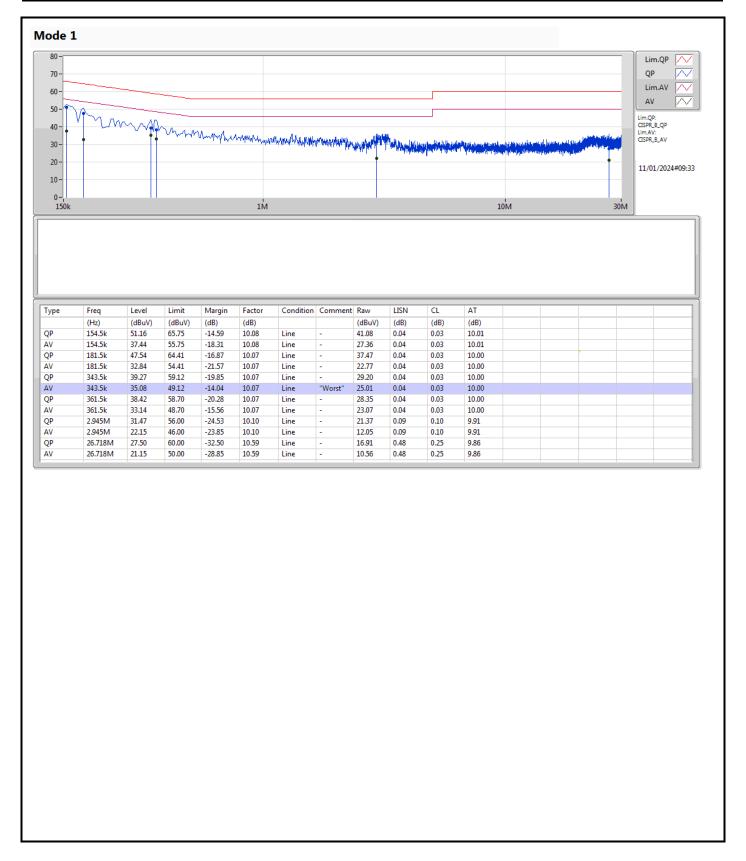
Appendix A

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	361.5k	35.57	48.70	-13.13	Neutral

Page No. Sporton International Inc. Hsinchu Laboratory Report No. : FR3D2102

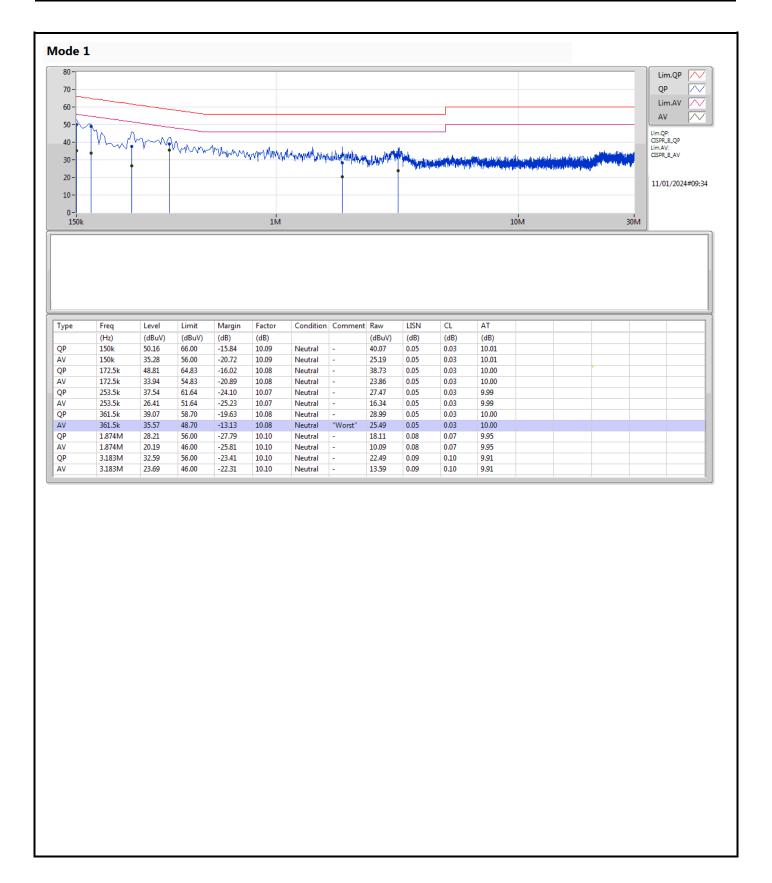




Page No. : 2 of 3

Report No. : FR3D2102





Page No. : 3 of 3
Report No. : FR3D2102



Appendix B **EBW**

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.725-5.85GHz	-	-	=	-	-
QPSK5_5MHz_Nss1,(MCS0)_2TX	4.661M	4.607M	4M61G7D	2.035M	4.58M
QPSK10_10MHz_Nss1,(MCS0)_2TX	9.295M	9.223M	9M22G7D	9.213M	9.171M
QPSK15_15MHz_Nss1,(MCS0)_2TX	13.901M	13.883M	13M9G7D	13.86M	13.819M
QPSK20_20MHz_Nss1,(MCS0)_2TX	18.535M	18.45M	18M5G7D	18.48M	18.391M
QPSK30_30MHz_Nss1,(MCS0)_2TX	27.803M	27.675M	27M7G7D	27.72M	27.595M
QPSK40_40MHz_Nss1,(MCS0)_2TX	37.07M	37.086M	37M1G7D	36.96M	36.776M

 $\label{eq:max-NdB} Max - N \ dB = Maximum \ 6dB \ down \ bandwidth \ for \ 5.725-5.85 \ GHz \ band \ / \ Maximum \ 26dB \ down \ bandwidth \ for \ other \ band; \\ Max - OBW = Maximum \ 99\% \ occupied \ bandwidth; \\ Min - N \ dB = Minimum \ 6dB \ down \ bandwidth \ for \ 5.725-5.85 \ GHz \ band \ / \ Maximum \ 26dB \ down \ bandwidth \ for \ other \ band; \\ Min - OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min - OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min - OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min - OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ band; \\ Min - OBW = Minimum \ 99\% \ occupied \ bandwidth \ for \ other \ ba$

Sporton International Inc. Hsinchu Laboratory

Page No. : 1 of 20 Report No. : FR3D2102



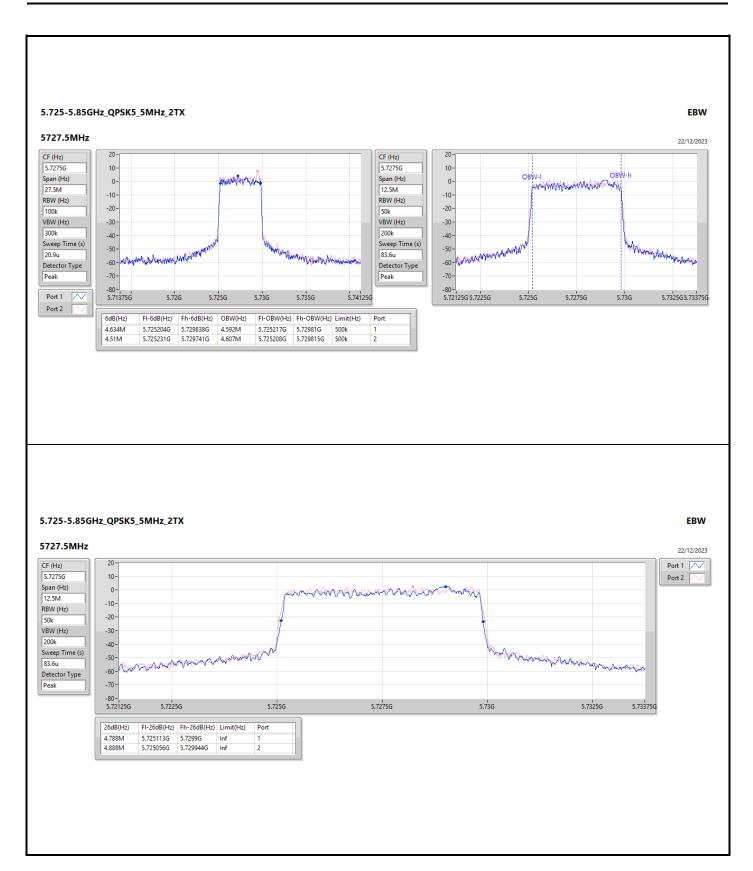
Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
QPSK5_5MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5727.5MHz	Pass	500k	4.634M	4.592M	4.51M	4.607M
5787MHz	Pass	500k	2.035M	4.58M	4.029M	4.606M
5847.5MHz	Pass	500k	4.661M	4.581M	4.648M	4.604M
QPSK10_10MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5730MHz	Pass	500k	9.295M	9.171M	9.213M	9.223M
5787MHz	Pass	500k	9.268M	9.22M	9.295M	9.203M
5845MHz	Pass	500k	9.24M	9.207M	9.24M	9.188M
QPSK15_15MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5732.5MHz	Pass	500k	13.86M	13.883M	13.901M	13.829M
5787MHz	Pass	500k	13.901M	13.821M	13.86M	13.863M
5842.5MHz	Pass	500k	13.86M	13.819M	13.901M	13.829M
QPSK20_20MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5735MHz	Pass	500k	18.48M	18.424M	18.535M	18.415M
5787MHz	Pass	500k	18.535M	18.409M	18.535M	18.391M
5840MHz	Pass	500k	18.535M	18.45M	18.535M	18.396M
QPSK30_30MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5740MHz	Pass	500k	27.72M	27.635M	27.803M	27.616M
5787MHz	Pass	500k	27.803M	27.632M	27.803M	27.665M
5835MHz	Pass	500k	27.803M	27.595M	27.803M	27.675M
QPSK40_40MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5745MHz	Pass	500k	36.96M	36.985M	37.07M	36.854M
5787MHz	Pass	500k	37.07M	36.776M	37.07M	37.086M
5830MHz	Pass	500k	37.07M	36.95M	37.07M	36.837M

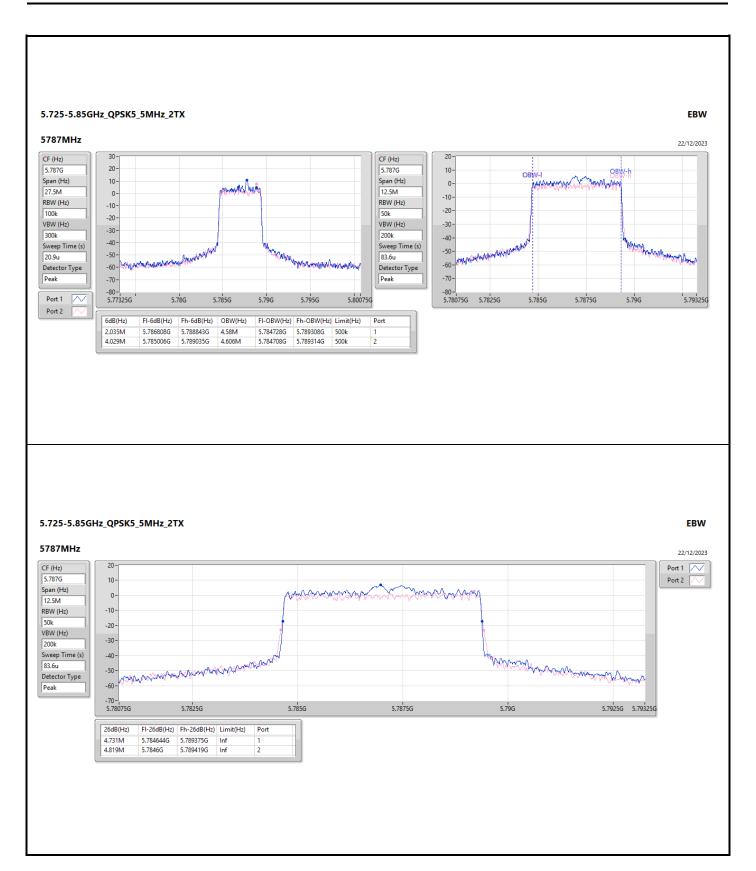
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth

Sporton International Inc. Hsinchu Laboratory

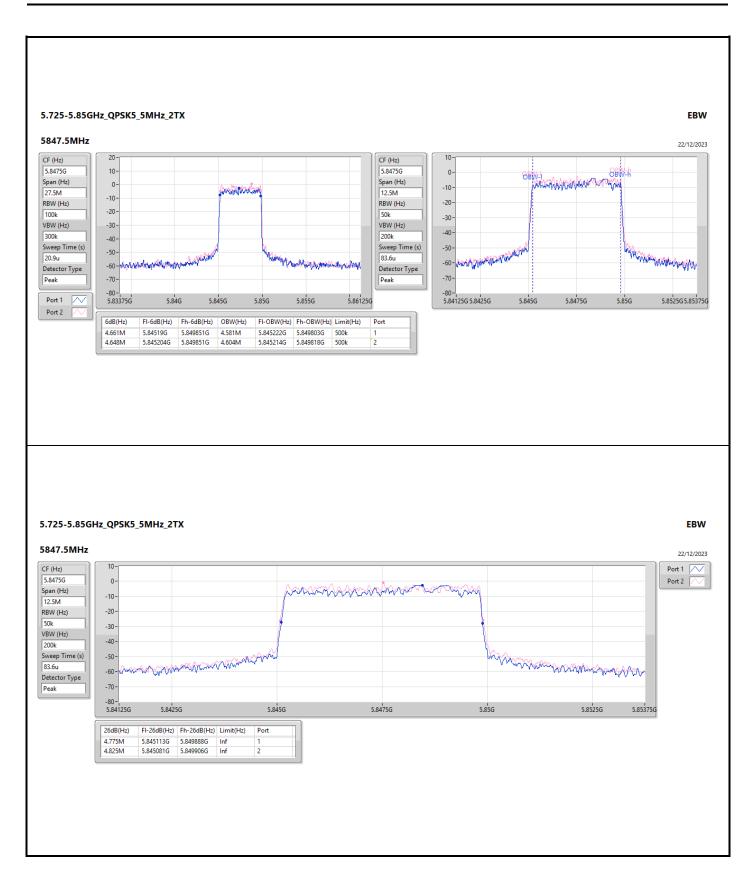
Page No. : 2 of 20 Report No. : FR3D2102



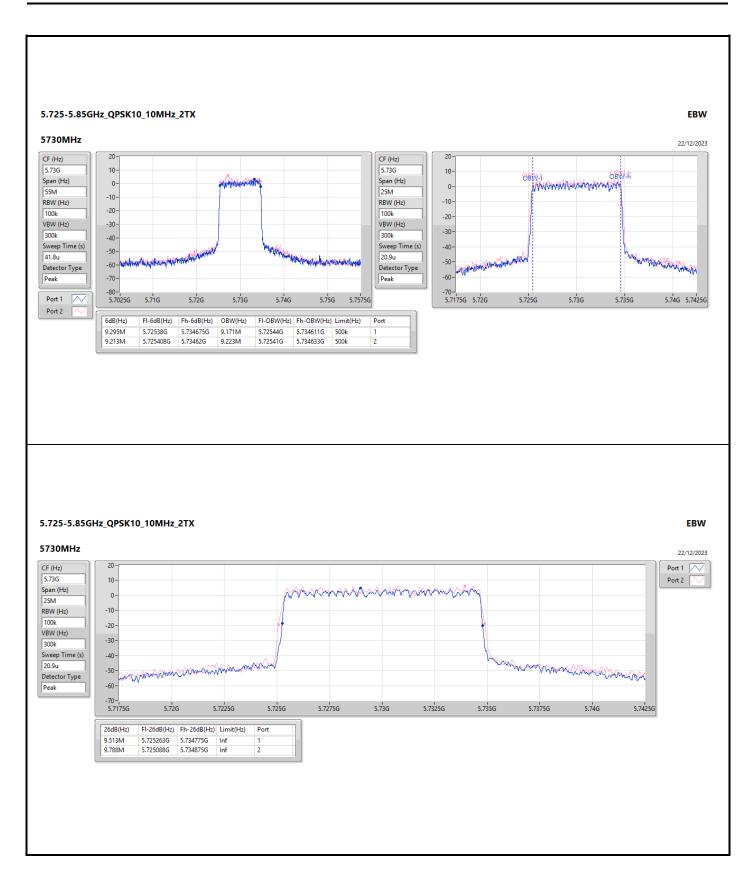
Page No. : 3 of 20 Report No. : FR3D2102



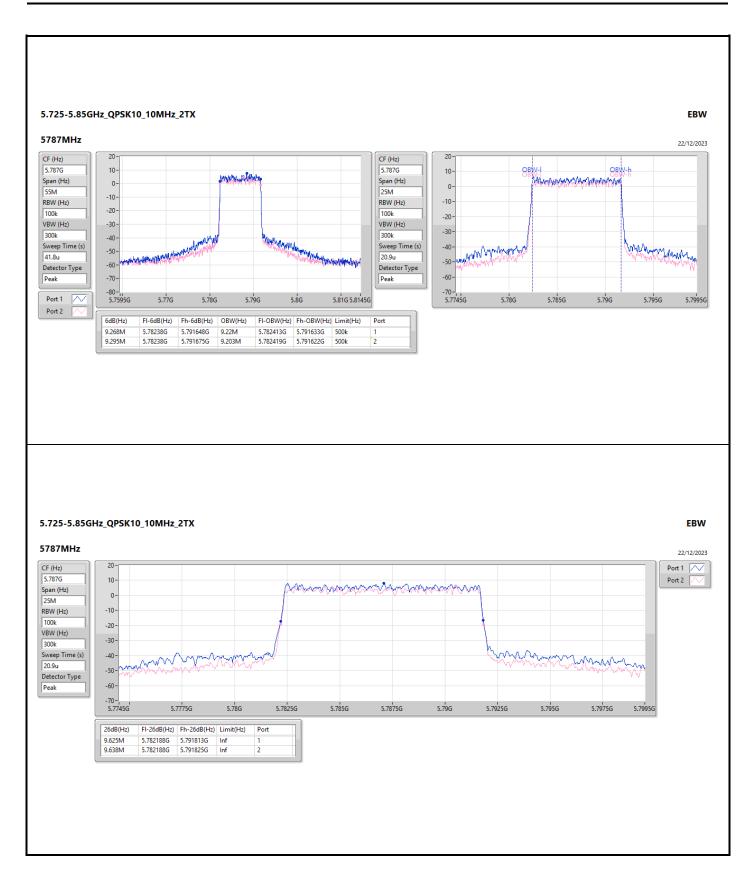
Page No. : 4 of 20 Report No. : FR3D2102



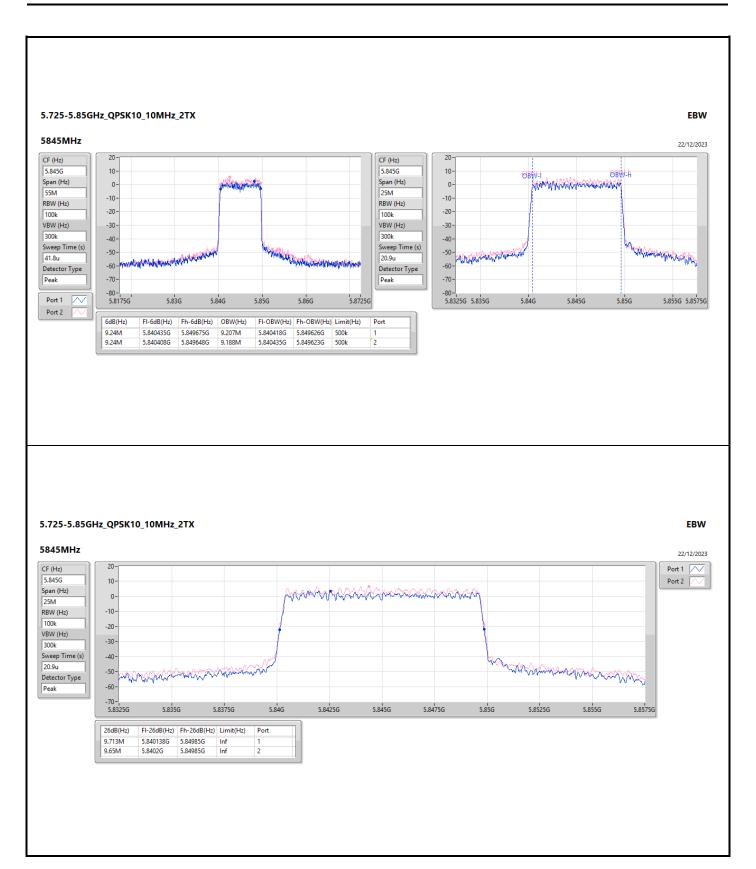
Page No. : 5 of 20 Report No. : FR3D2102



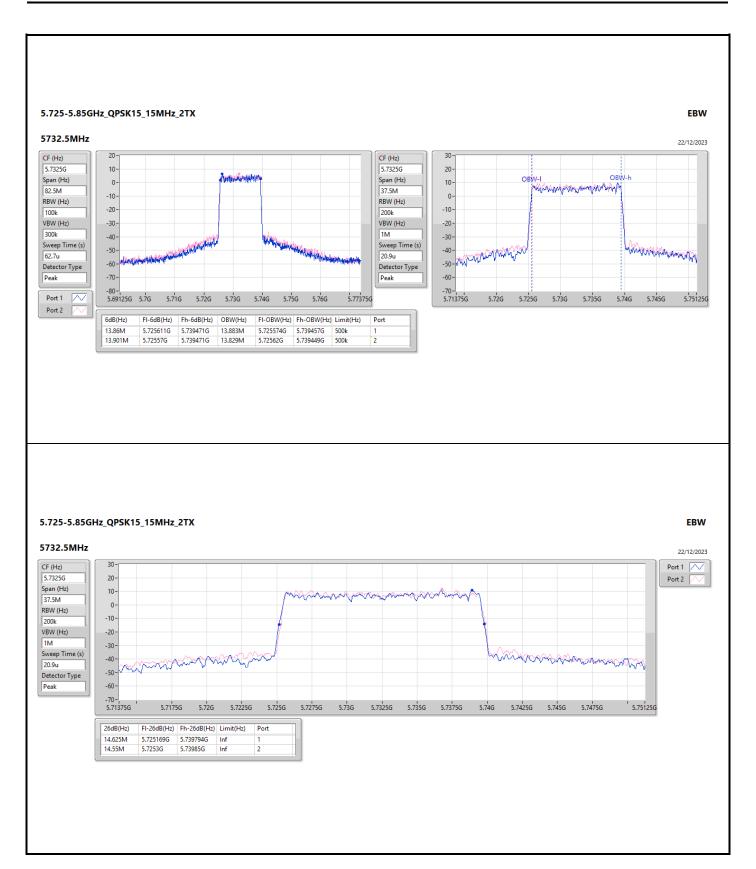
Page No. : 6 of 20 Report No. : FR3D2102



Page No. : 7 of 20 Report No. : FR3D2102



Page No. : 8 of 20 Report No. : FR3D2102



Page No. : 9 of 20 Report No. : FR3D2102



Page No. : 10 of 20 Report No. : FR3D2102



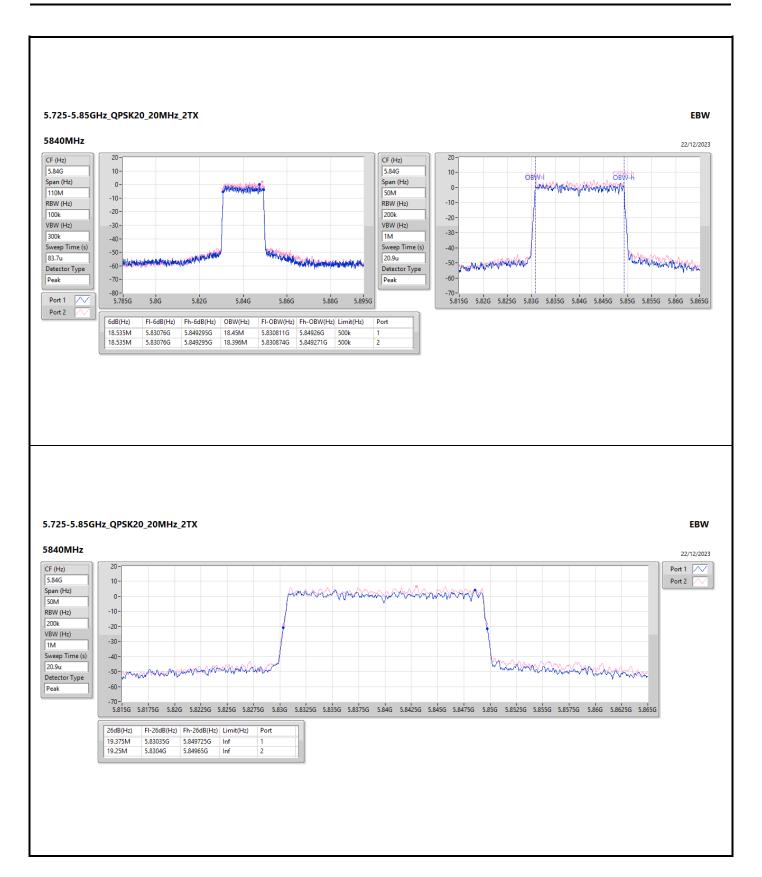
Page No. : 11 of 20 Report No. : FR3D2102



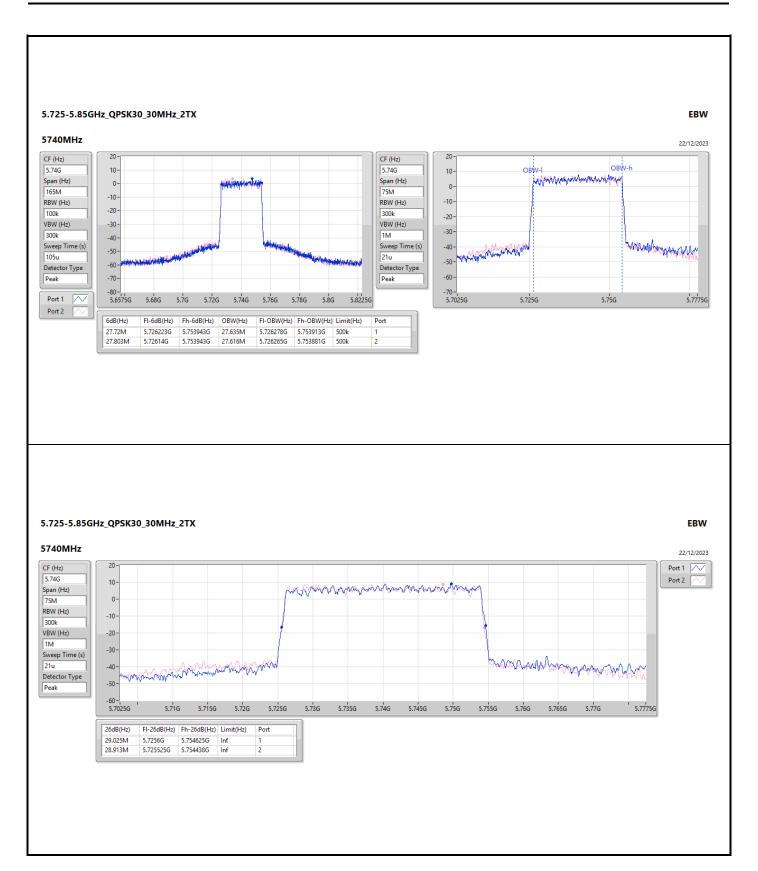
Page No. : 12 of 20 Report No. : FR3D2102



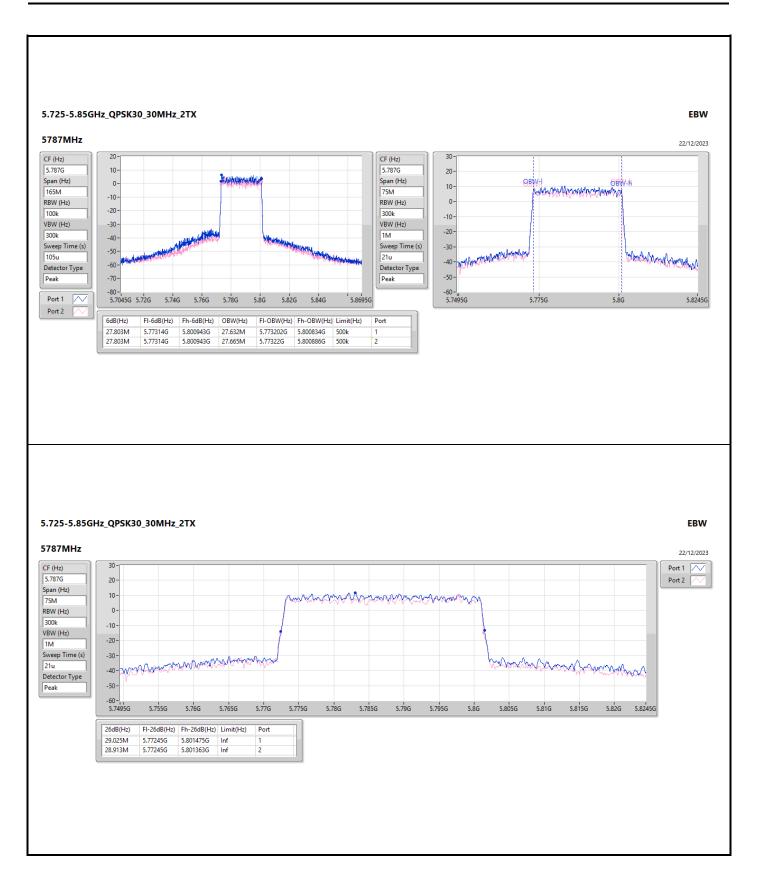
Page No. : 13 of 20 Report No. : FR3D2102



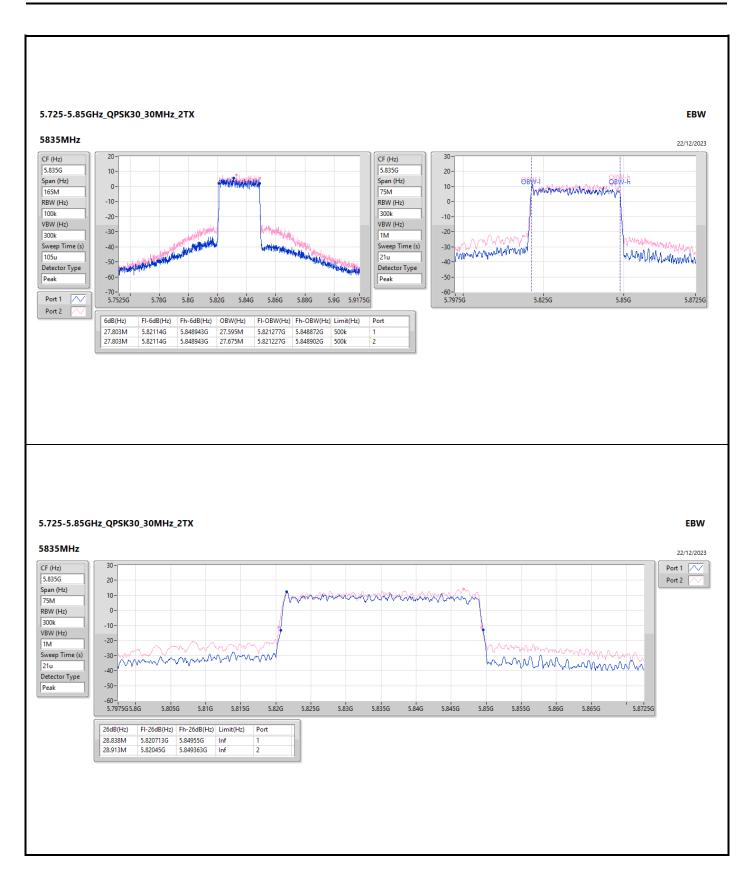
Page No. : 14 of 20 Report No. : FR3D2102



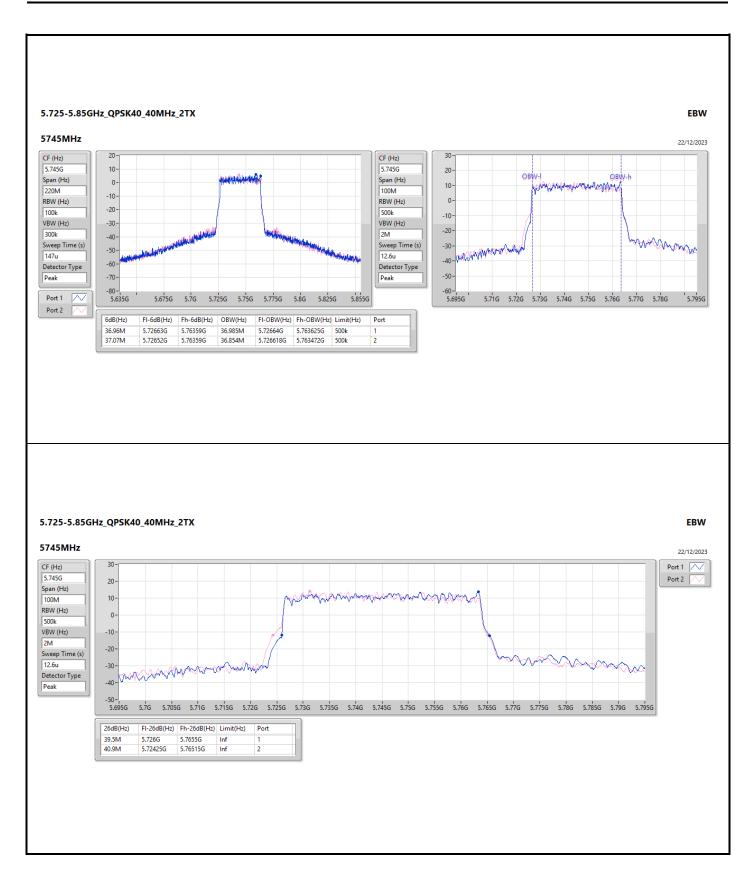
Page No. : 15 of 20 Report No. : FR3D2102



Page No. : 16 of 20 Report No. : FR3D2102



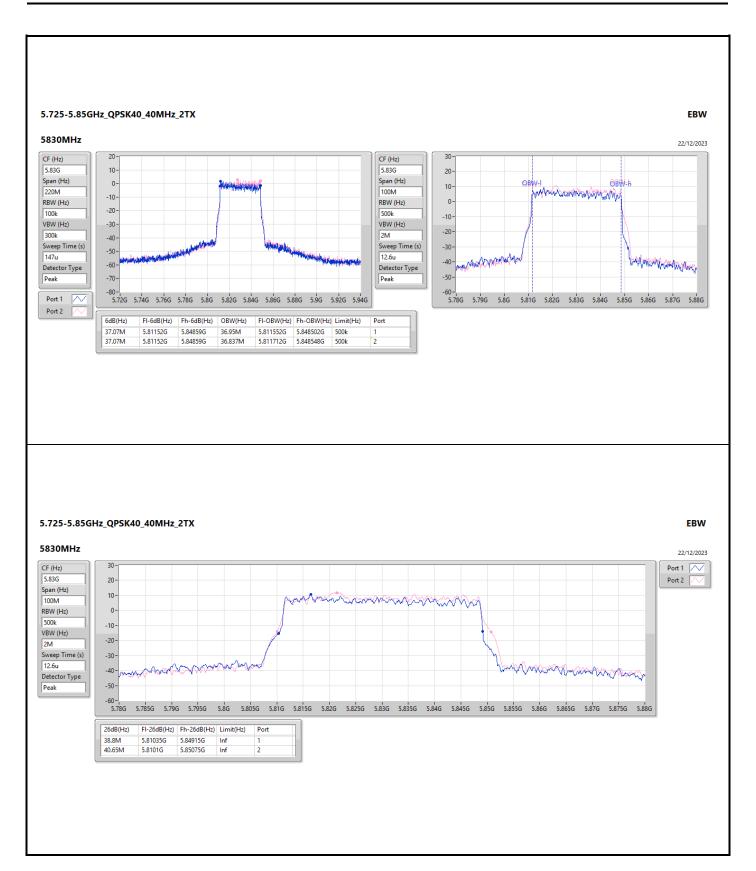
Page No. : 17 of 20 Report No. : FR3D2102



Page No. : 18 of 20 Report No. : FR3D2102



Page No. : 19 of 20 Report No. : FR3D2102



Page No. : 20 of 20 Report No. : FR3D2102



Average Power Appendix C

Summary

Mode	Total Power	Total Power	
	(dBm)	(W)	
5.725-5.85GHz	-	-	
QPSK5_5MHz_Nss1,(MCS0)_2TX	16.72	0.04699	
QPSK10_10MHz_Nss1,(MCS0)_2TX	20.54	0.11324	
QPSK15_15MHz_Nss1,(MCS0)_2TX	22.40	0.17378	
QPSK20_20MHz_Nss1,(MCS0)_2TX	24.04	0.25351	
QPSK30_30MHz_Nss1,(MCS0)_2TX	25.59	0.36224	
QPSK40_40MHz_Nss1,(MCS0)_2TX	25.71	0.37239	

Page No. : 1 of 2 Report No. : FR3D2102



Average Power Appendix C

Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit	
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	
QPSK5_5MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5727.5MHz	Pass	24.00	11.09	12.59	14.91	30.00	
5787MHz	Pass	24.00	14.57	12.64	16.72	30.00	
5847.5MHz	Pass	24.00	5.93	8.71	10.55	30.00	
QPSK10_10MHz_Nss1,(MCS0)_2TX	-	-	=	-	-	-	
5730MHz	Pass	24.00	15.01	16.34	18.74	30.00	
5787MHz	Pass	24.00	18.45	16.35	20.54	30.00	
5845MHz	Pass	24.00	14.03	16.55	18.48	30.00	
QPSK15_15MHz_Nss1,(MCS0)_2TX	-	-	=	-	-	-	
5732.5MHz	Pass	24.00	18.83	19.89	22.40	30.00	
5787MHz	Pass	24.00	17.92	15.88	20.03	30.00	
5842.5MHz	Pass	24.00	17.61	19.93	21.93	30.00	
QPSK20_20MHz_Nss1,(MCS0)_2TX	-	-	-	•	-	-	
5735MHz	Pass	24.00	19.05	19.83	22.47	30.00	
5787MHz	Pass	24.00	21.90	19.95	24.04	30.00	
5840MHz	Pass	24.00	14.19	16.17	18.30	30.00	
QPSK30_30MHz_Nss1,(MCS0)_2TX	-	-	=	-	-	-	
5740MHz	Pass	24.00	18.97	19.25	22.12	30.00	
5787MHz	Pass	24.00	21.58	19.62	23.72	30.00	
5835MHz	Pass	24.00	21.60	23.38	25.59	30.00	
QPSK40_40MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5745MHz	Pass	24.00	22.76	22.63	25.71	30.00	
5787MHz	Pass	24.00	21.50	19.58	23.66	30.00	
5830MHz	Pass	24.00	18.42	19.77	22.16	30.00	

DG = Directional Gain; Port X = Port X output power

Page No. : 2 of 2

Report No. : FR3D2102



Summary

Mode	PD (dBm/RBW)
5.725-5.85GHz	-
QPSK5_5MHz_Nss1,(MCS0)_2TX	7.33
QPSK10_10MHz_Nss1,(MCS0)_2TX	7.96
QPSK15_15MHz_Nss1,(MCS0)_2TX	8.15
QPSK20_20MHz_Nss1,(MCS0)_2TX	8.77
QPSK30_30MHz_Nss1,(MCS0)_2TX	8.71
QPSK40_40MHz_Nss1,(MCS0)_2TX	7.81

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

Page No. : 1 of 11 Report No. : FR3D2102

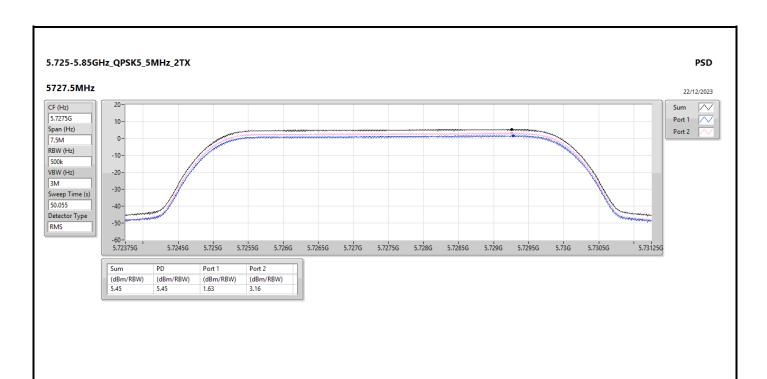
Appendix D **PSD**

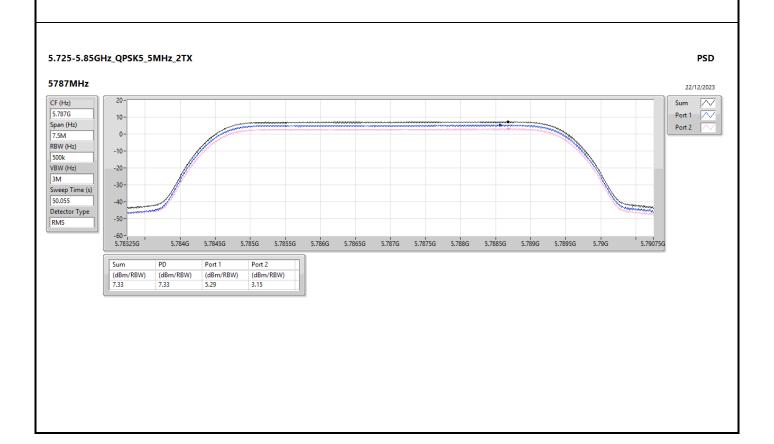
Result

Mode	Result	DG	Port 1	Port 2	PD	PD Limit	
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	
QPSK5_5MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5727.5MHz	Pass	24.00	1.63	3.16	5.45	12.00	
5787MHz	Pass	24.00	5.29	3.15	7.33	12.00	
5847.5MHz	Pass	24.00	-3.63	-0.89	0.94	12.00	
QPSK10_10MHz_Nss1,(MCS0)_2TX	-	-	ī	ī	-	-	
5730MHz	Pass	24.00	2.64	3.70	6.20	12.00	
5787MHz	Pass	24.00	5.92	3.77	7.96	12.00	
5845MHz	Pass	24.00	1.31	4.06	5.88	12.00	
QPSK15_15MHz_Nss1,(MCS0)_2TX	-	-	-	=	-	-	
5732.5MHz	Pass	24.00	4.84	5.44	8.15	12.00	
5787MHz	Pass	24.00	3.62	1.54	5.69	12.00	
5842.5MHz	Pass	24.00	3.15	5.81	7.67	12.00	
QPSK20_20MHz_Nss1,(MCS0)_2TX	-	-	=	=	-	-	
5735MHz	Pass	24.00	4.09	4.38	7.17	12.00	
5787MHz	Pass	24.00	6.66	4.68	8.77	12.00	
5840MHz	Pass	24.00	-1.21	0.98	2.86	12.00	
QPSK30_30MHz_Nss1,(MCS0)_2TX	-	-	-	=	-	-	
5740MHz	Pass	24.00	2.58	2.58	5.30	12.00	
5787MHz	Pass	24.00	5.17	3.26	7.29	12.00	
5835MHz	Pass	24.00	5.48	6.74	8.71	12.00	
QPSK40_40MHz_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5745MHz	Pass	24.00	5.33	5.44	7.81	12.00	
5787MHz	Pass	24.00	4.55	2.79	6.77	12.00	
5830MHz	Pass	24.00	1.96	2.32	4.77	12.00	

Page No. Report No. : FR3D2102

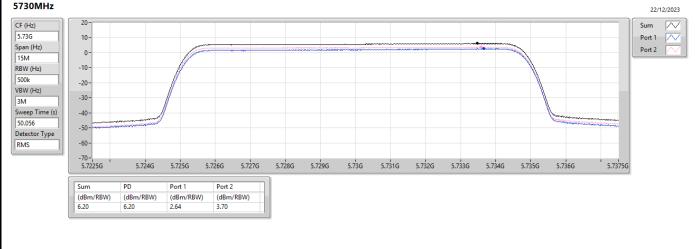
DG = Directional Gain; RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;



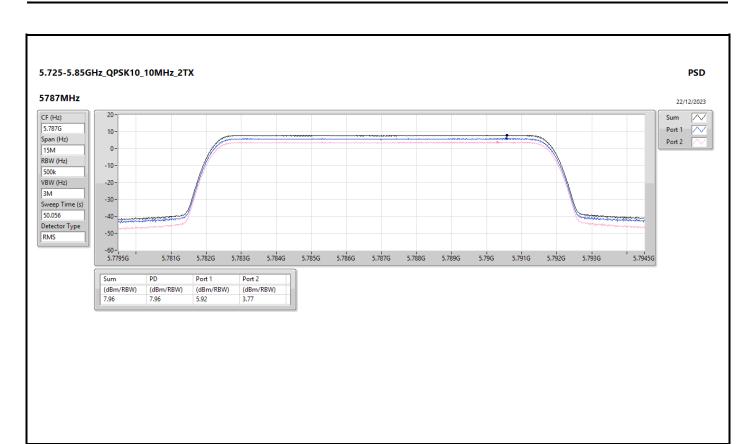


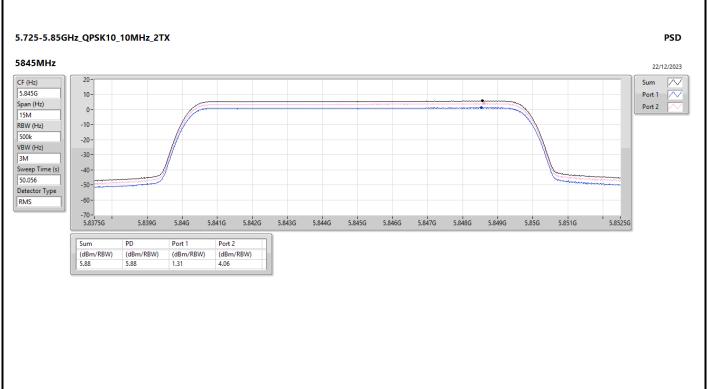
Page No. : 3 of 11 Report No. : FR3D2102



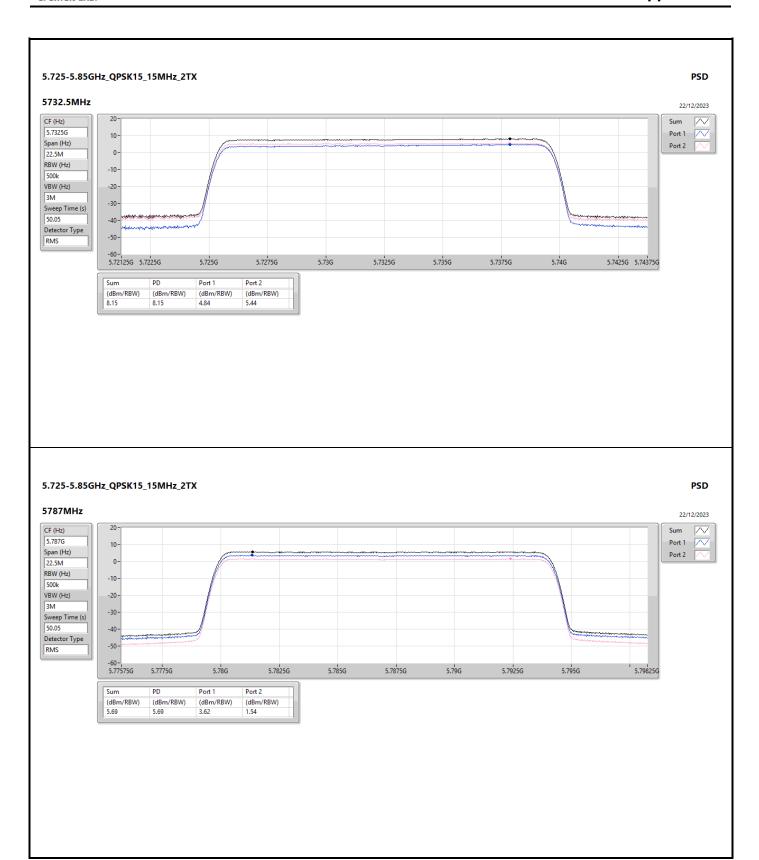


Page No. : 4 of 11 Report No. : FR3D2102





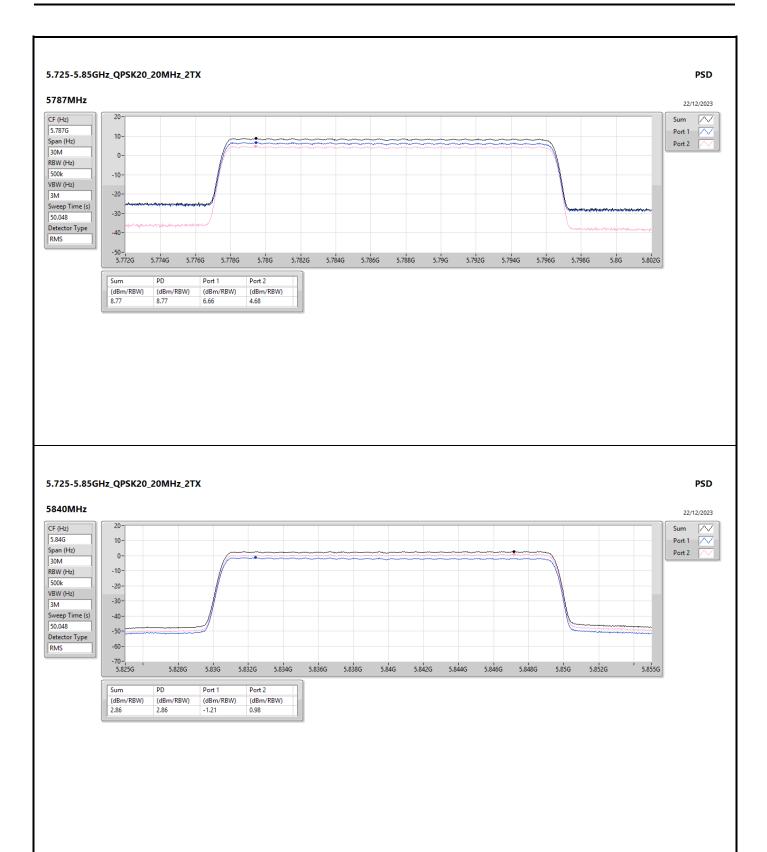
Page No. : 5 of 11
Report No. : FR3D2102



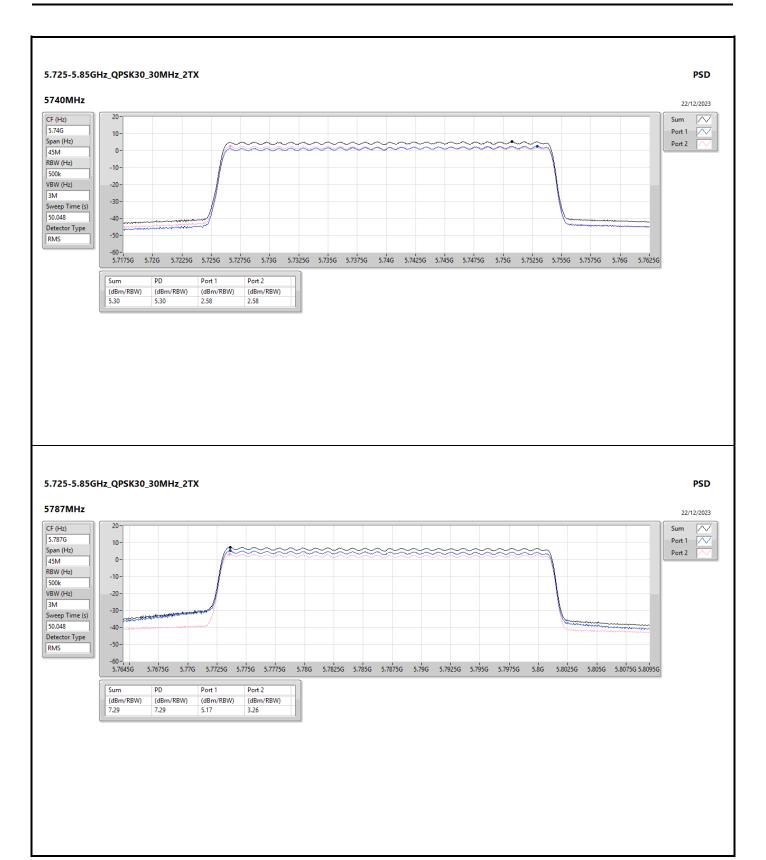
Page No. : 6 of 11 Report No. : FR3D2102



Page No. : 7 of 11 Report No. : FR3D2102

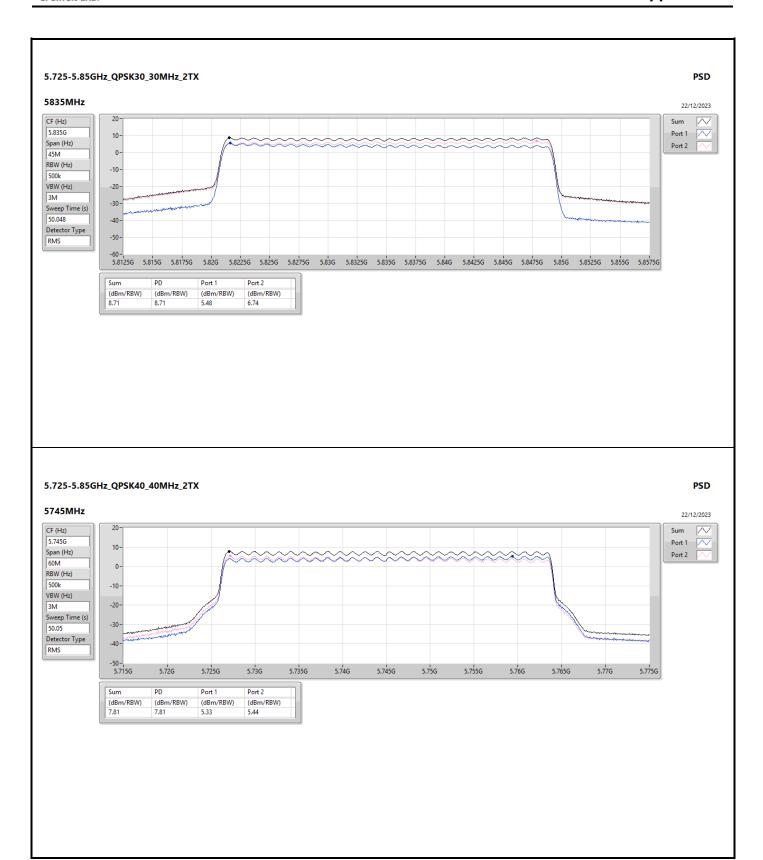


Page No. : 8 of 11
Report No. : FR3D2102



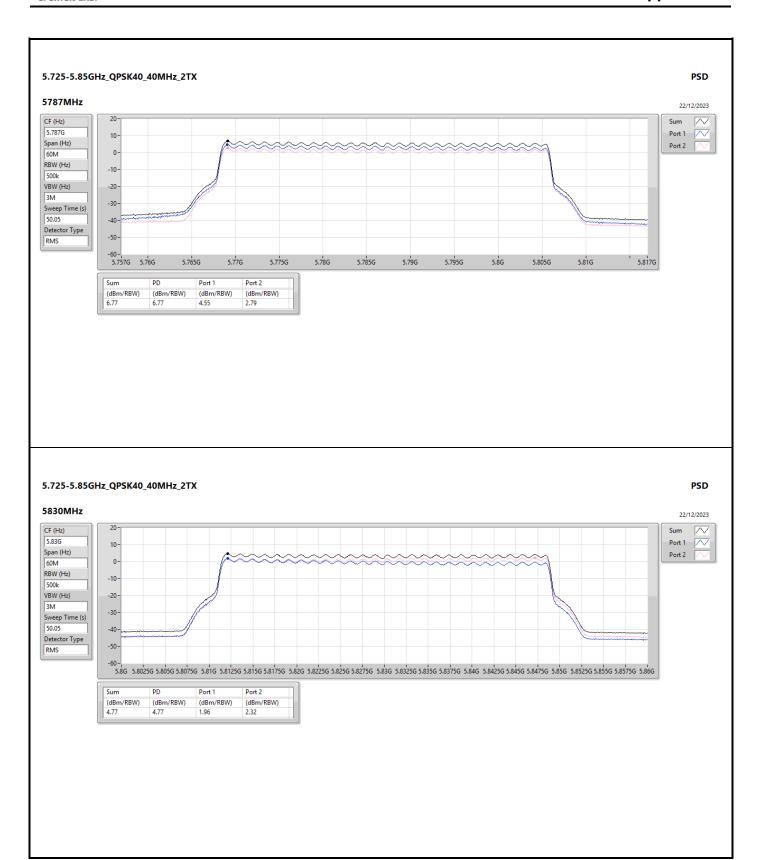
Page No. : 9 of 11

Report No. : FR3D2102



Page No. : 10 of 11

Report No. : FR3D2102



Page No. : 11 of 11

Report No. : FR3D2102



Radiated Emissions below 1GHz

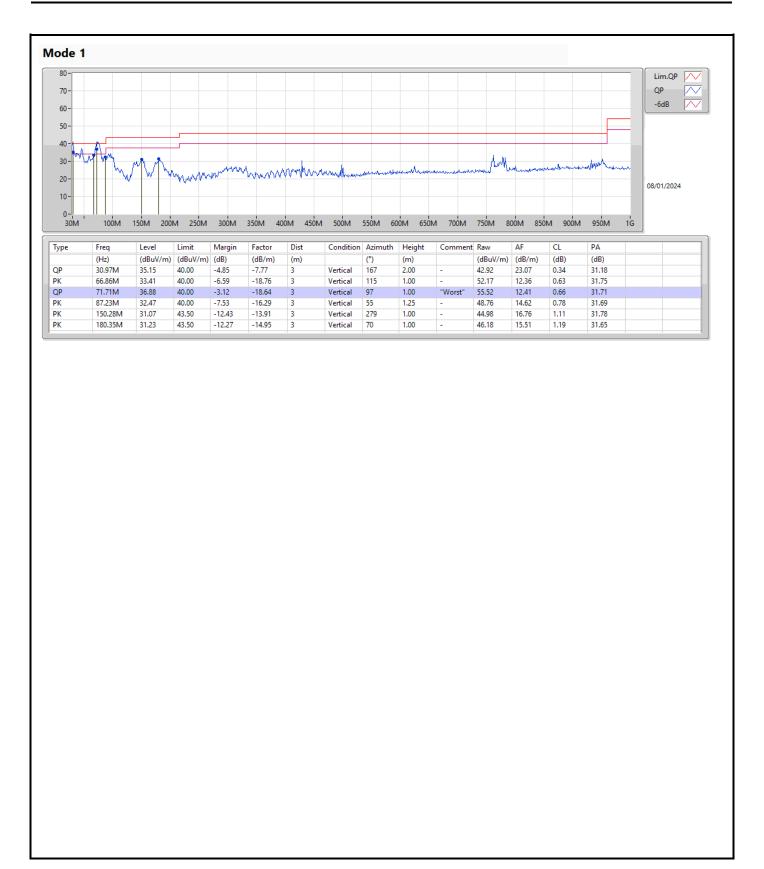
Appendix E.1

Summary

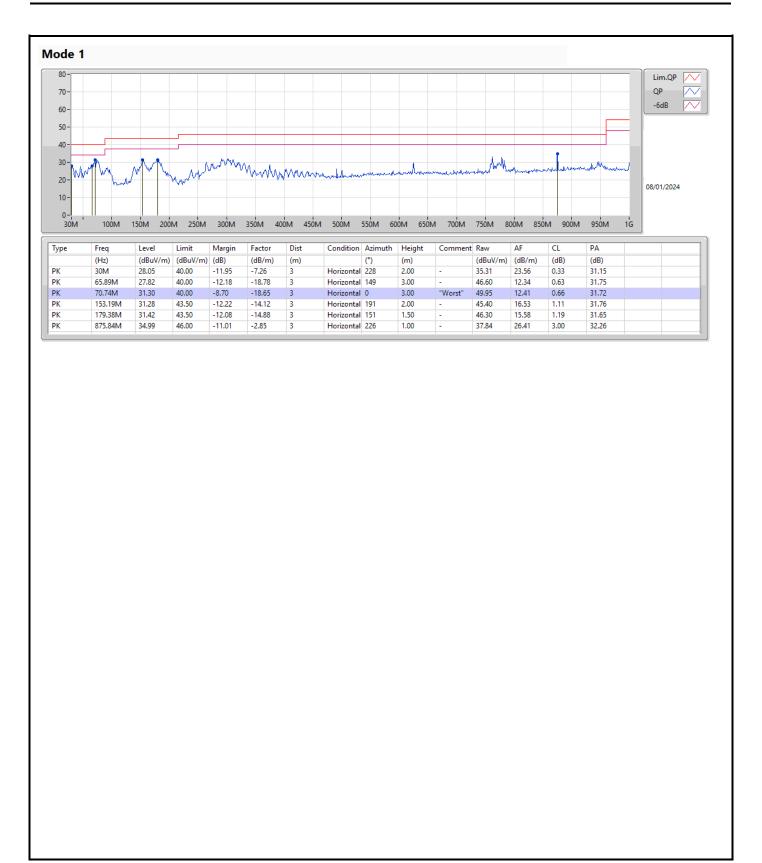
Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	71.71M	36.88	40.00	-3.12	Vertical

Sporton International Inc. Page No. Report No.

: FR3D2102



Sporton International Inc. Page No. Report No. : FR3D2102



Sporton International Inc. Page No. : 3 of 3
Report No. : FR3D2102



RSE TX above 1GHz

Appendix E.2

Summary

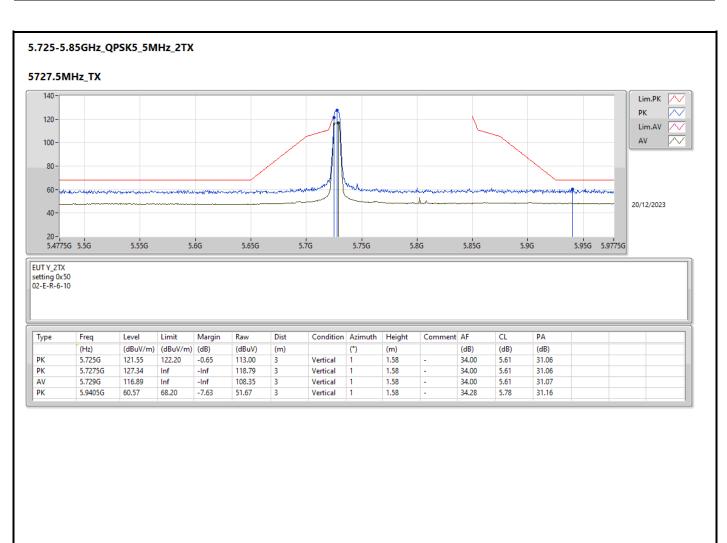
Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-
QPSK15_15MHz_2TX	Pass	PK	5.85G	122.15	122.20	-0.05	3	Vertical	360	1.80	-

_

Page No. : 1 of 109

Report No. : FR3D2102





Page No. : 2 of 109

Report No. : FR3D2102

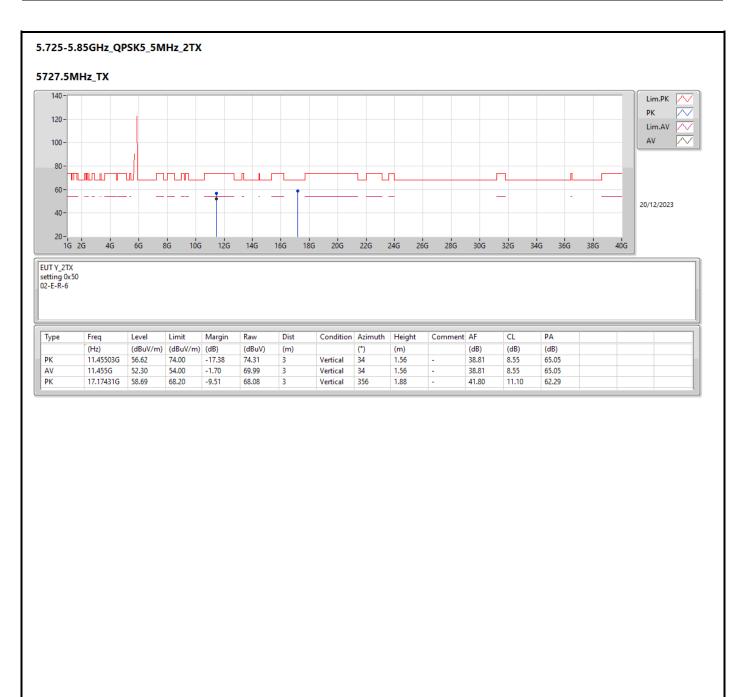




Page No. : 3 of 109

Report No. : FR3D2102

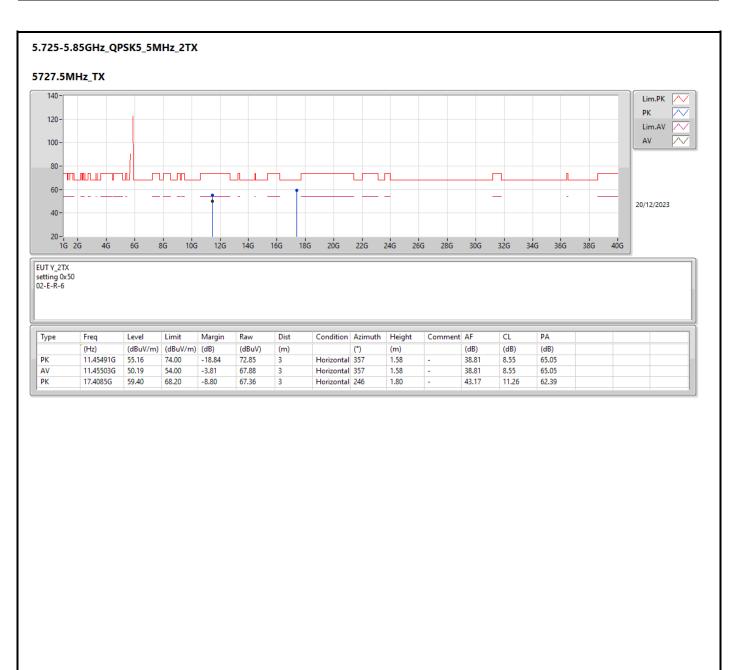




Page No. : 4 of 109

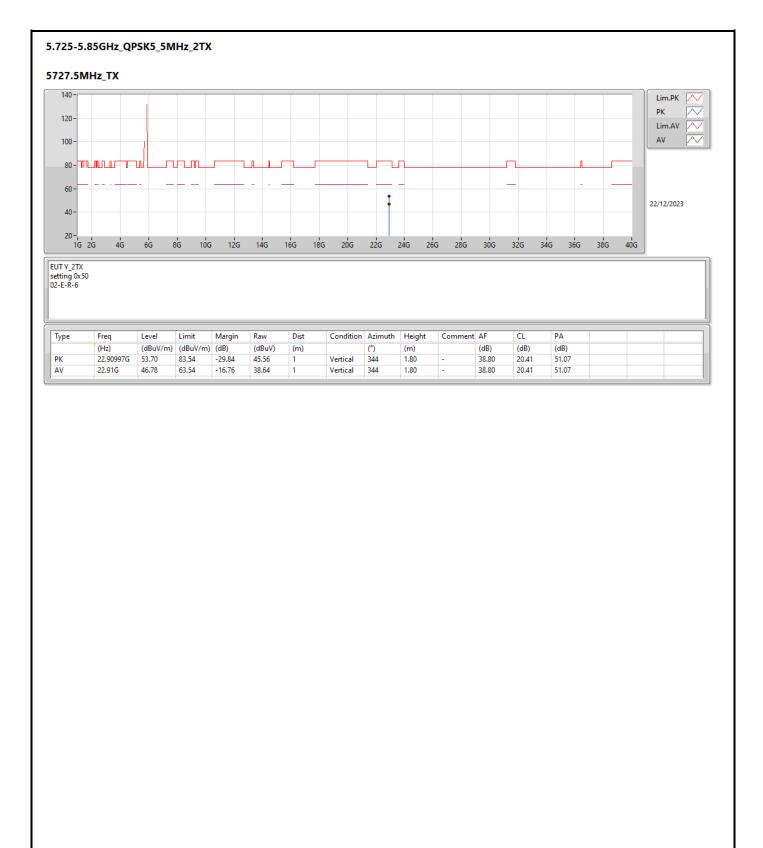
Report No. : FR3D2102



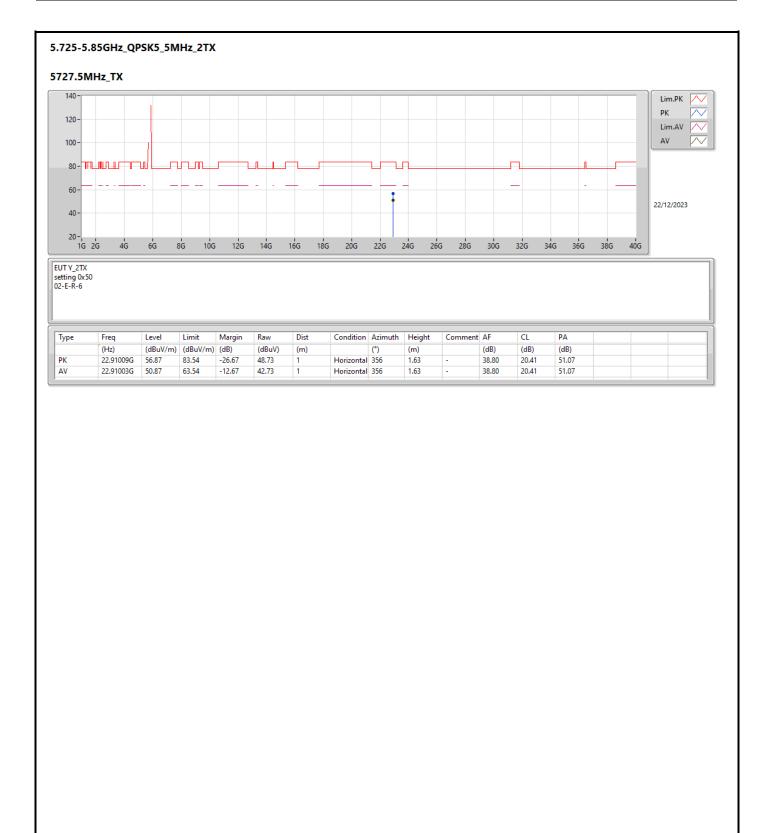


Page No. : 5 of 109 Report No. : FR3D2102



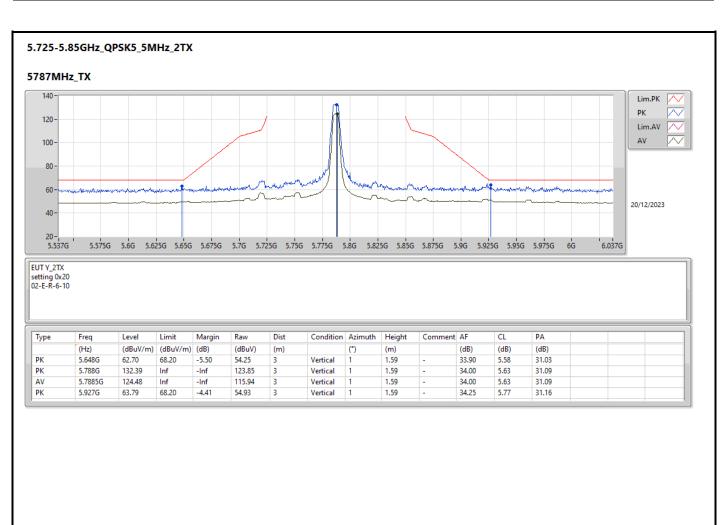






Page No. : 7 of 109 Report No. : FR3D2102

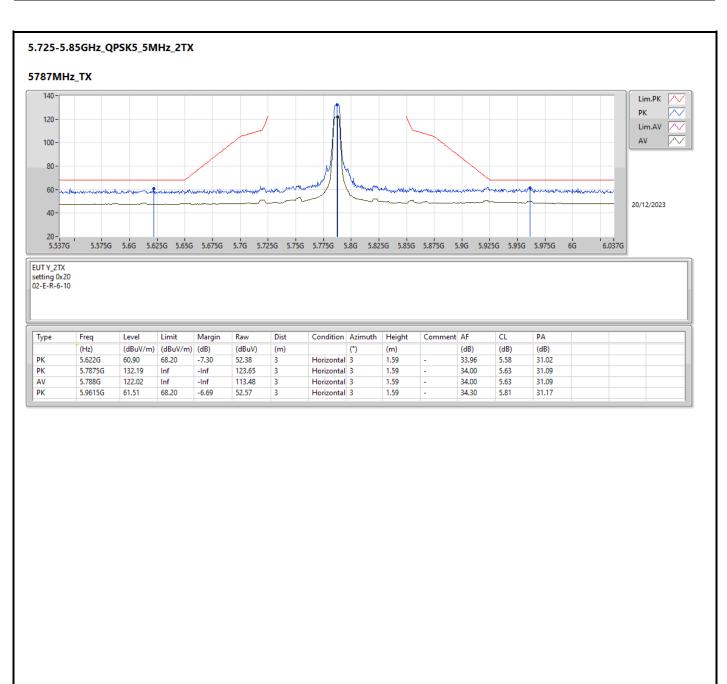




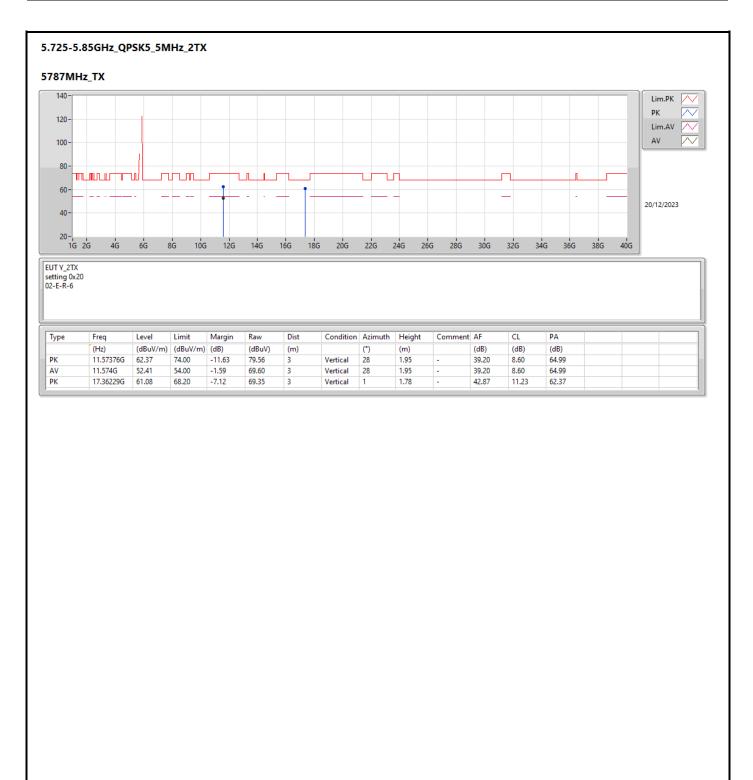
Page No. : 8 of 109

Report No. : FR3D2102

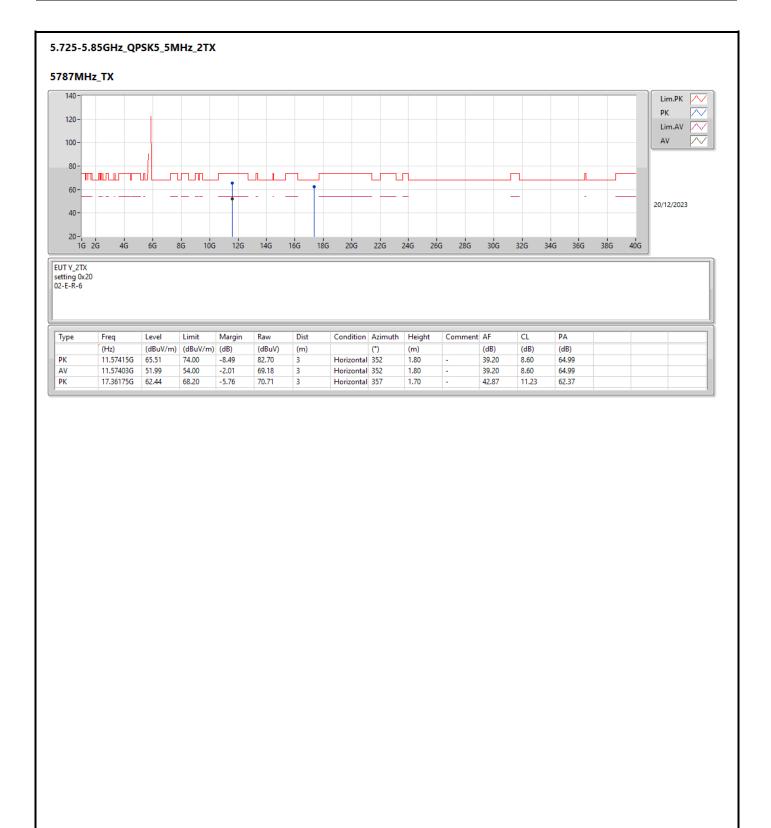




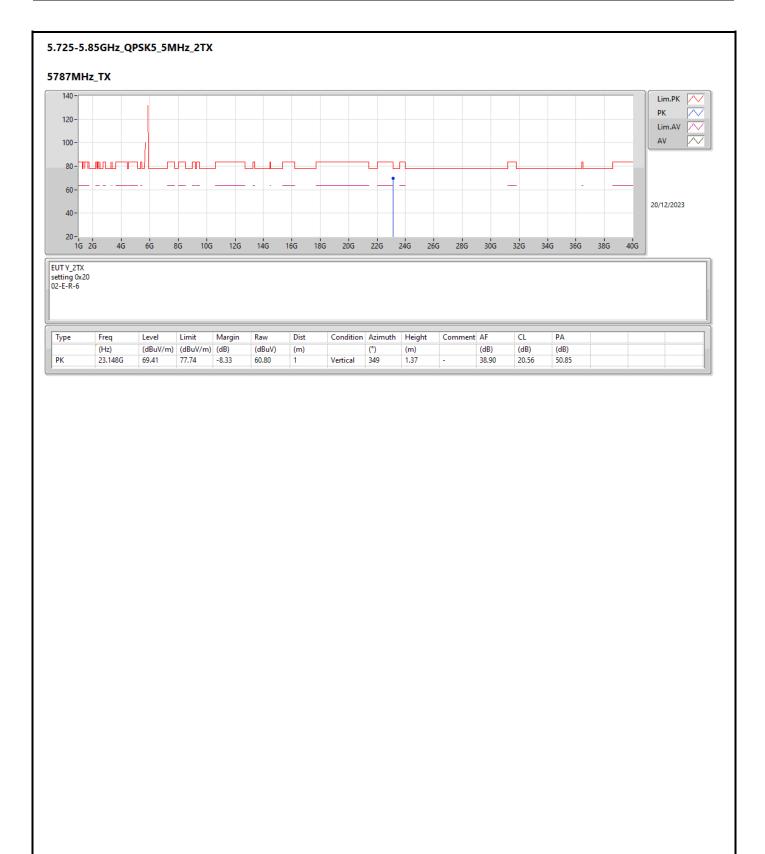


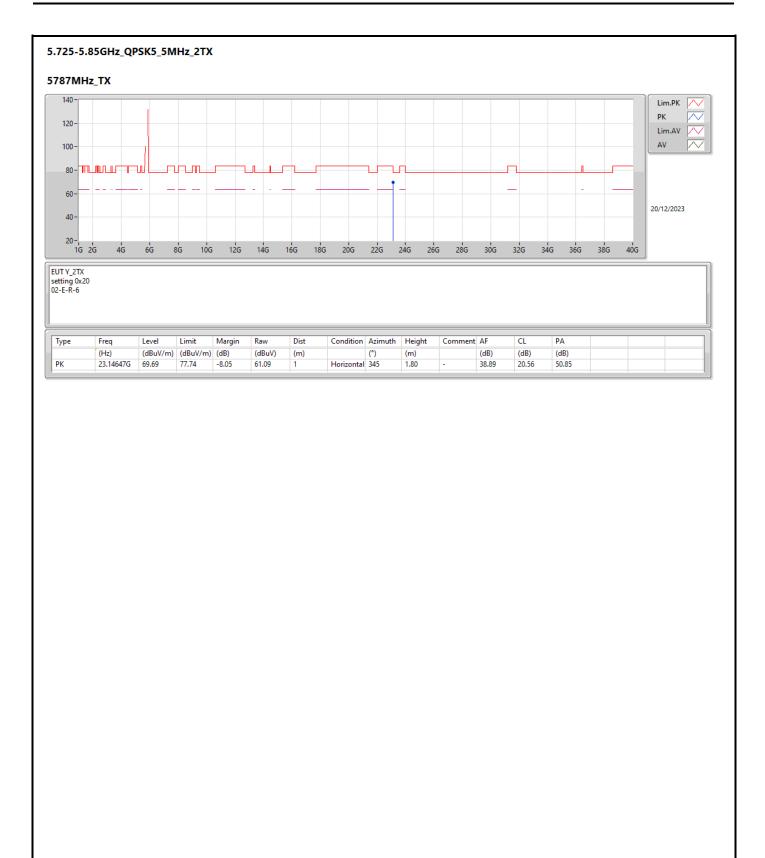












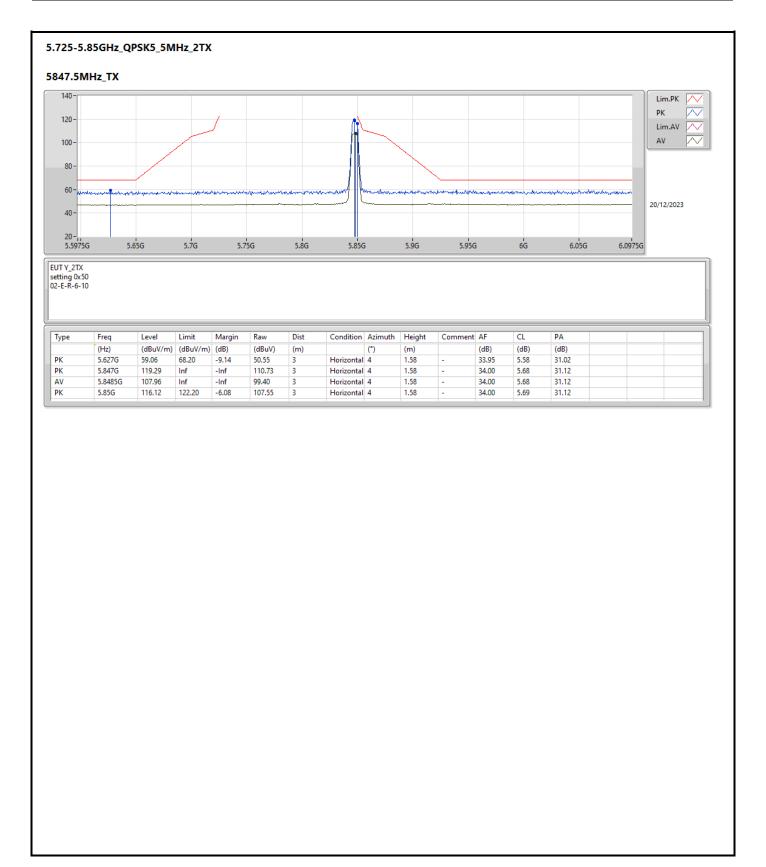




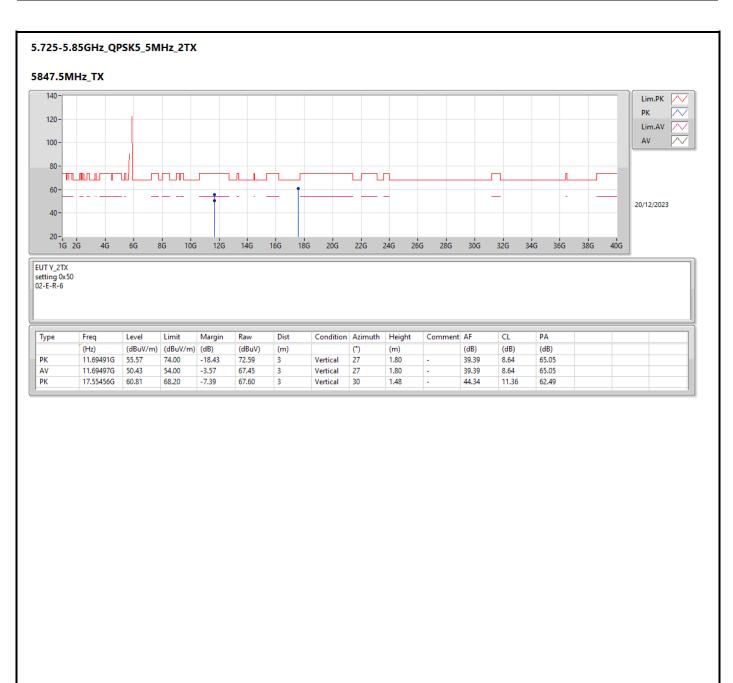
Page No. : 14 of 109

Report No. : FR3D2102

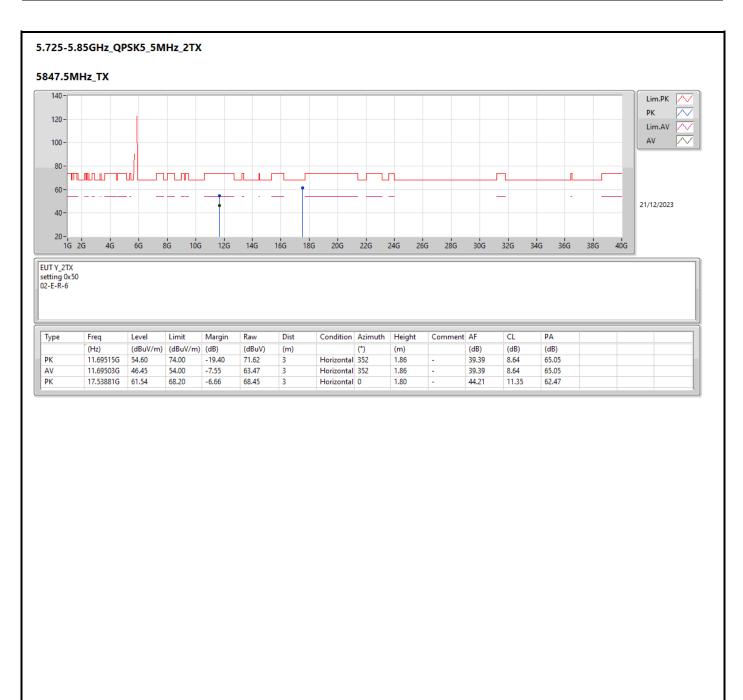




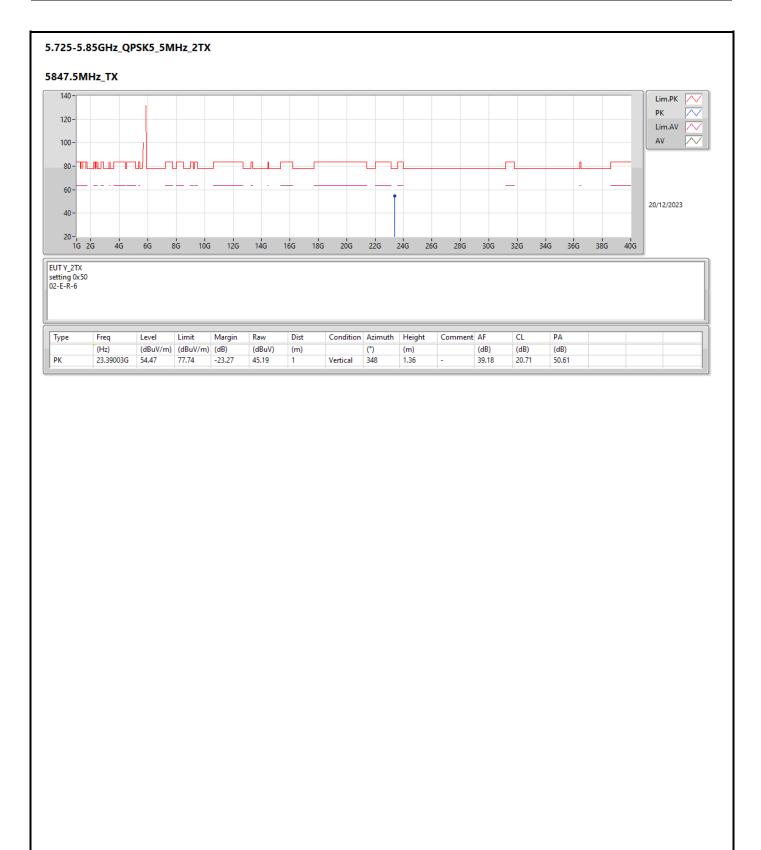




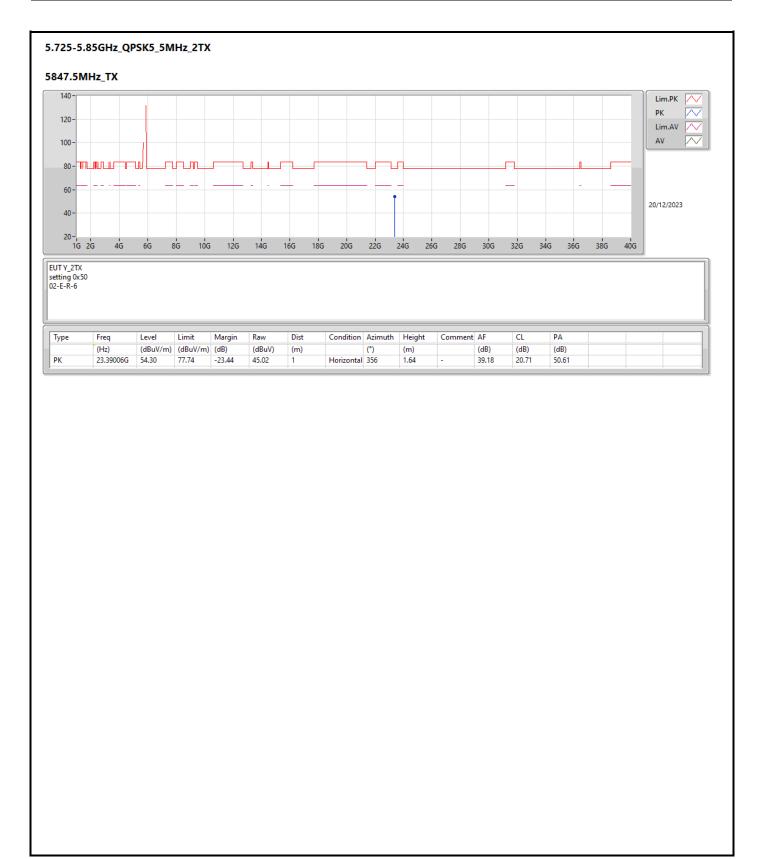




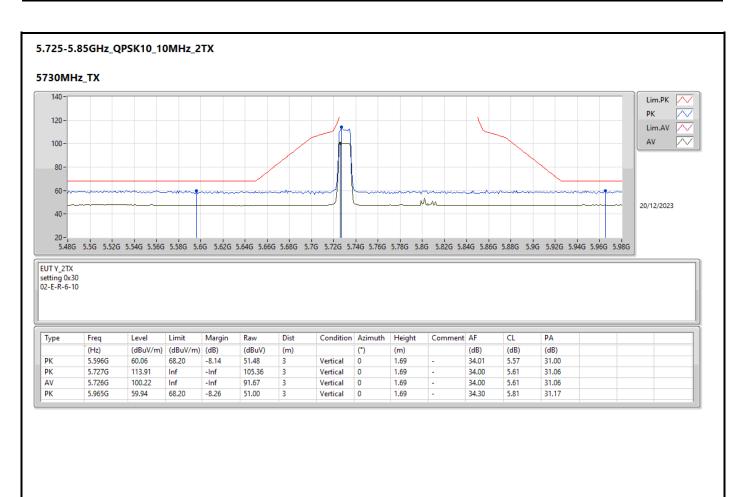








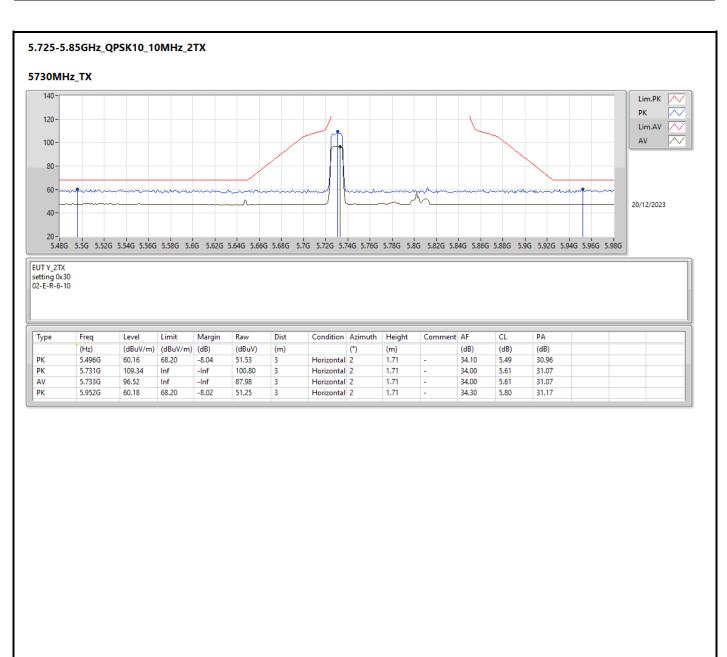




Page No. : 20 of 109

Report No. : FR3D2102

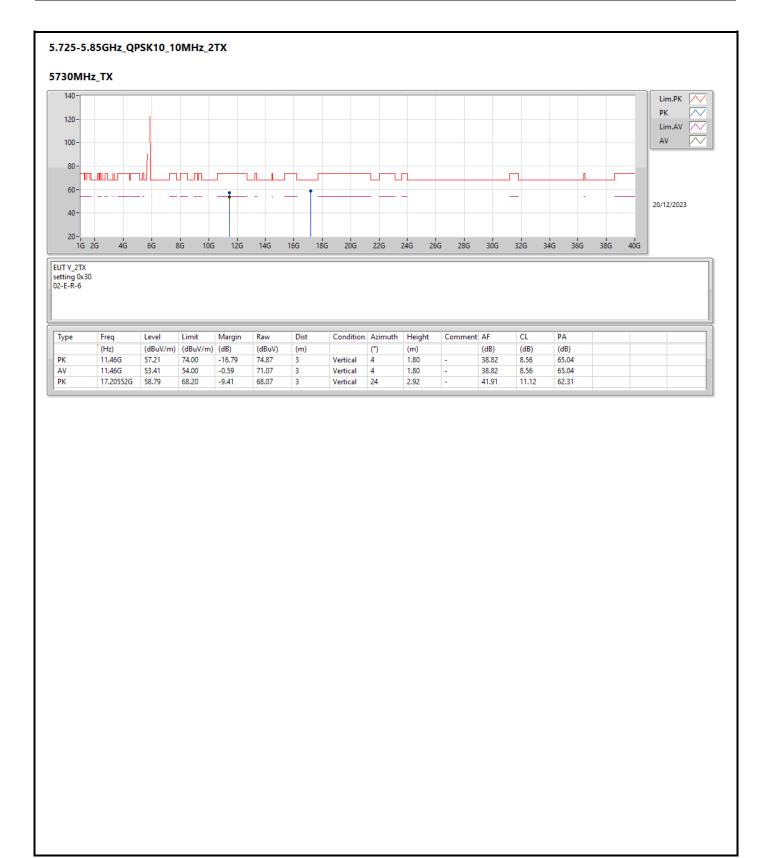




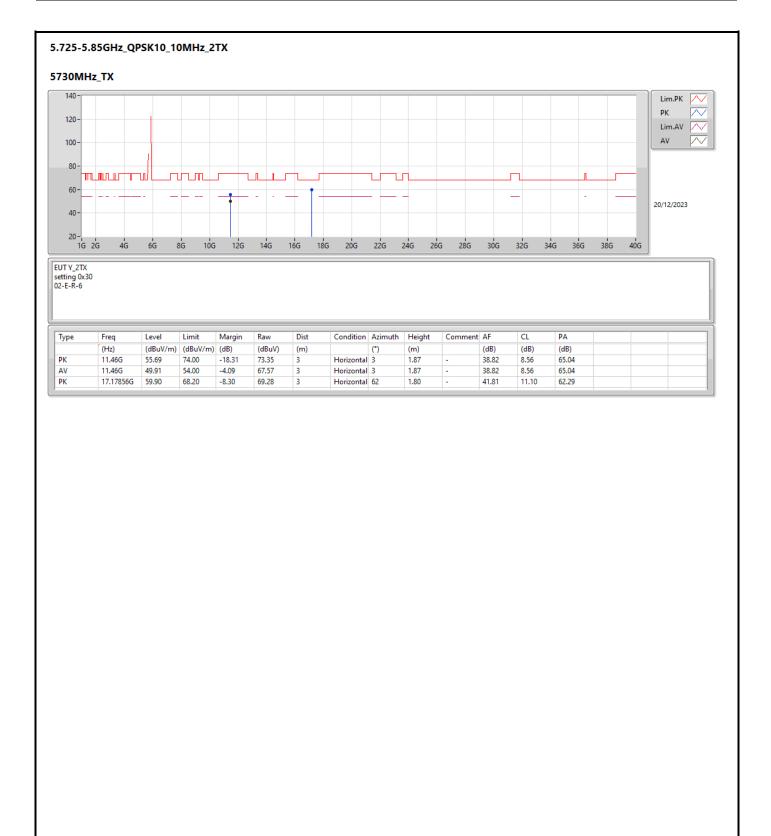
Page No. : 21 of 109

Report No. : FR3D2102

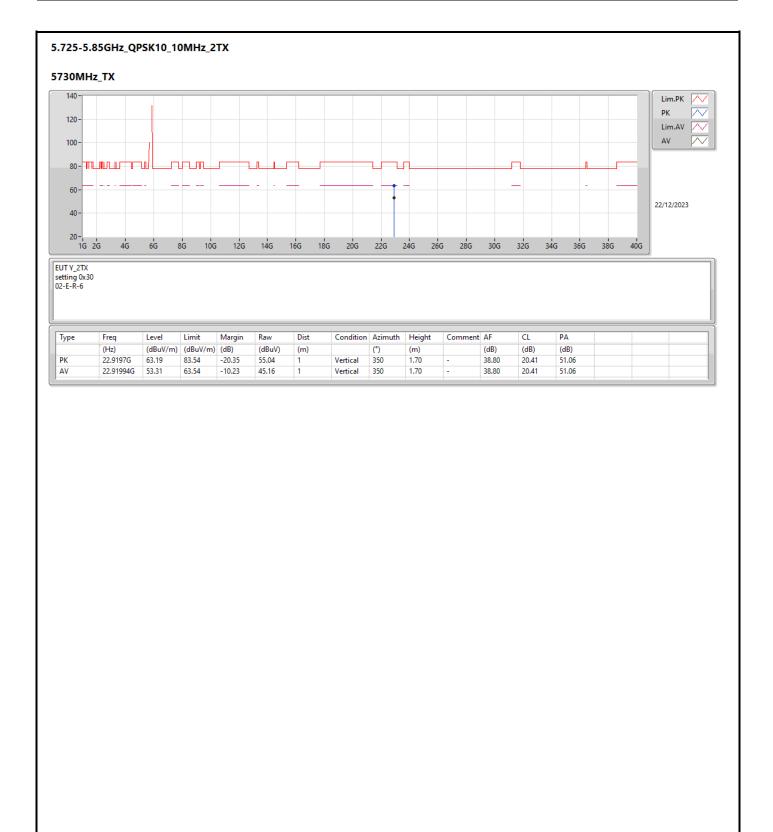






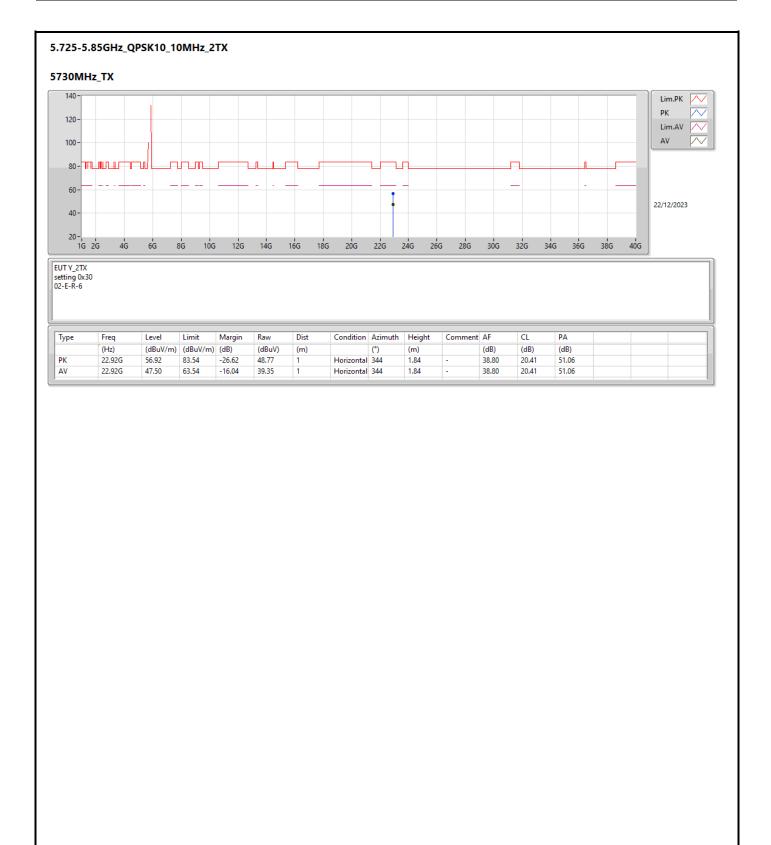






Page No. : 24 of 109
Report No. : FR3D2102

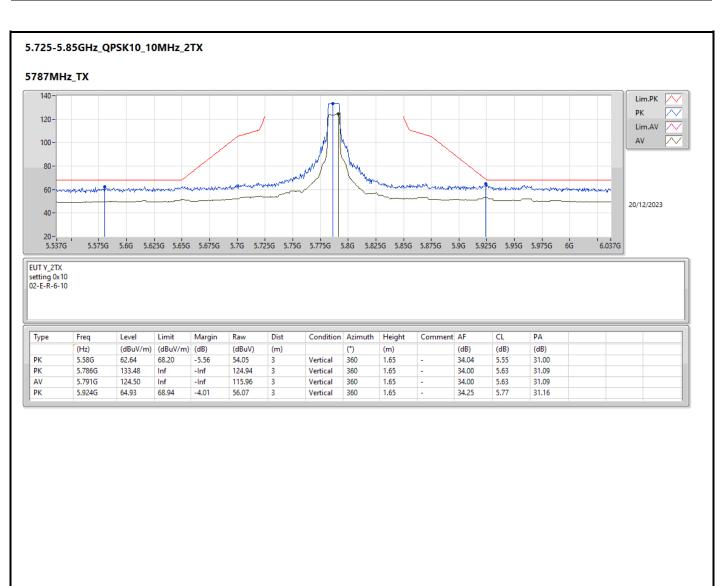




Page No. : 25 of 109

Report No. : FR3D2102

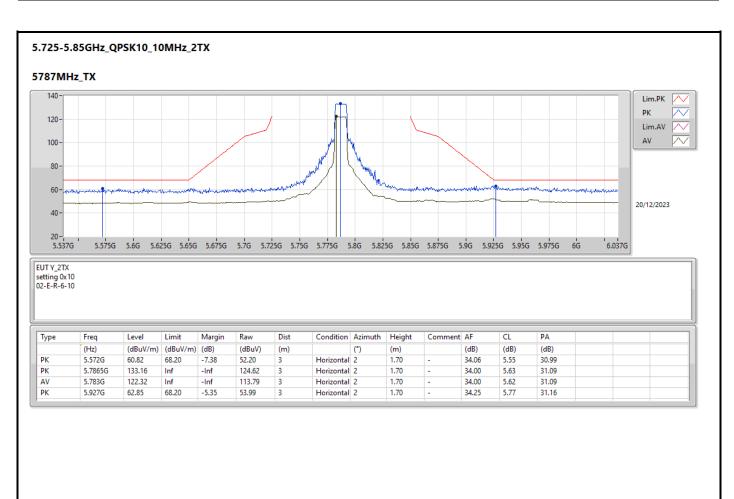




Page No. : 26 of 109

Report No. : FR3D2102

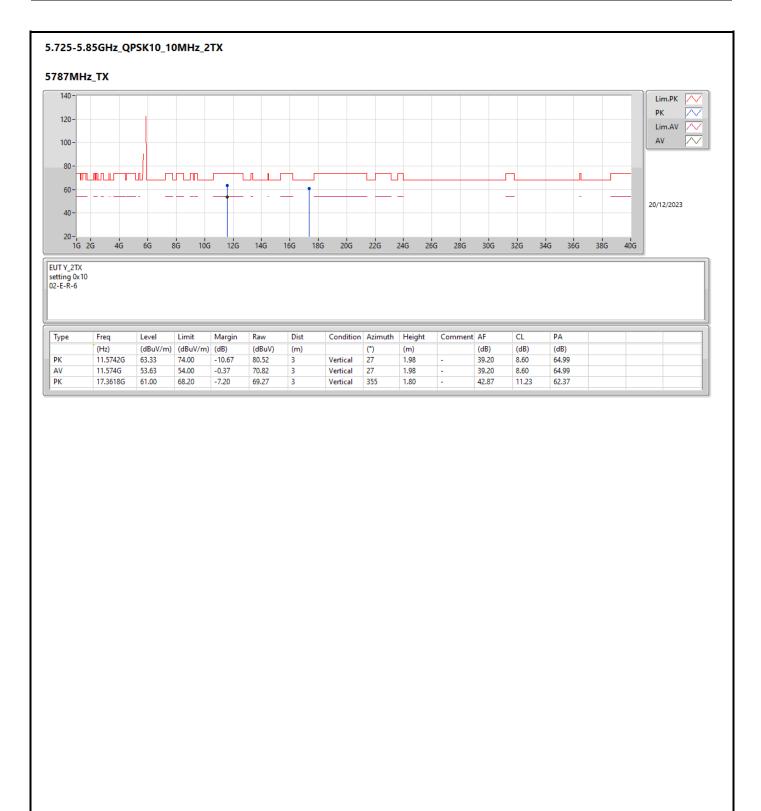




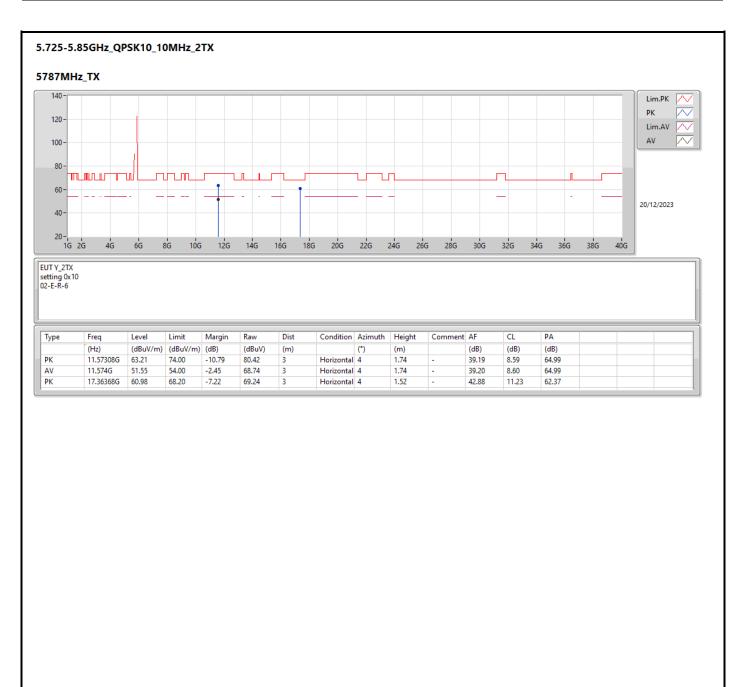
Page No. : 27 of 109

Report No. : FR3D2102

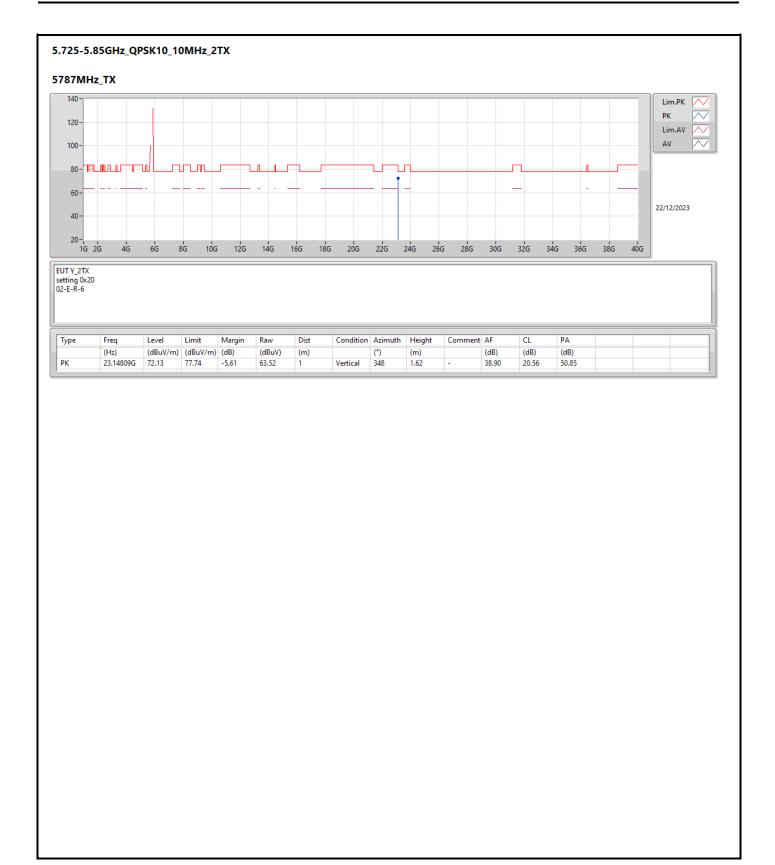




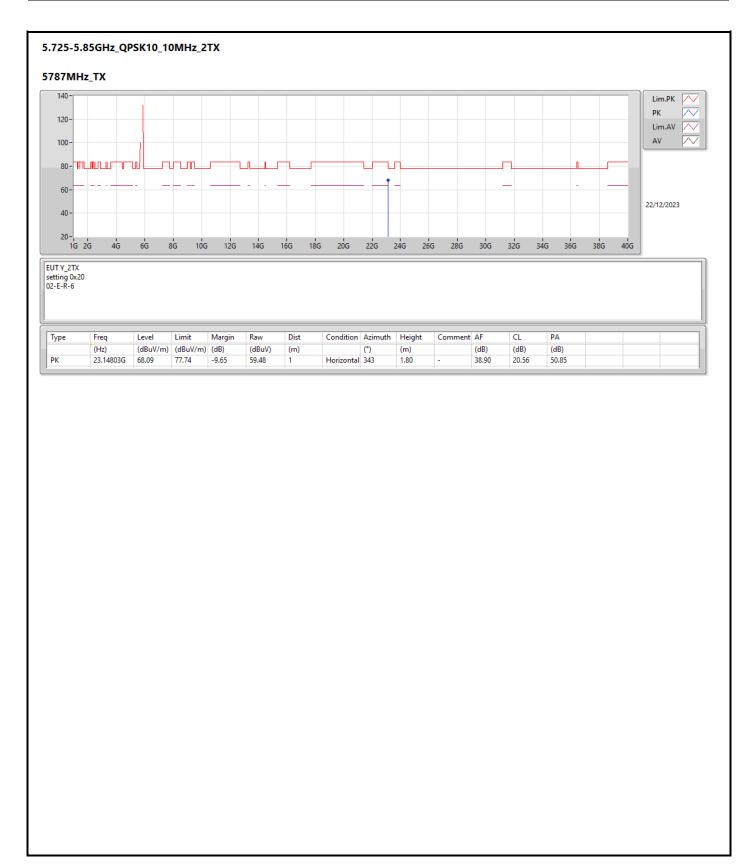




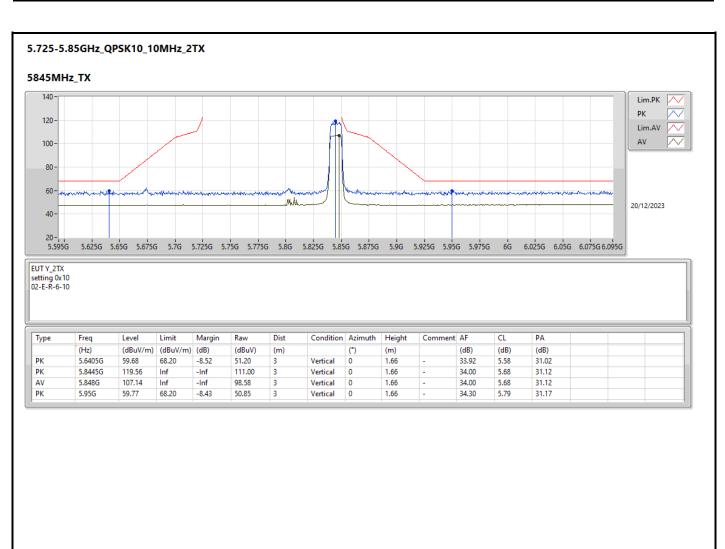
Page No. : 29 of 109
Report No. : FR3D2102







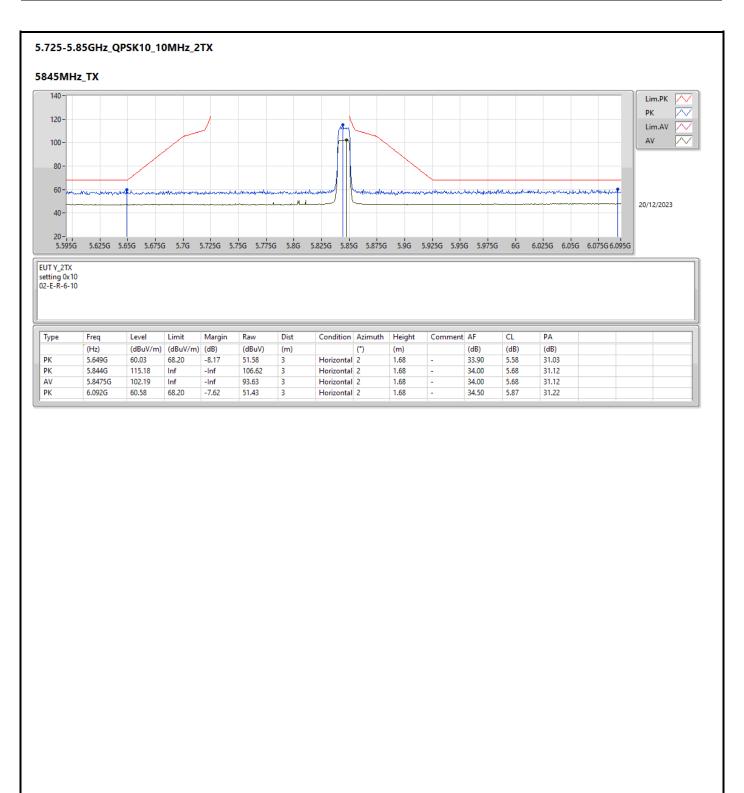




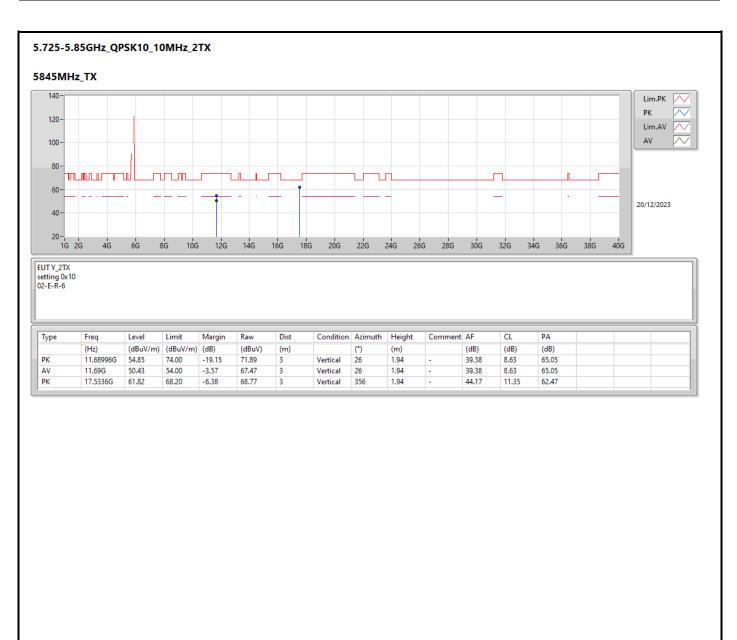
Page No. : 32 of 109

Report No. : FR3D2102



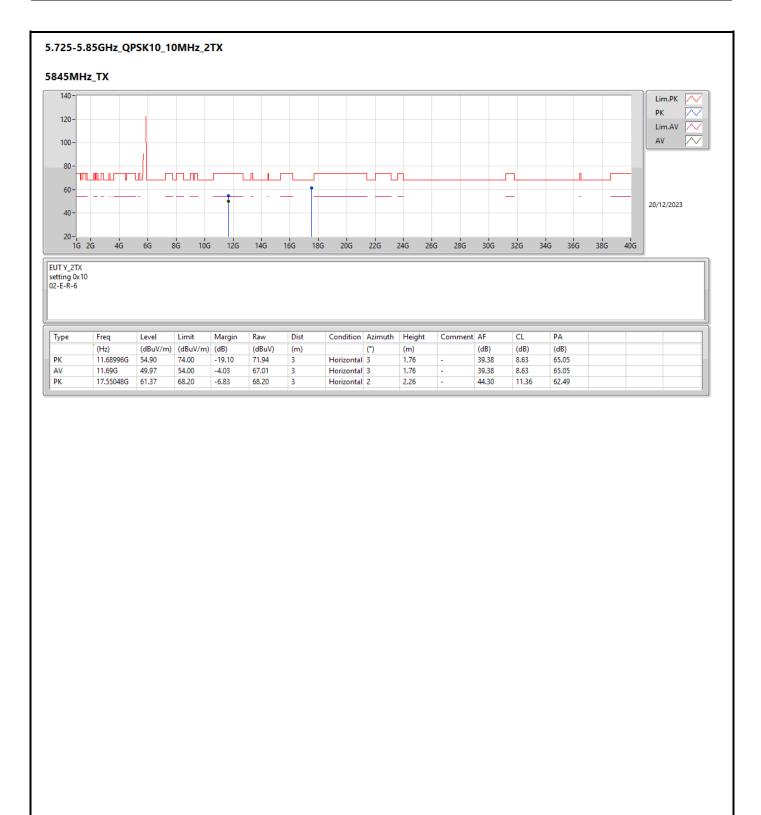






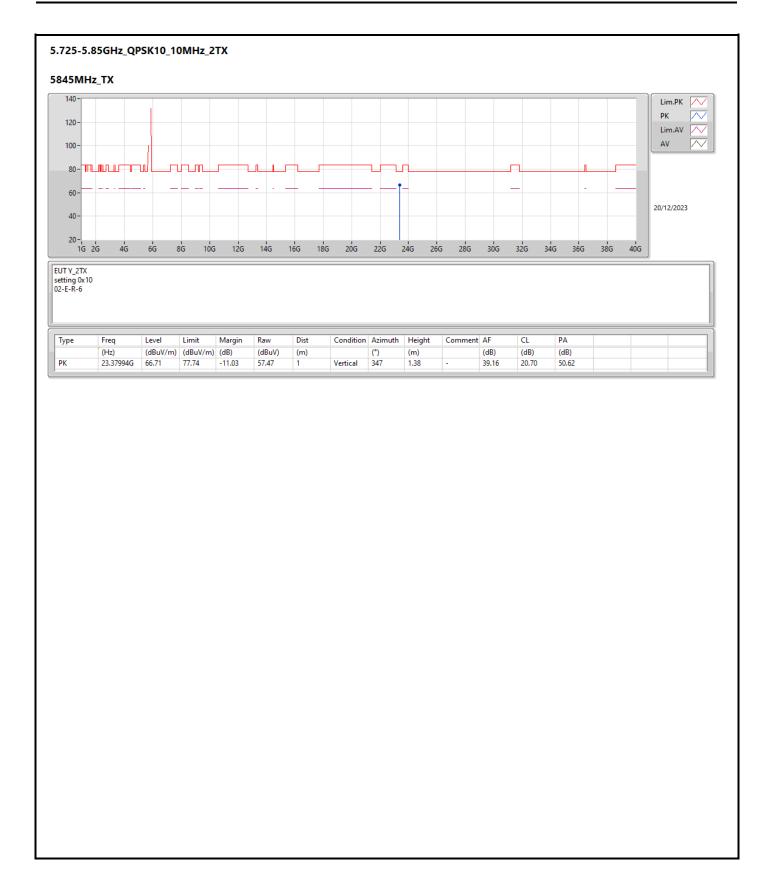
Page No. : 34 of 109 Report No. : FR3D2102

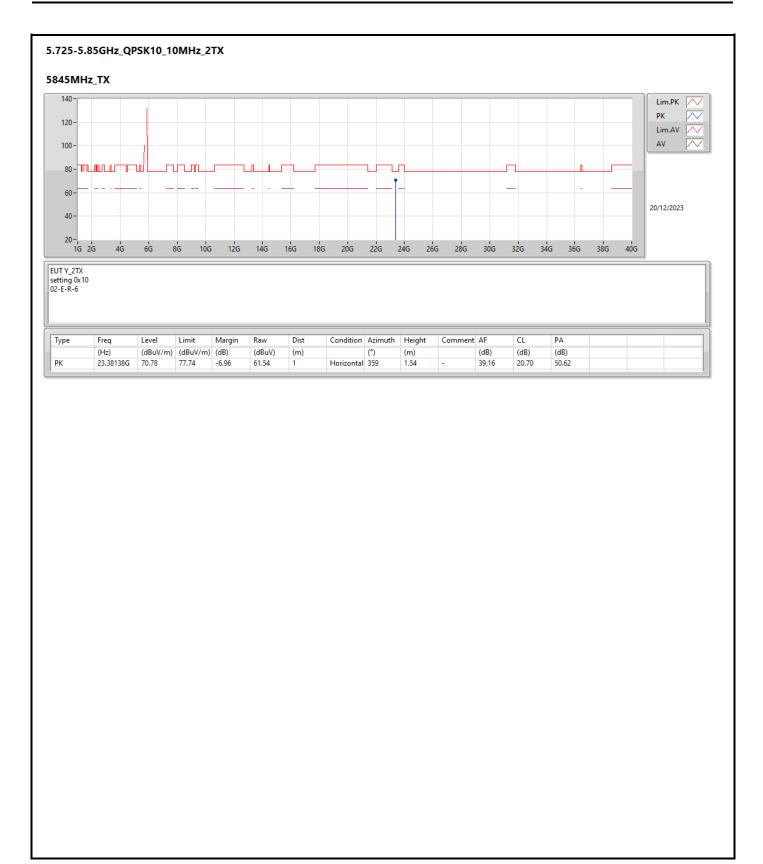




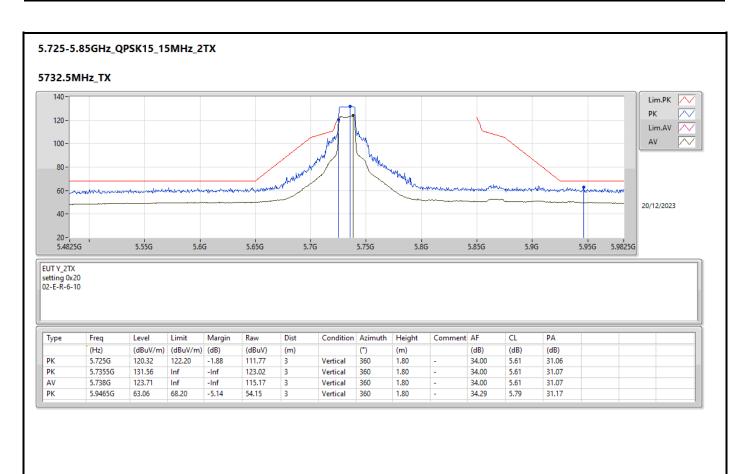
Page No. : 35 of 109

Report No. : FR3D2102





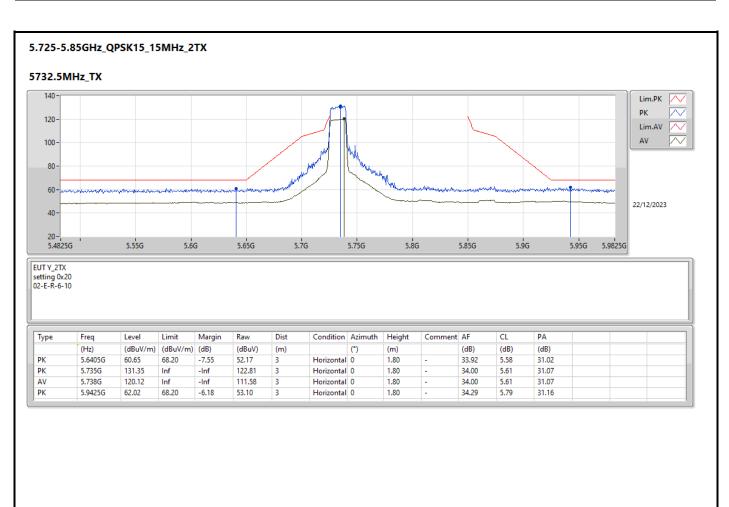




Page No. : 38 of 109

Report No. : FR3D2102

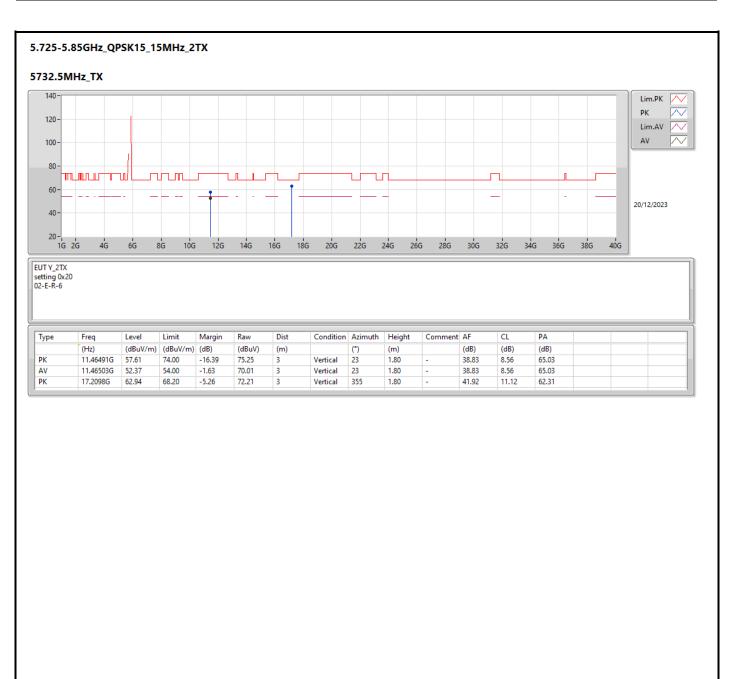




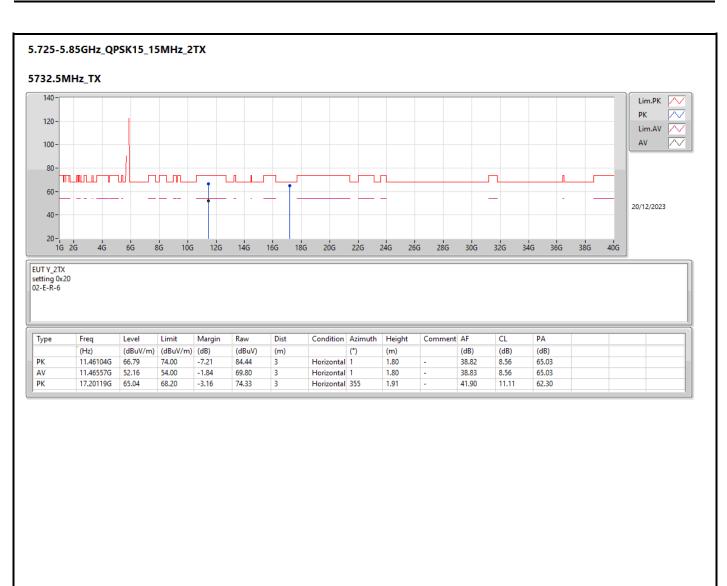
Page No. : 39 of 109

Report No. : FR3D2102



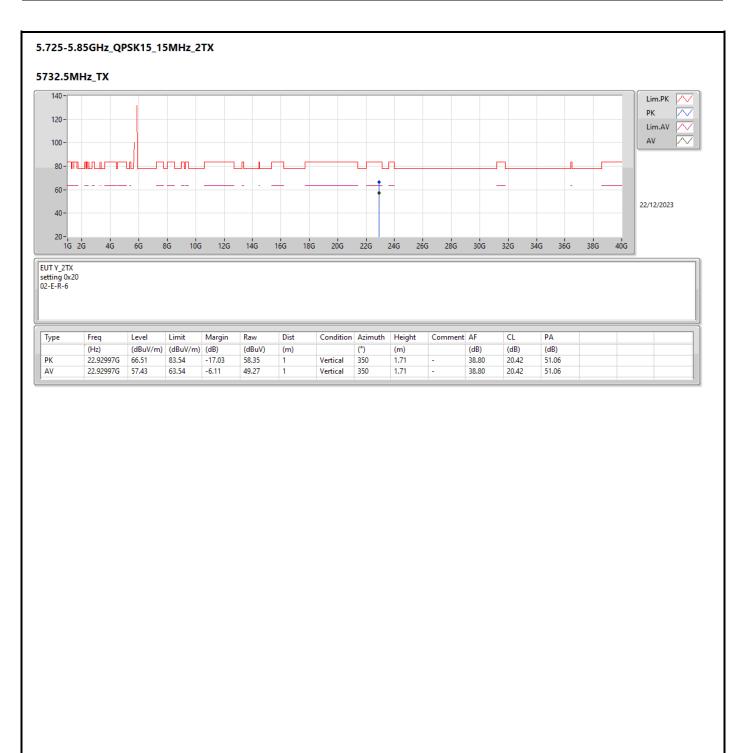




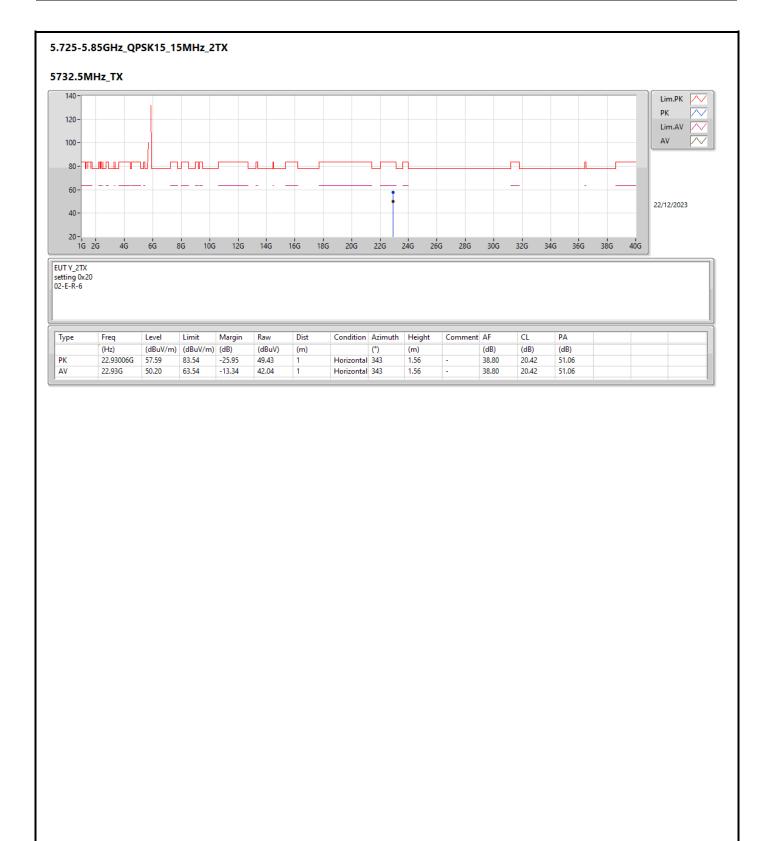


Page No. : 41 of 109 Report No. : FR3D2102





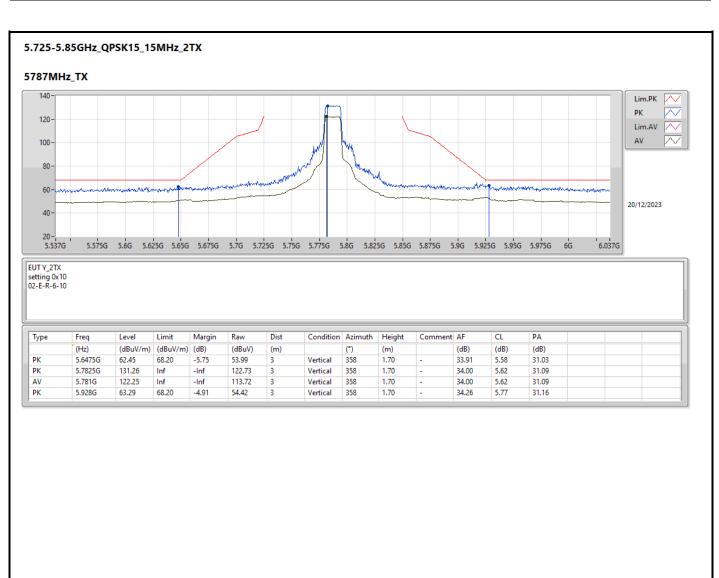




Page No. : 43 of 109

Report No. : FR3D2102

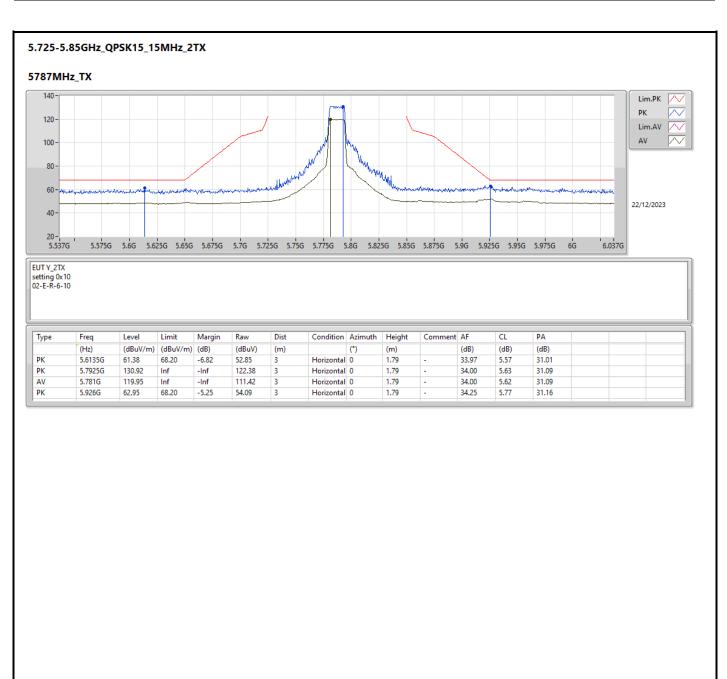




Page No. : 44 of 109

Report No. : FR3D2102

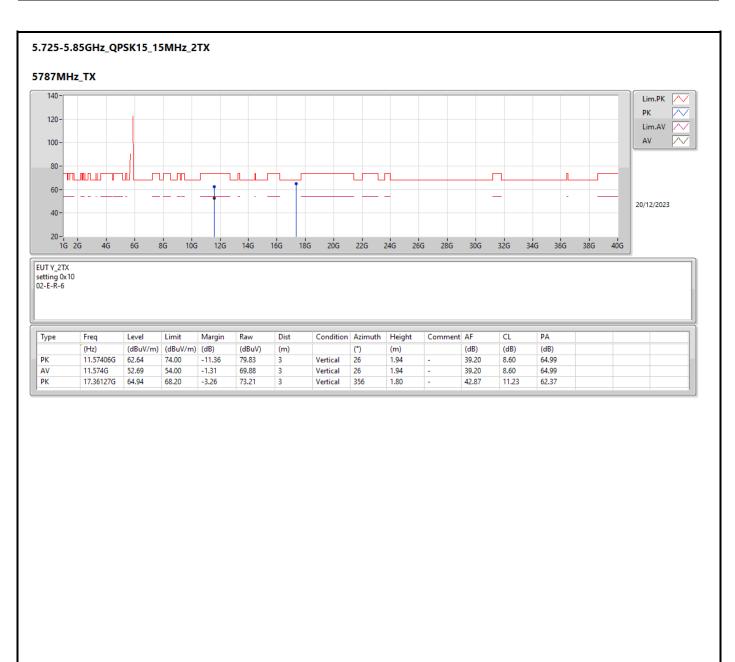




Page No. : 45 of 109

Report No. : FR3D2102

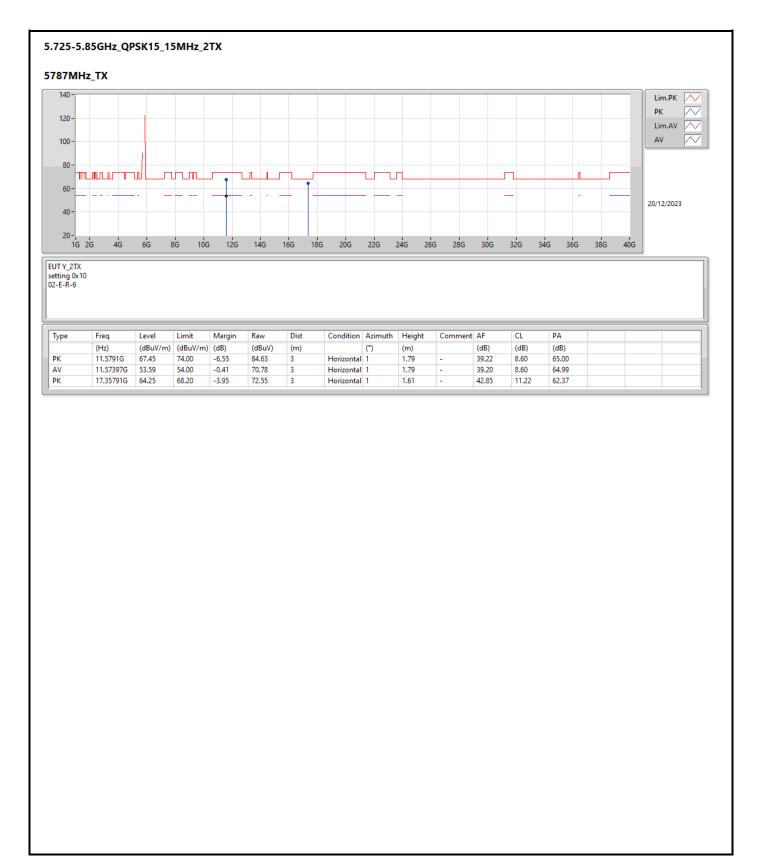


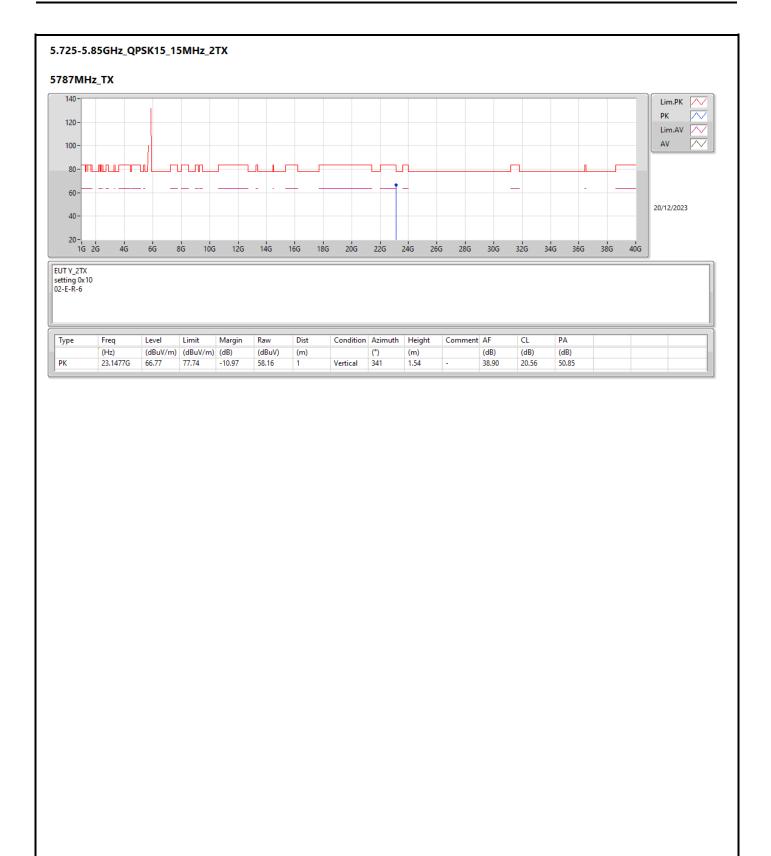


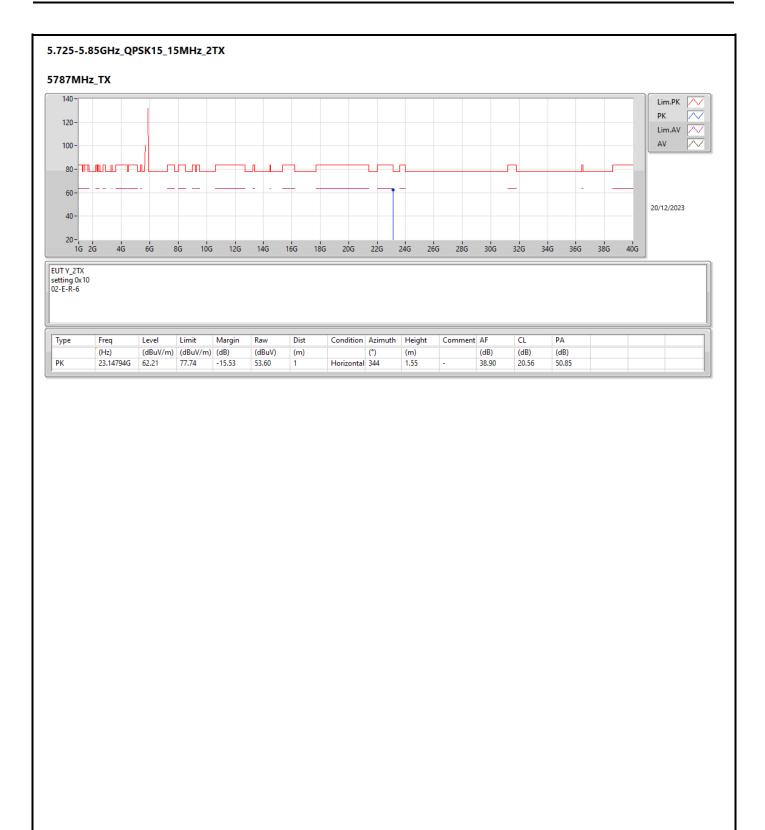
Page No. : 46 of 109

Report No. : FR3D2102

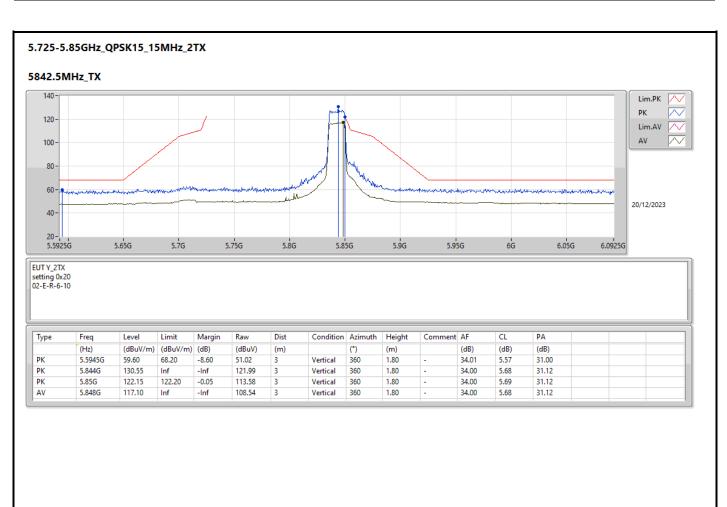






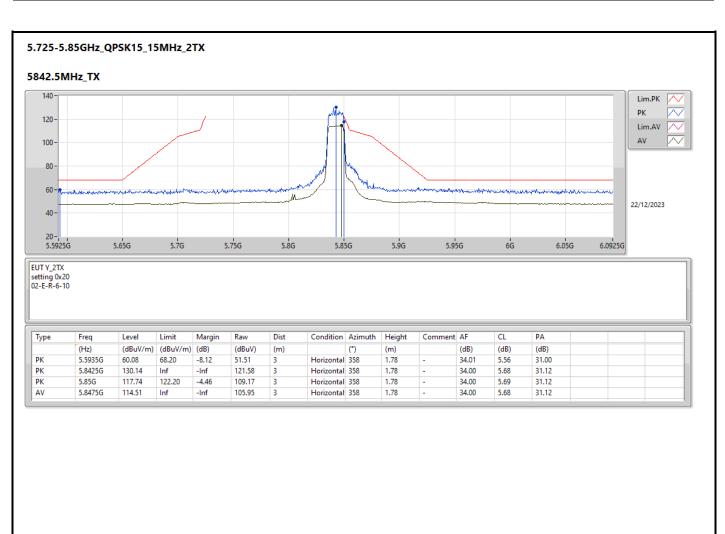






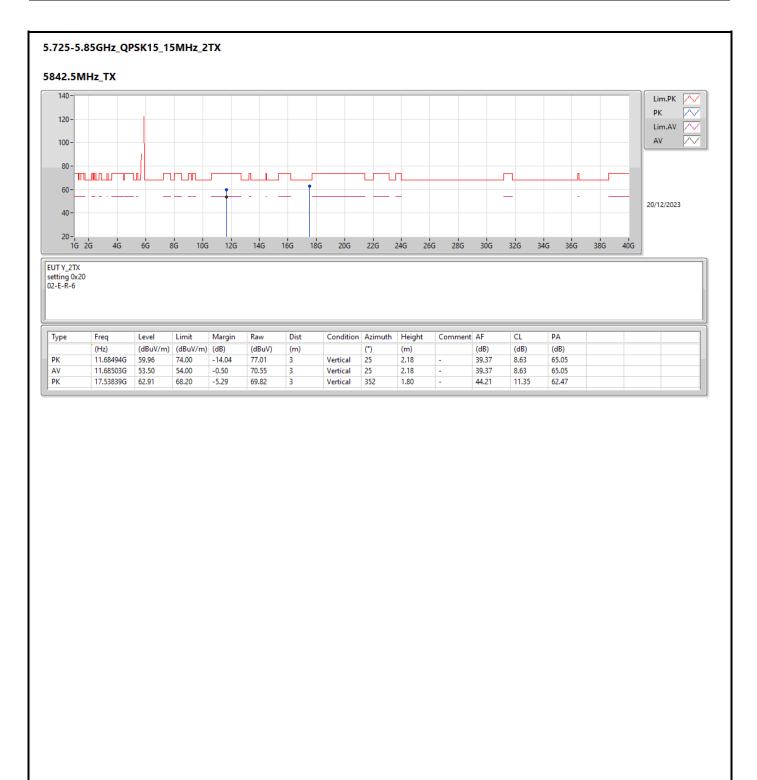
Page No. : 50 of 109 Report No. : FR3D2102





Page No. : 51 of 109
Report No. : FR3D2102

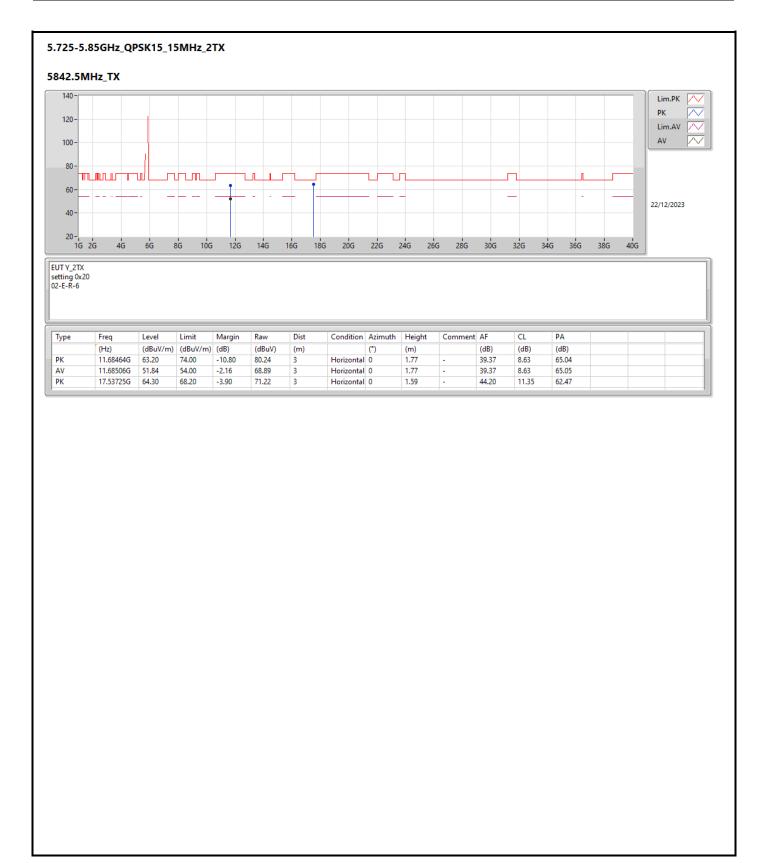


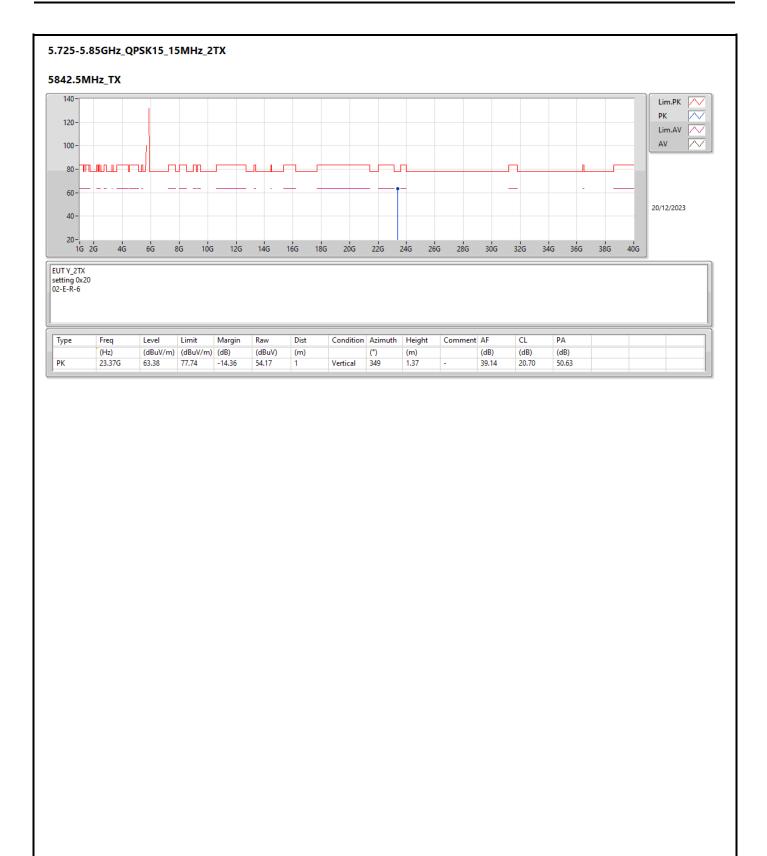


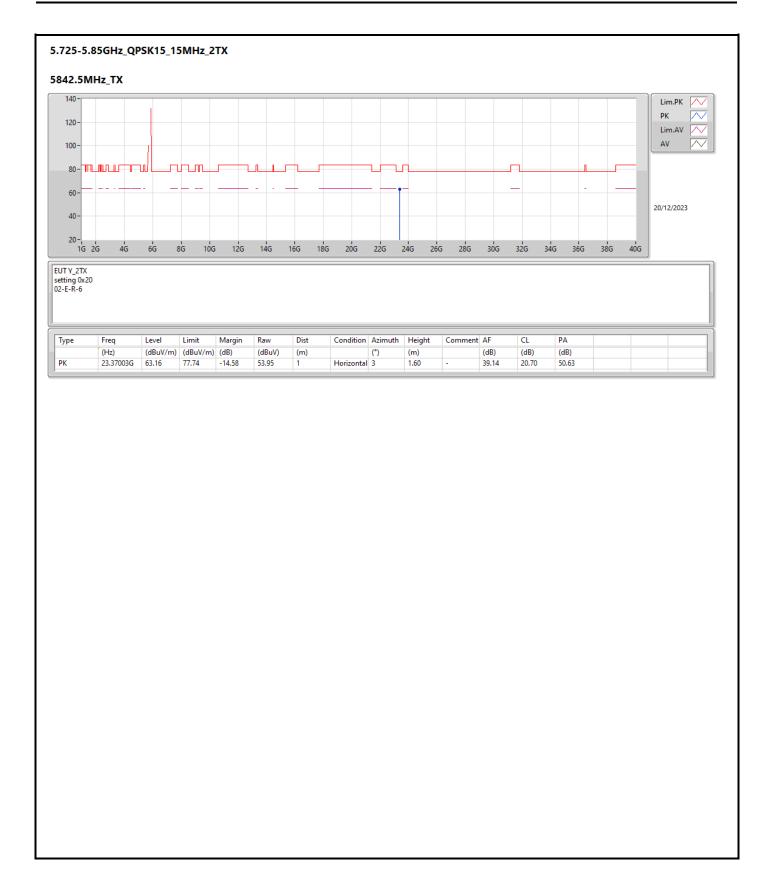
Page No. : 52 of 109

Report No. : FR3D2102

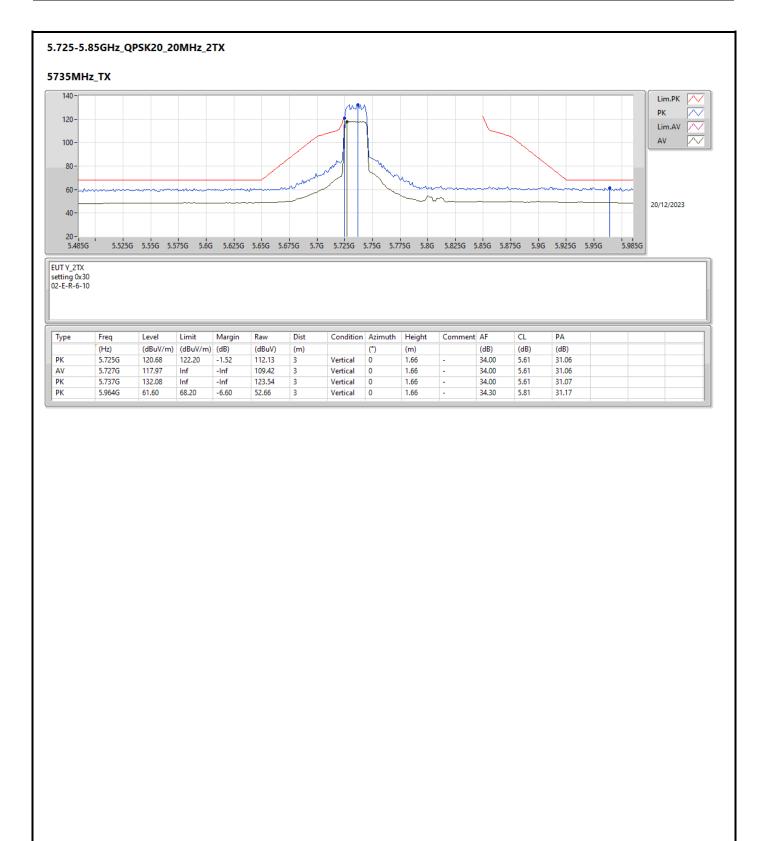




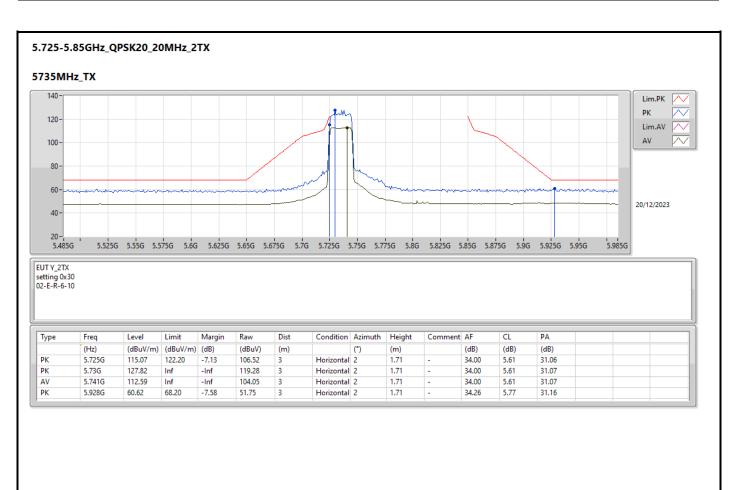








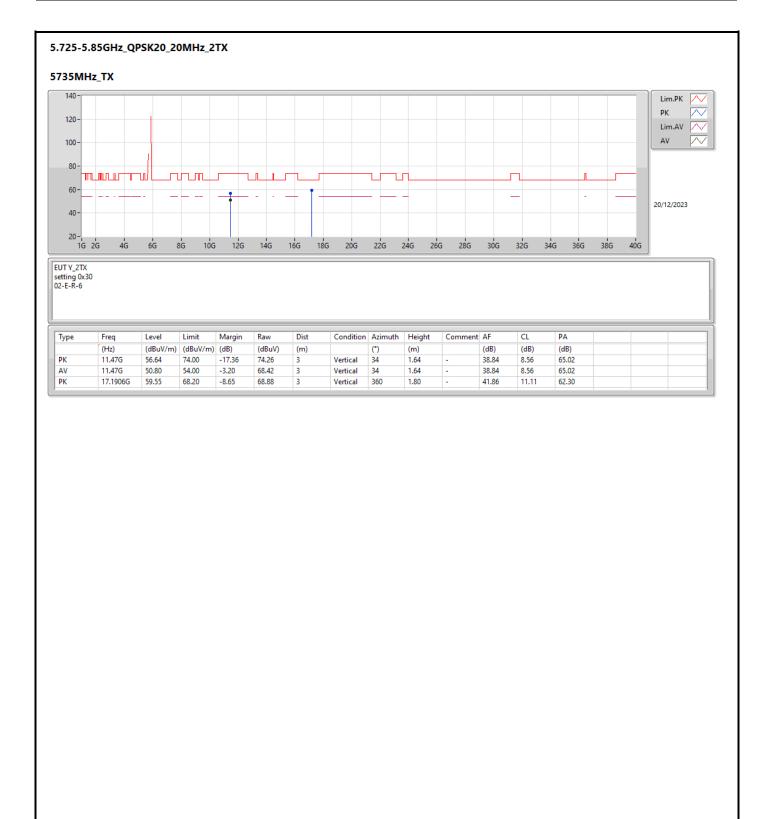




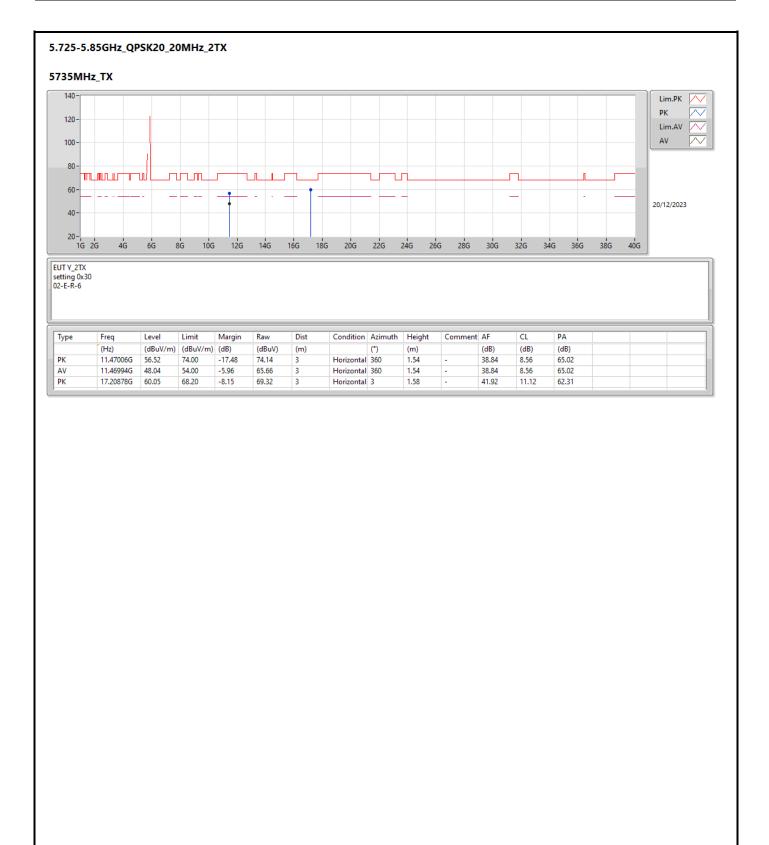
Page No. : 57 of 109

Report No. : FR3D2102

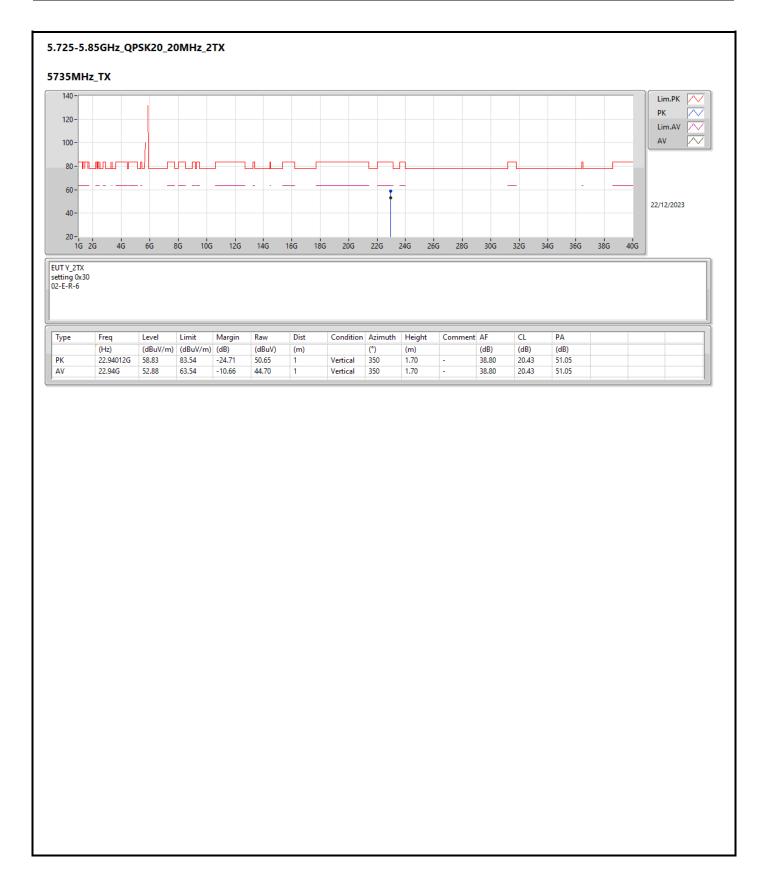




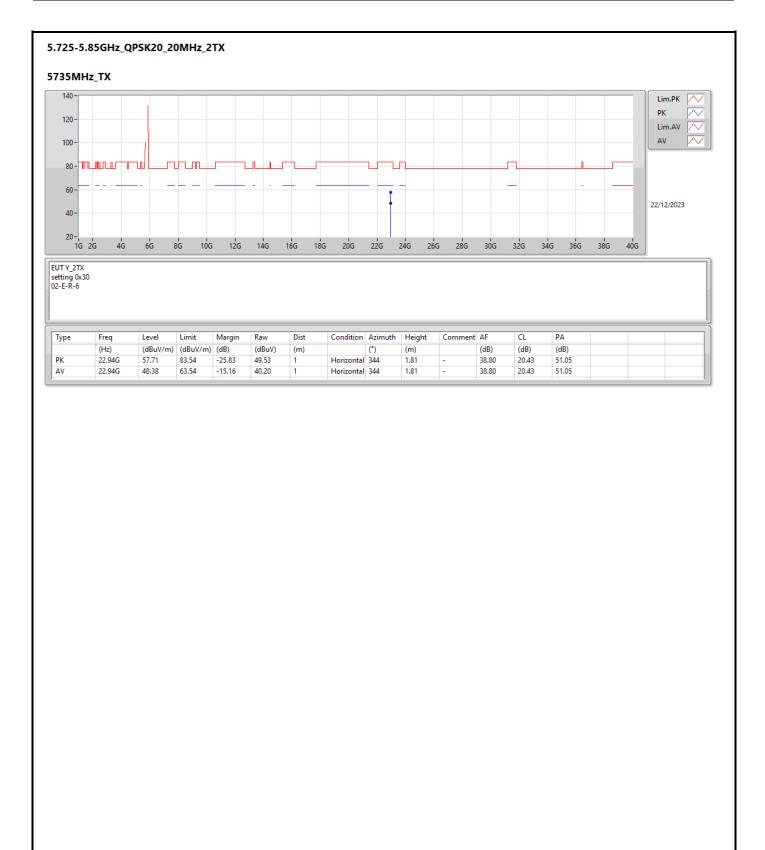




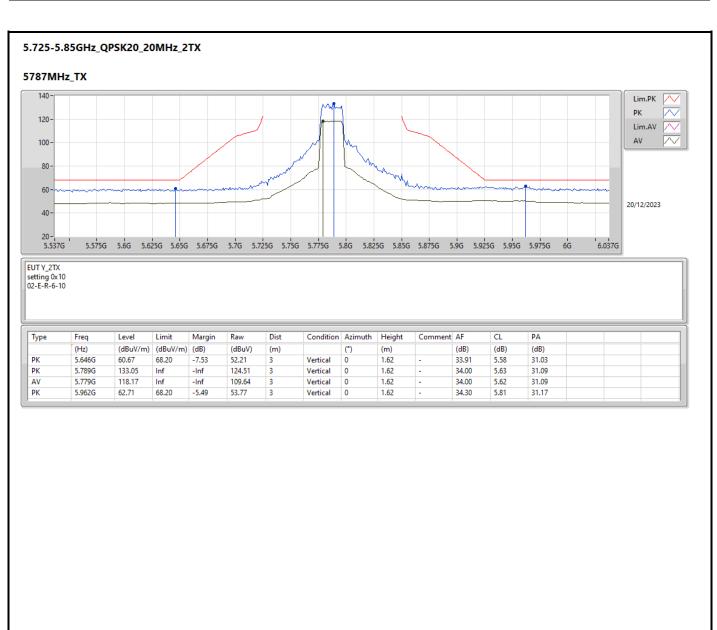




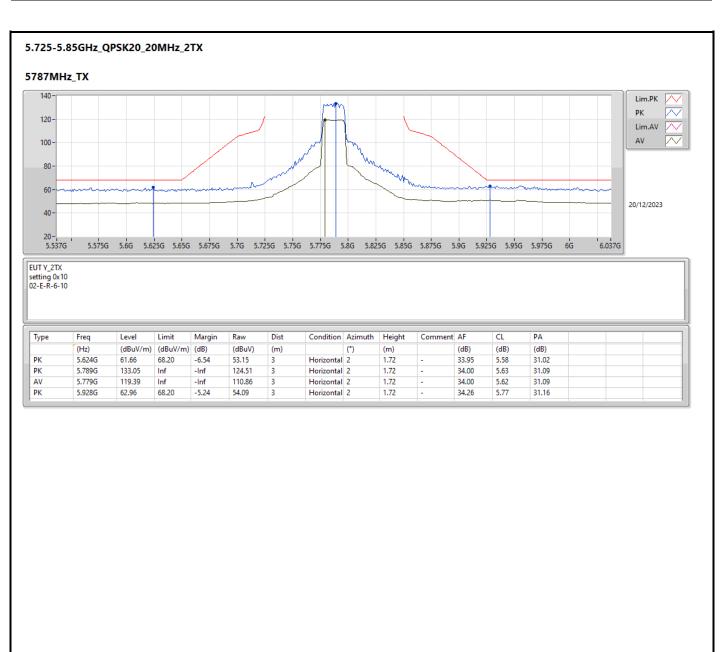








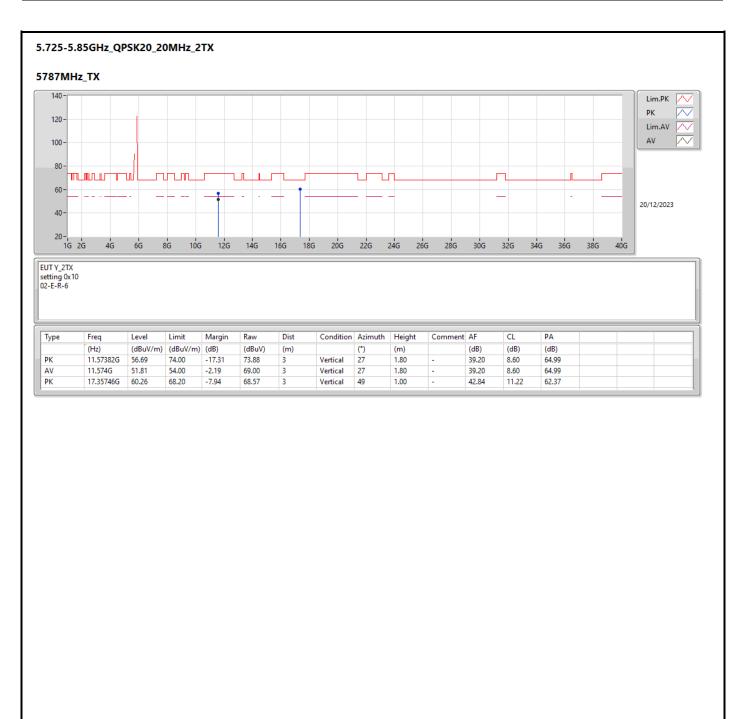




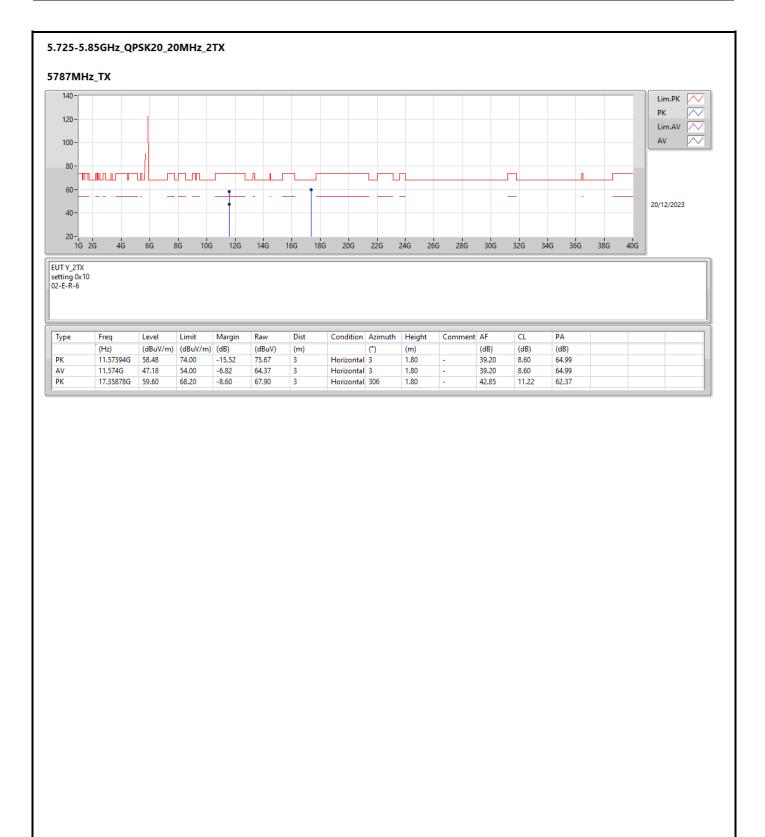
Page No. : 63 of 109

Report No. : FR3D2102

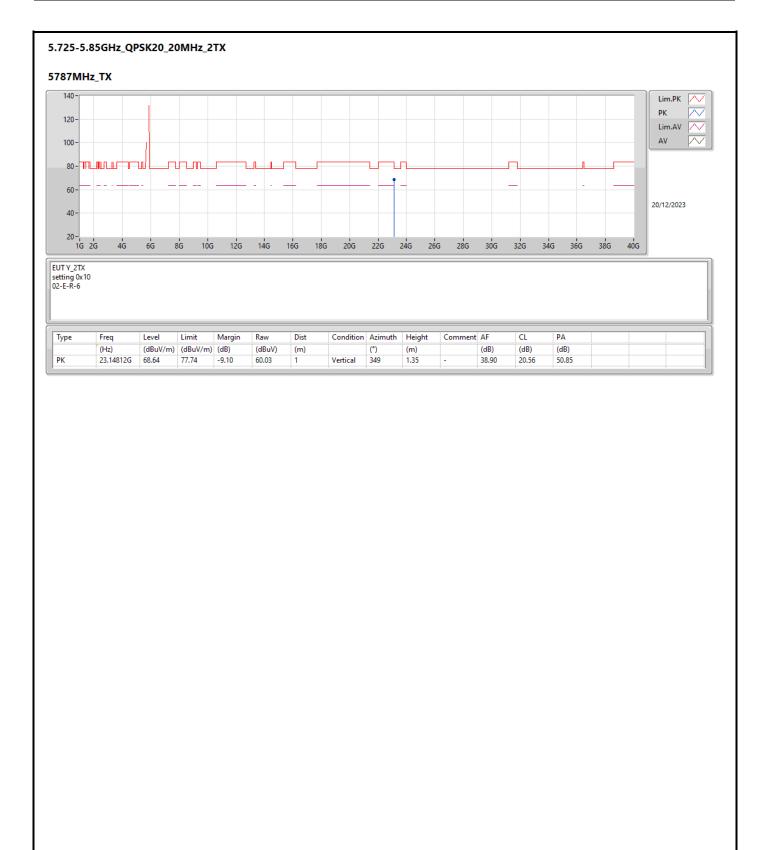


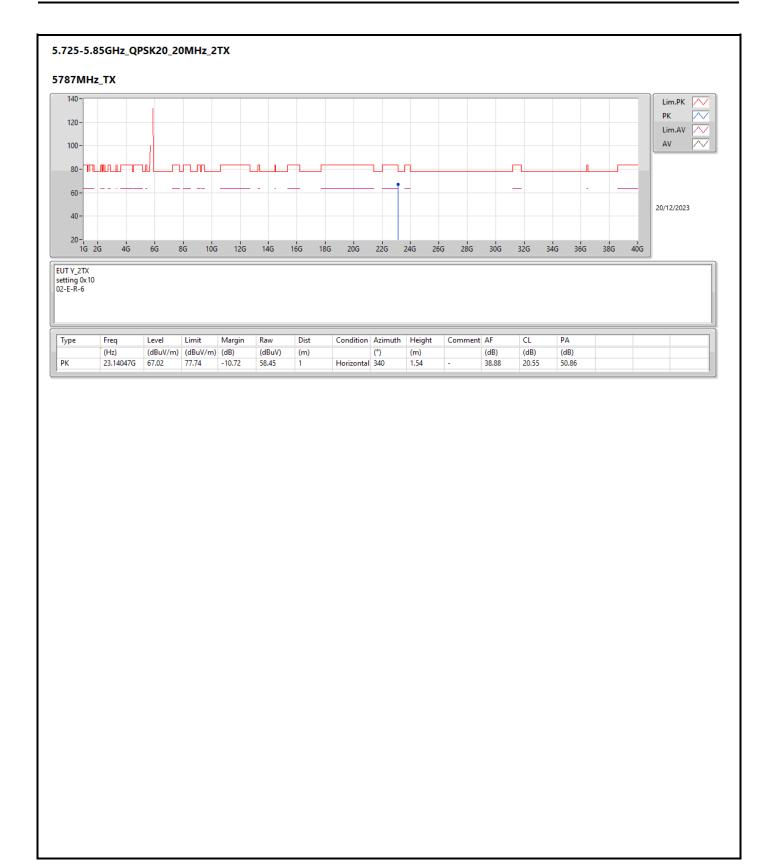




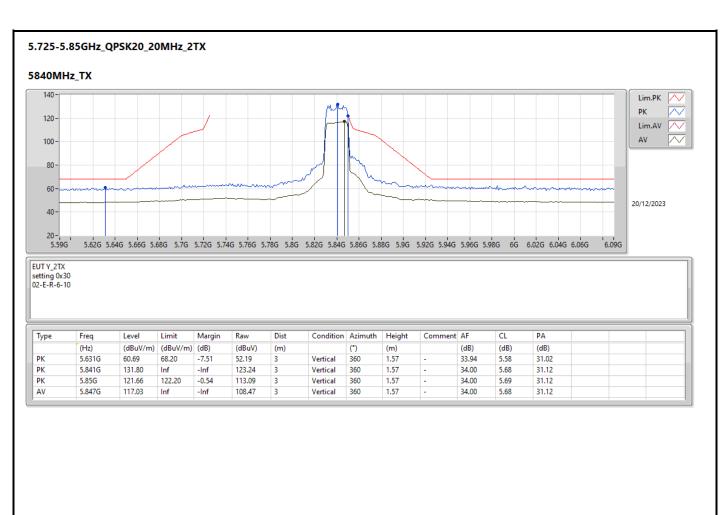




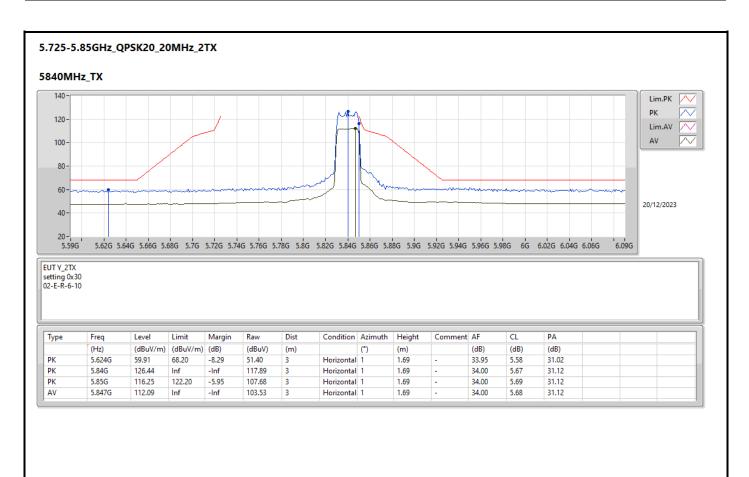








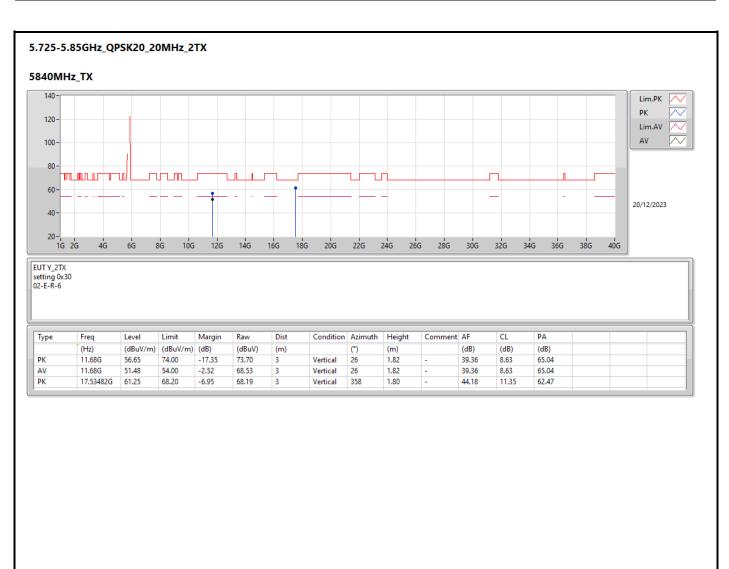




Page No. : 69 of 109

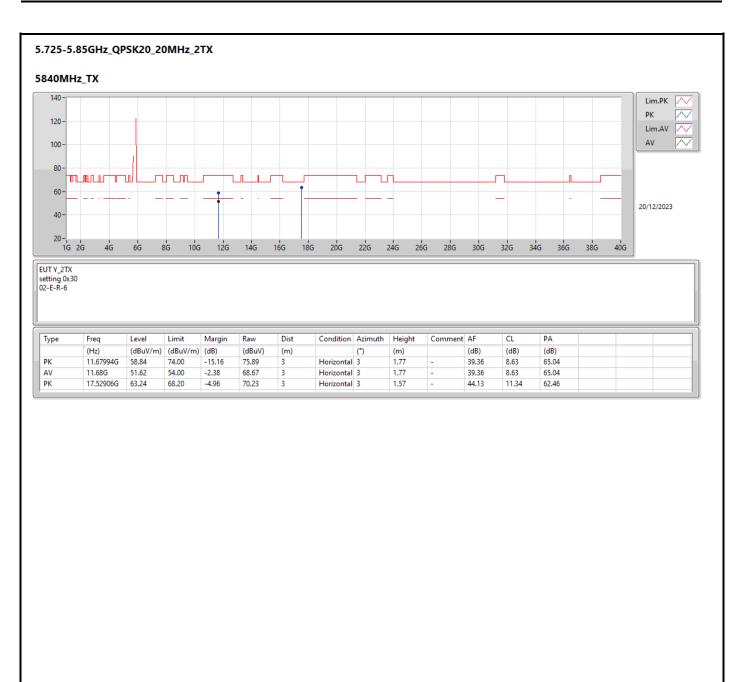
Report No. : FR3D2102



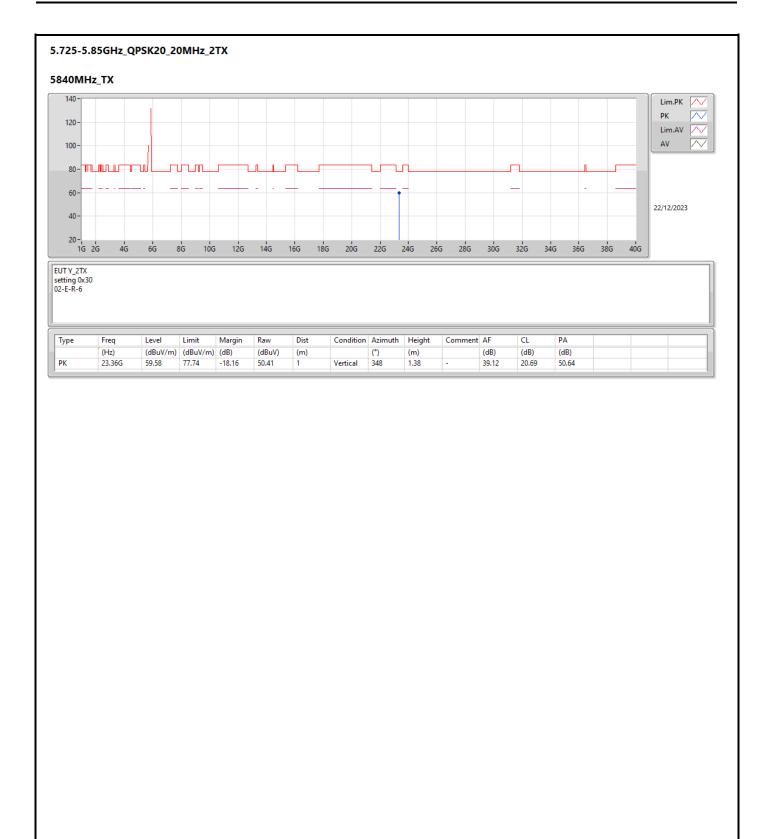


Page No. : 70 of 109 Report No. : FR3D2102

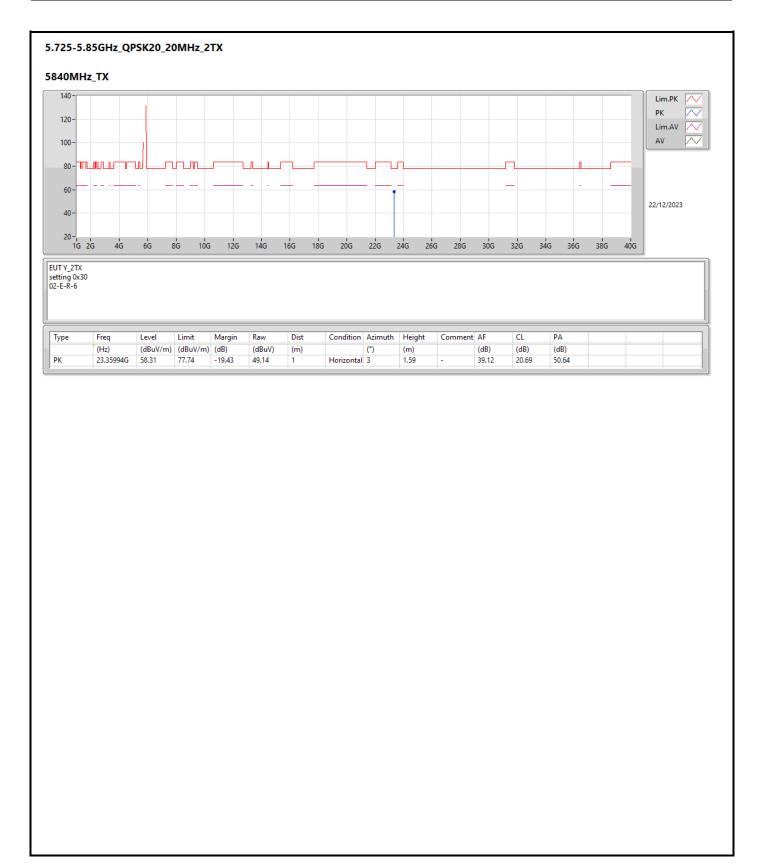




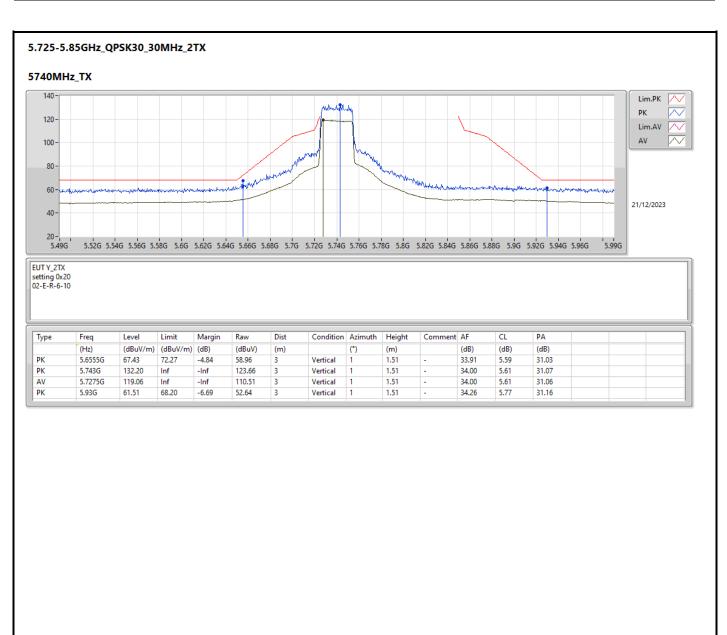
Page No. : 71 of 109
Report No. : FR3D2102



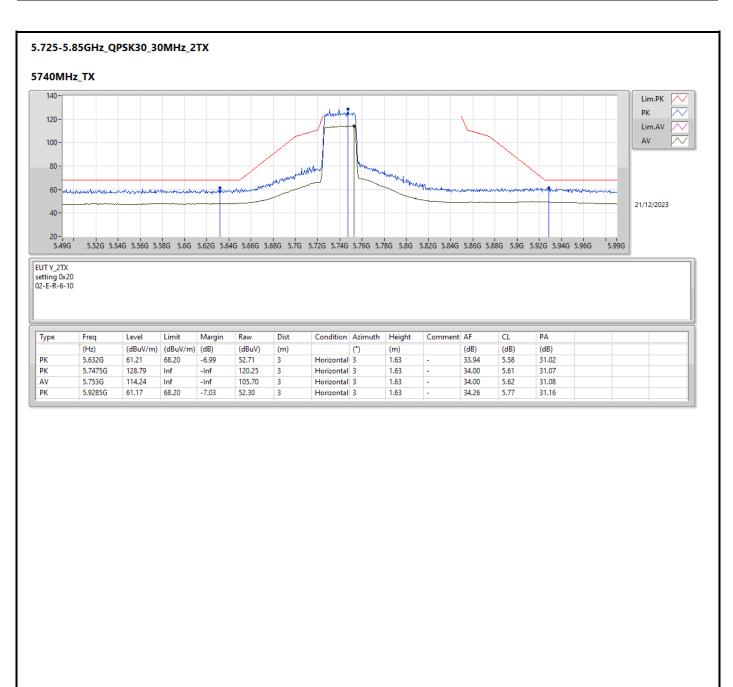




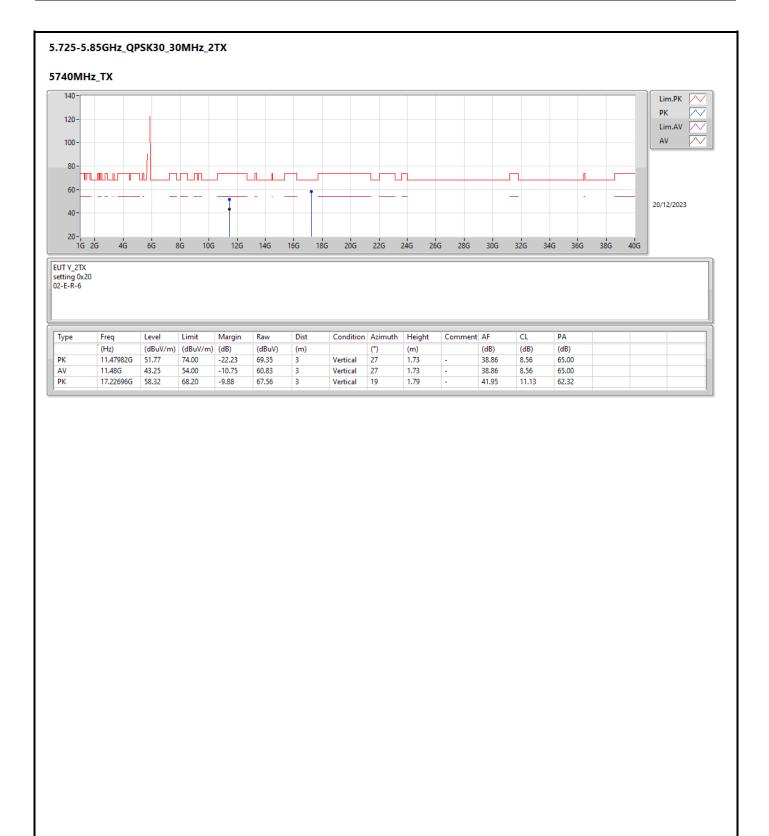




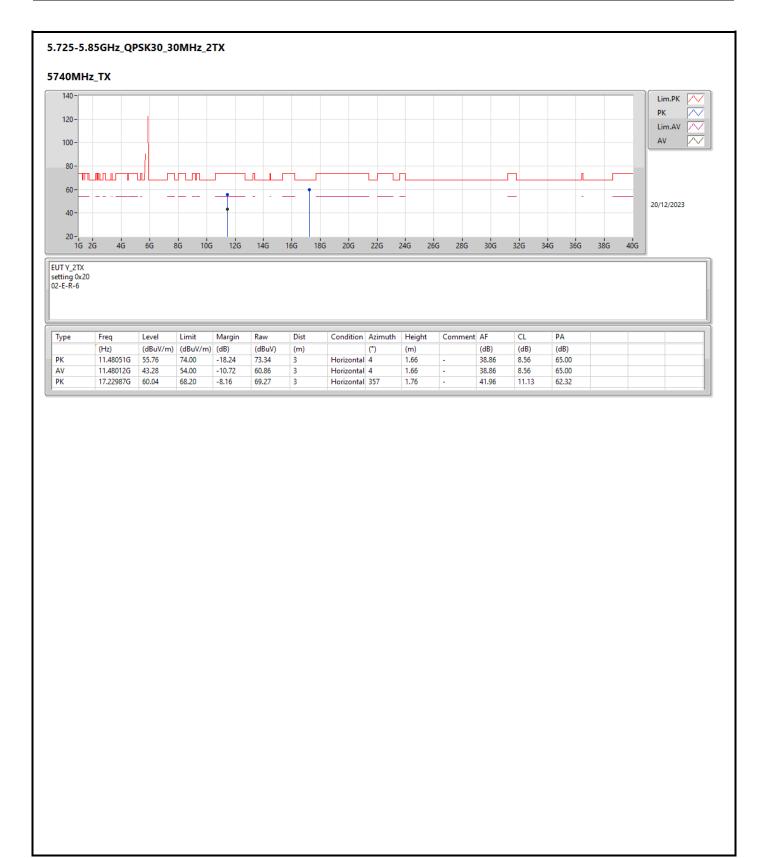




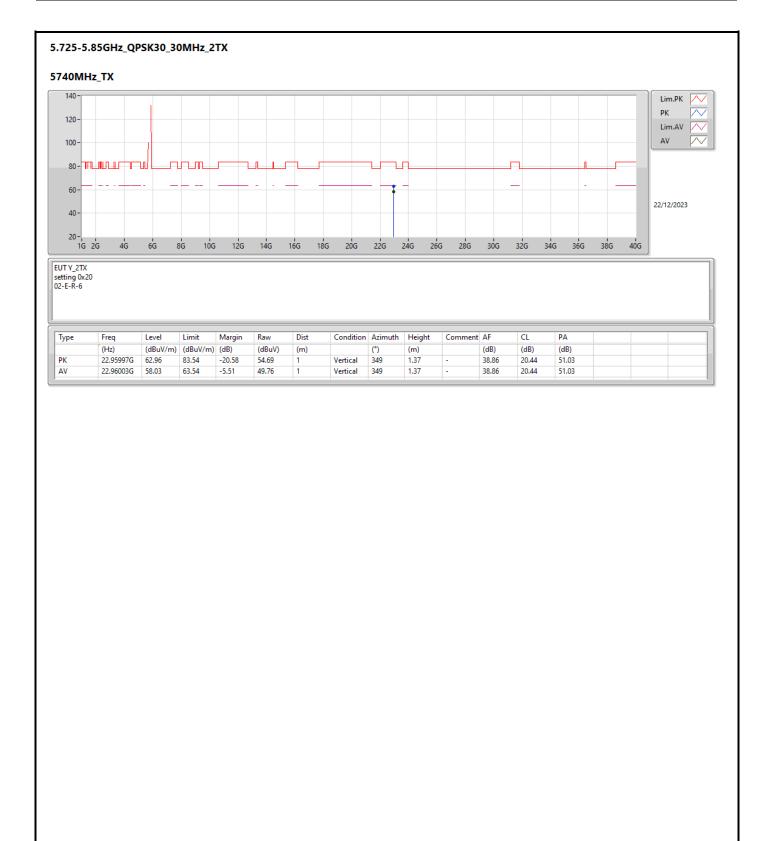








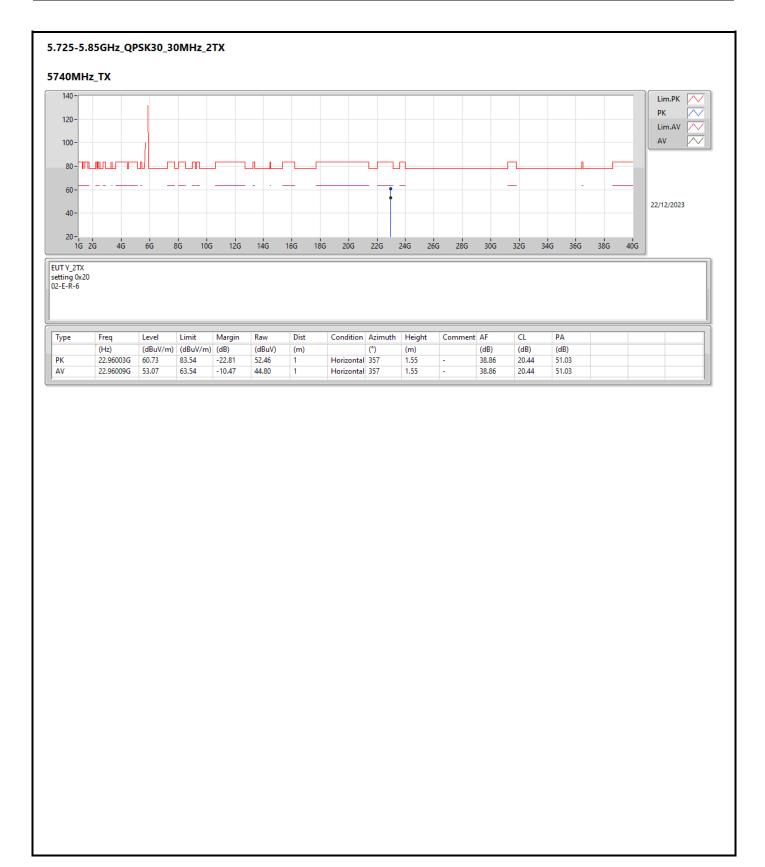




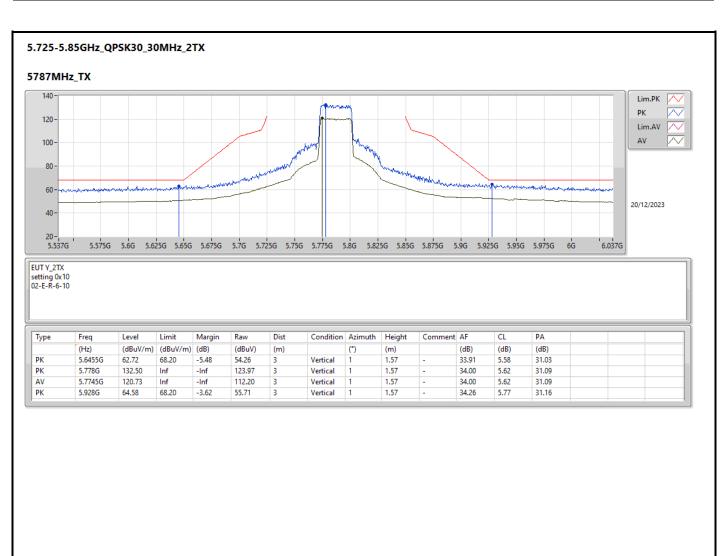
Page No. : 78 of 109

Report No. : FR3D2102





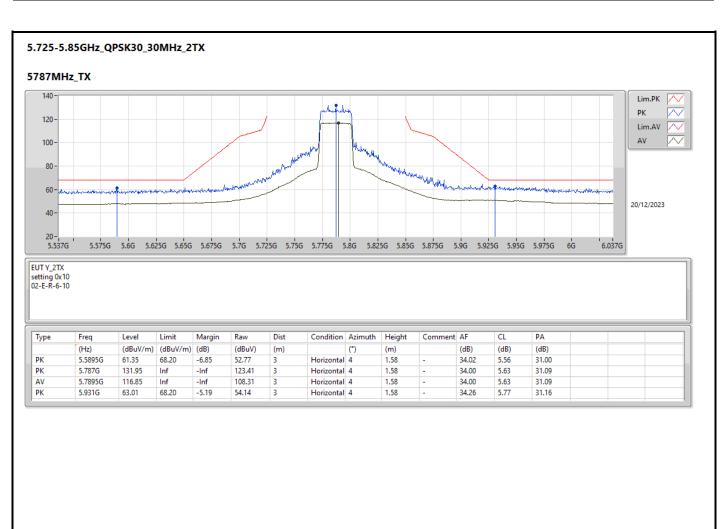




Page No. : 80 of 109

Report No. : FR3D2102

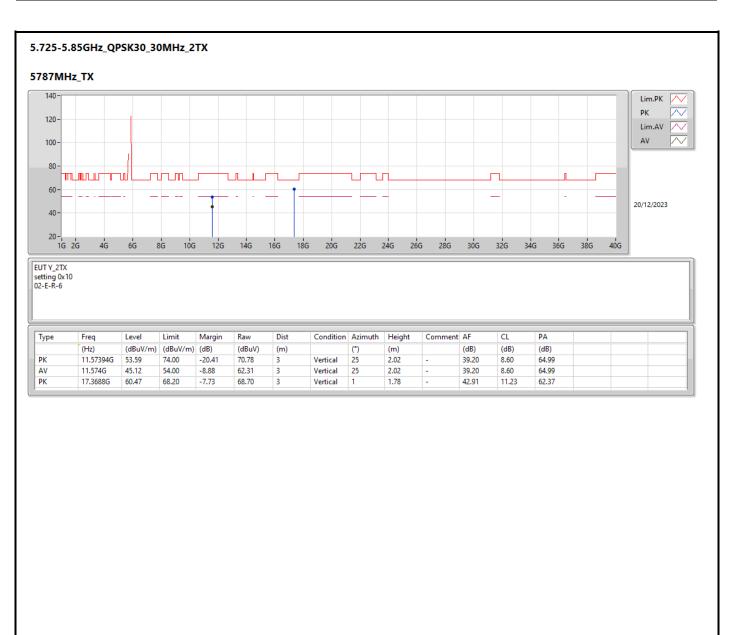




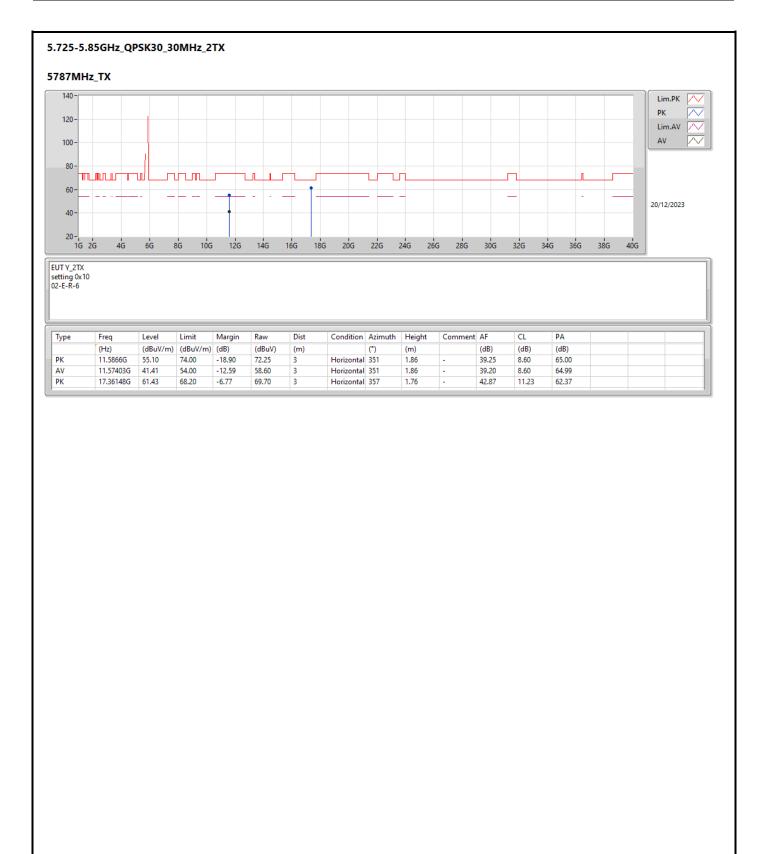
Page No. : 81 of 109

Report No. : FR3D2102

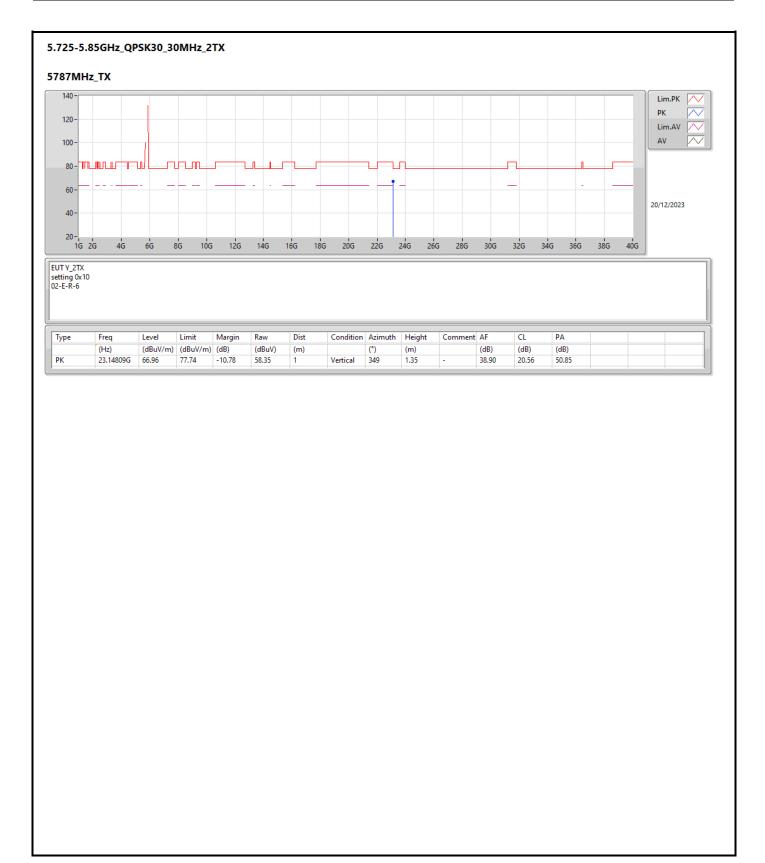




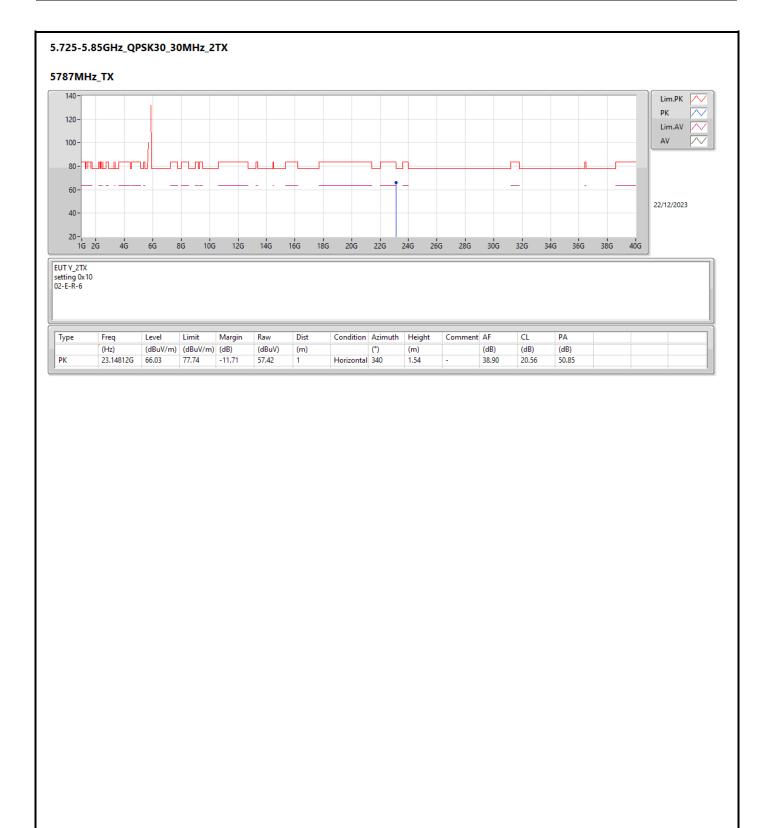




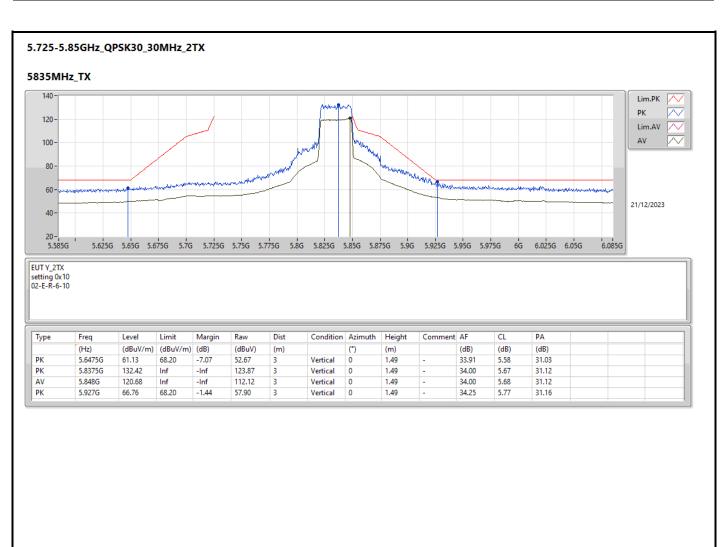




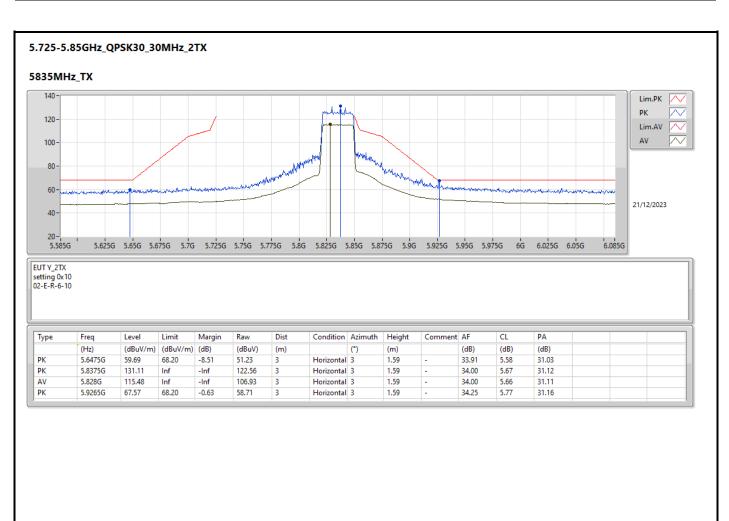








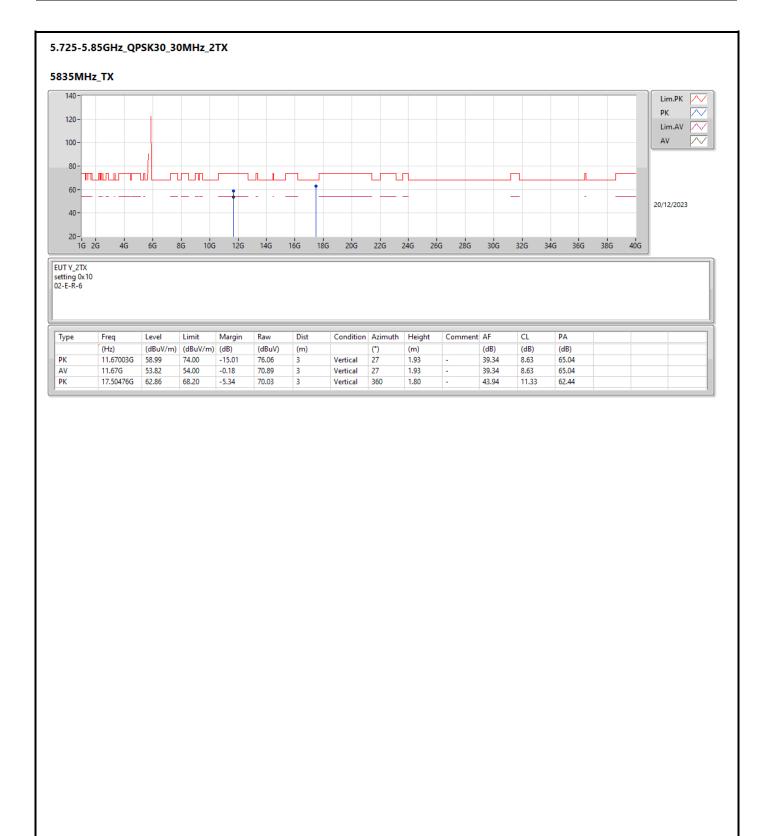




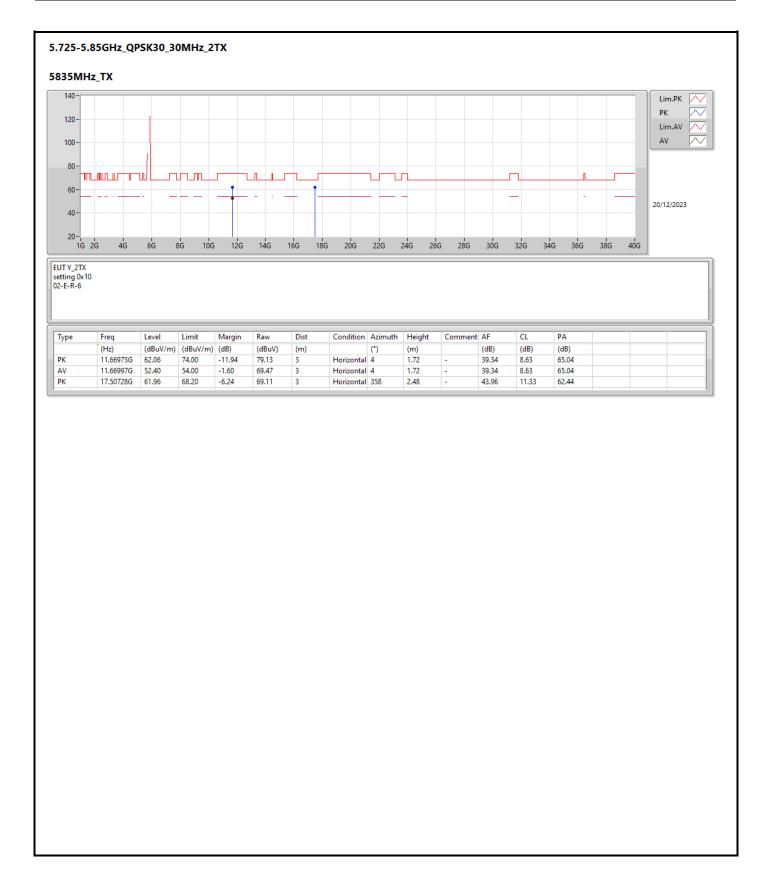
Page No. : 87 of 109

Report No. : FR3D2102

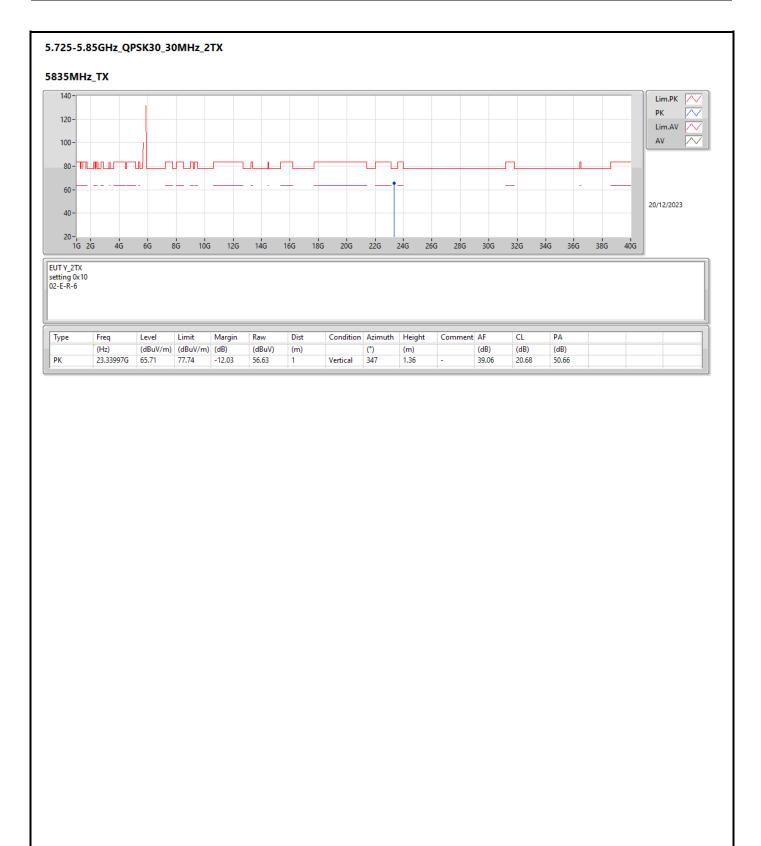


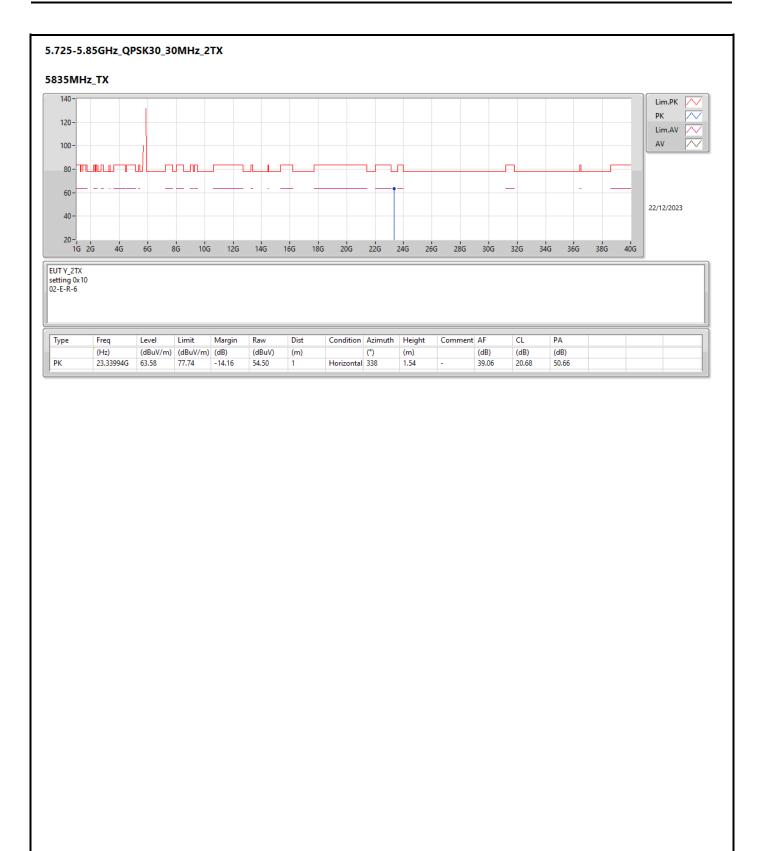




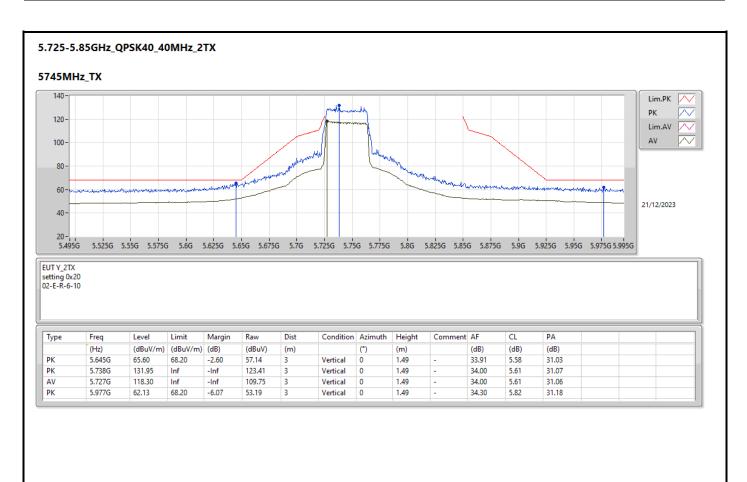








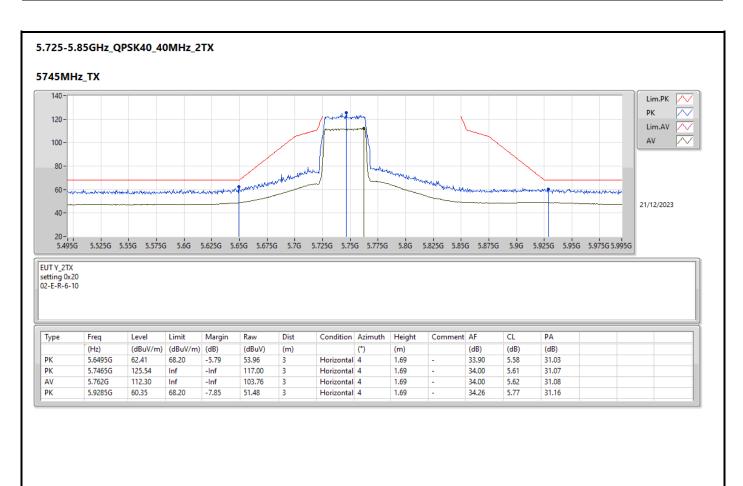




Page No. : 92 of 109

Report No. : FR3D2102

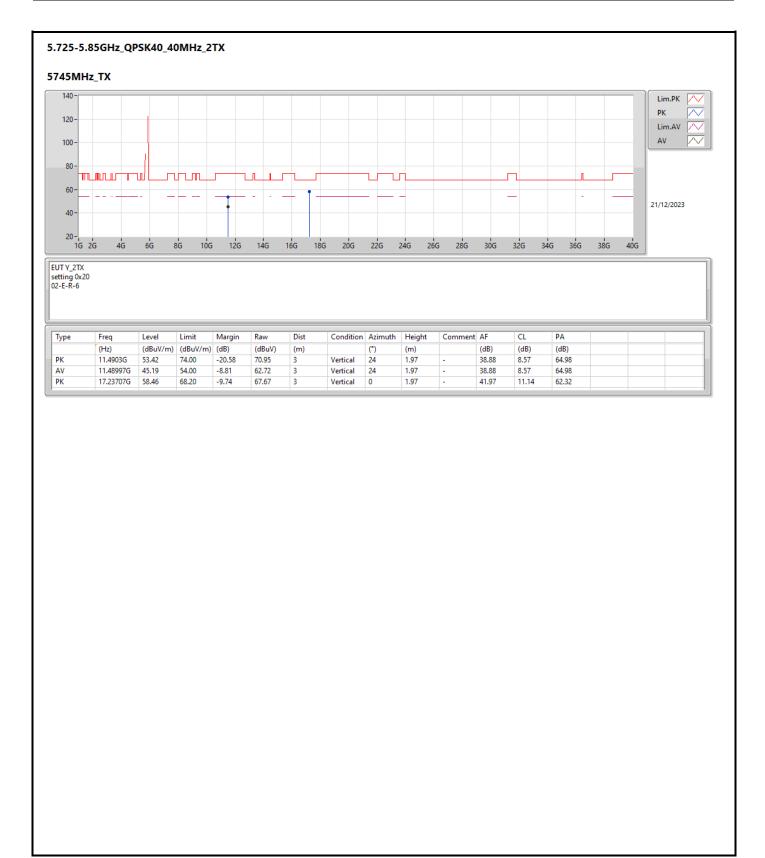




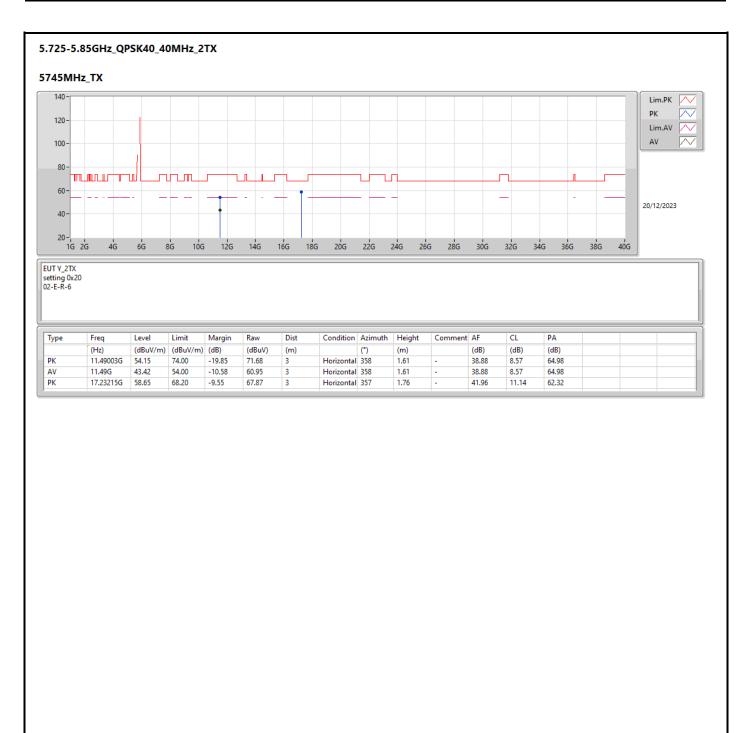
Page No. : 93 of 109

Report No. : FR3D2102



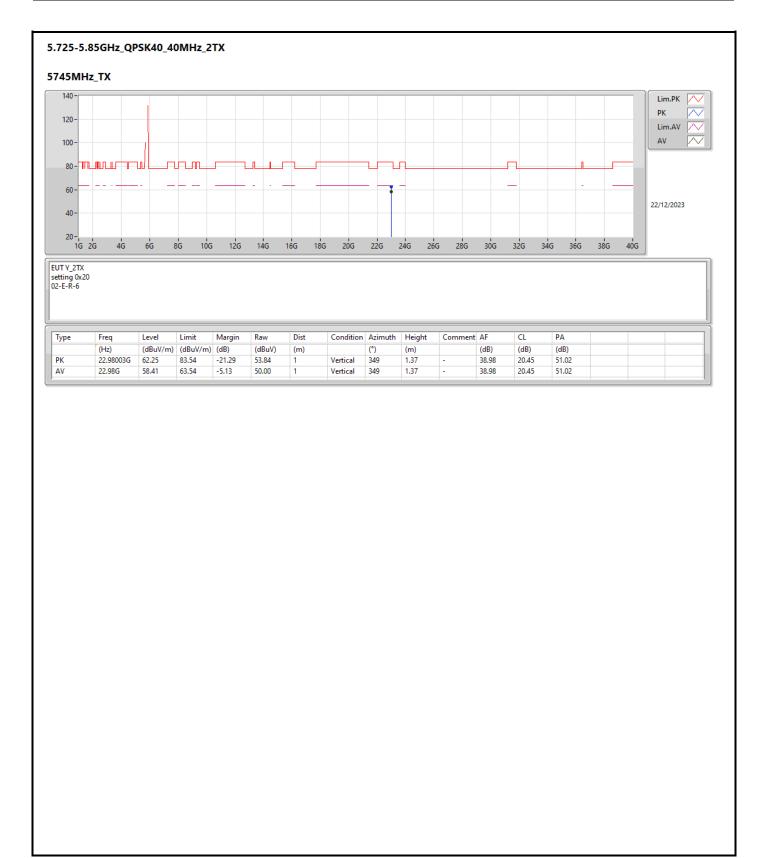




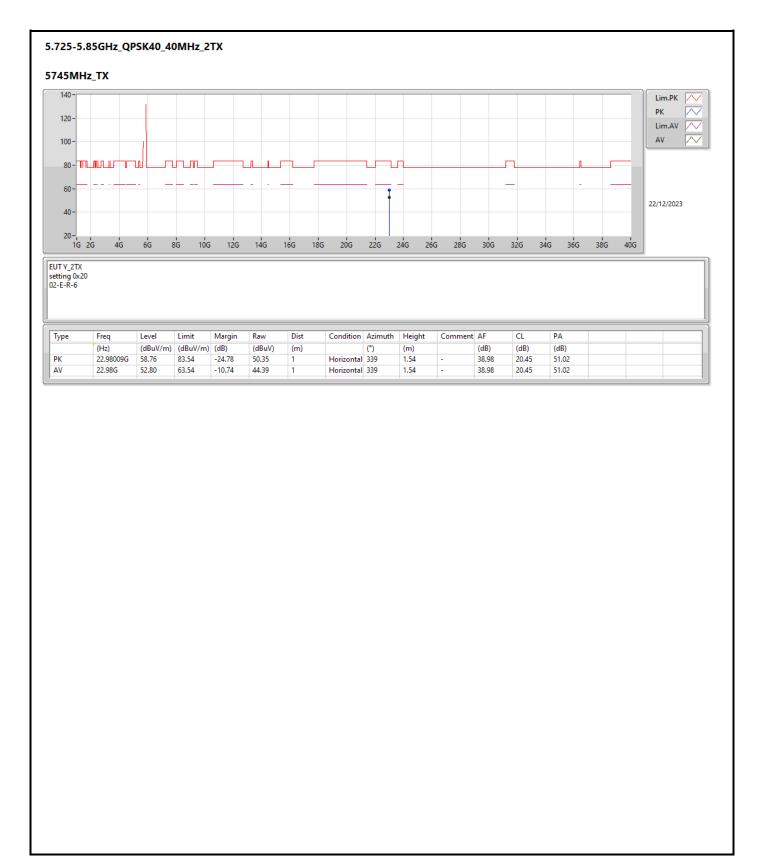


Page No. : 95 of 109 Report No. : FR3D2102

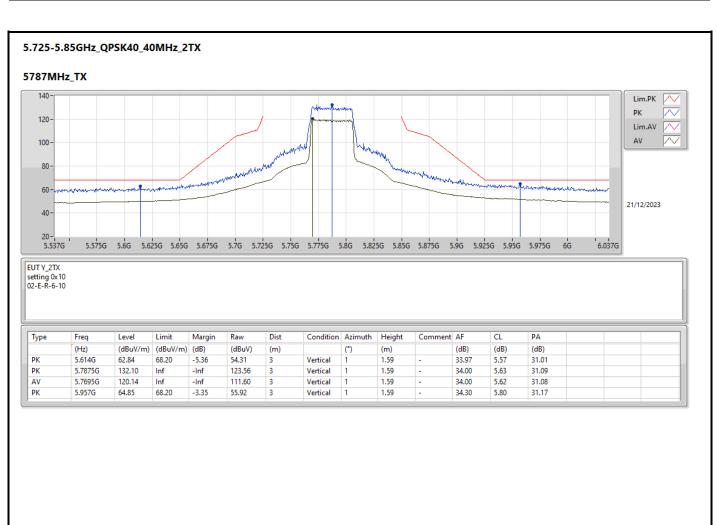








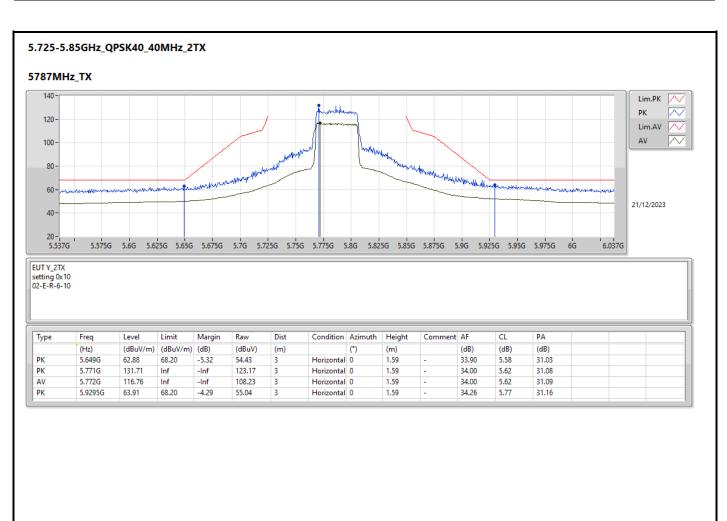




Page No. : 98 of 109

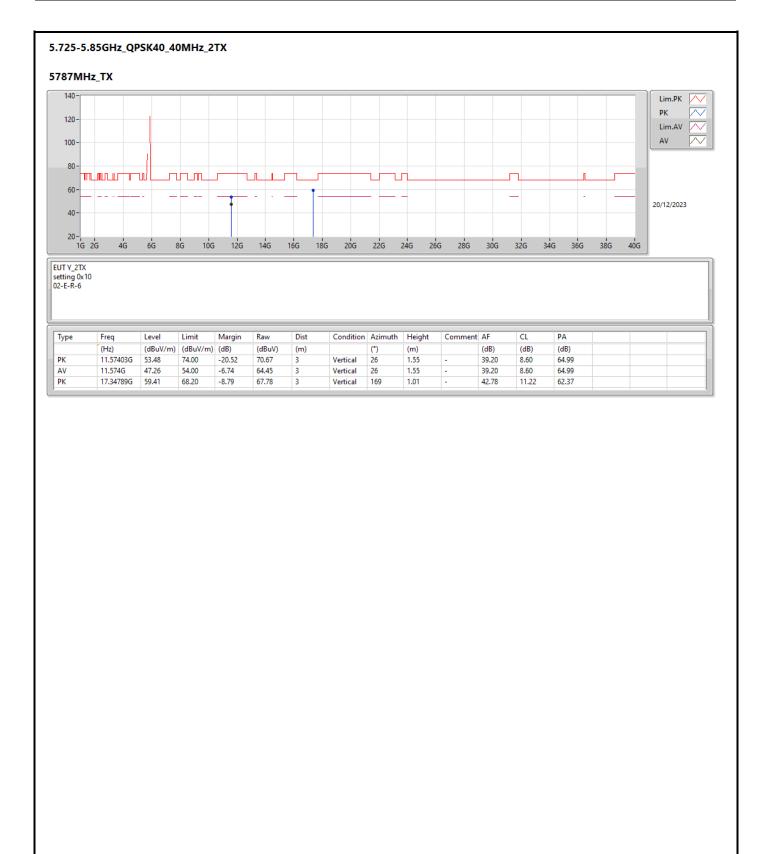
Report No. : FR3D2102





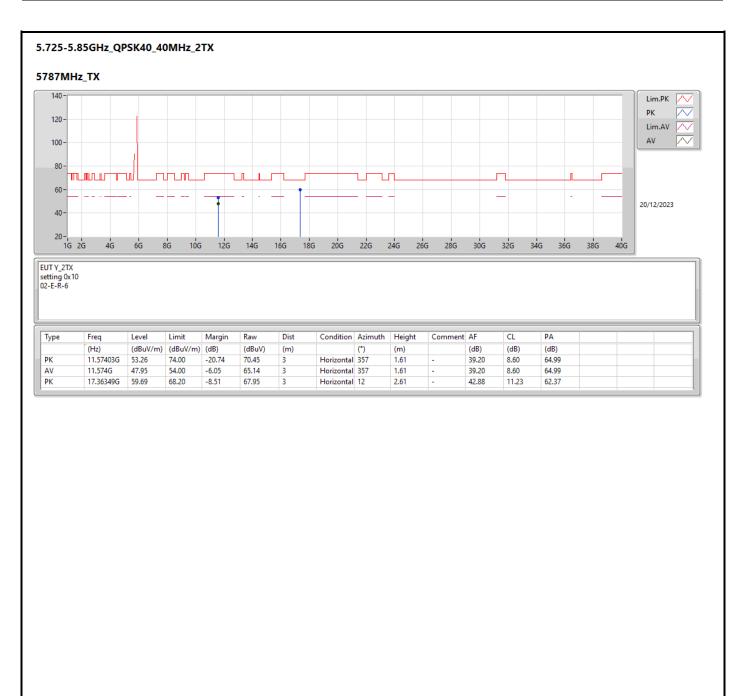
Page No. : 99 of 109 Report No. : FR3D2102





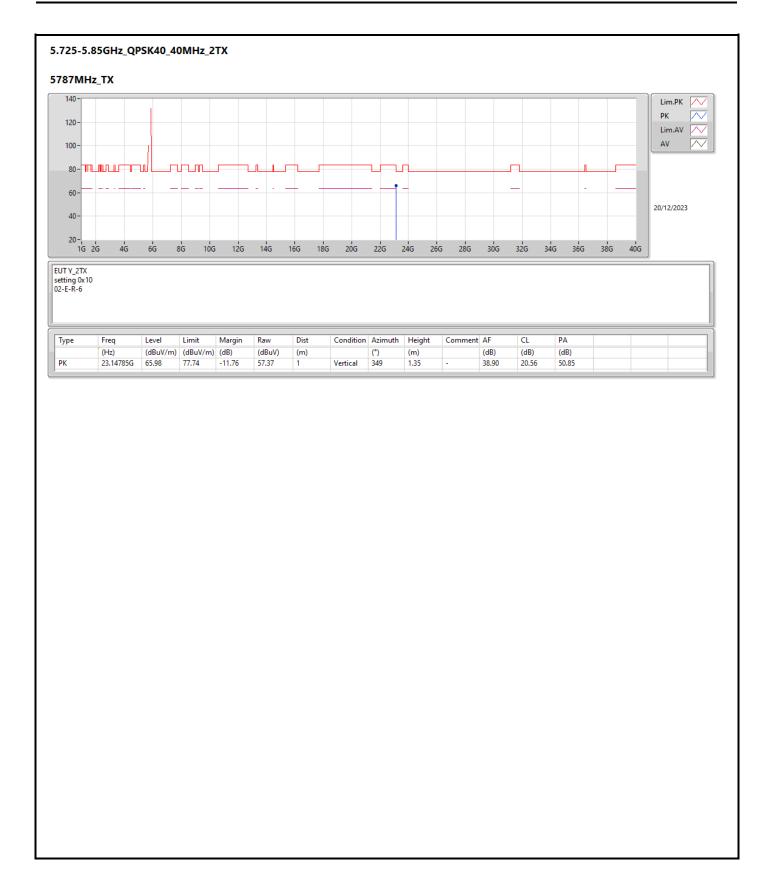
Page No. : 100 of 109 Report No. : FR3D2102



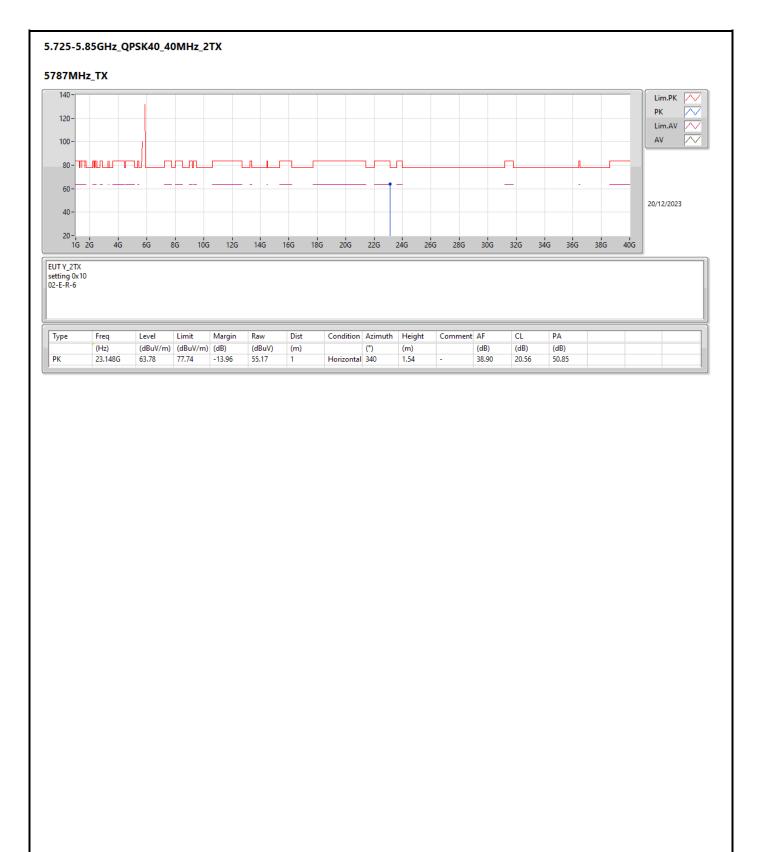


Page No. : 101 of 109

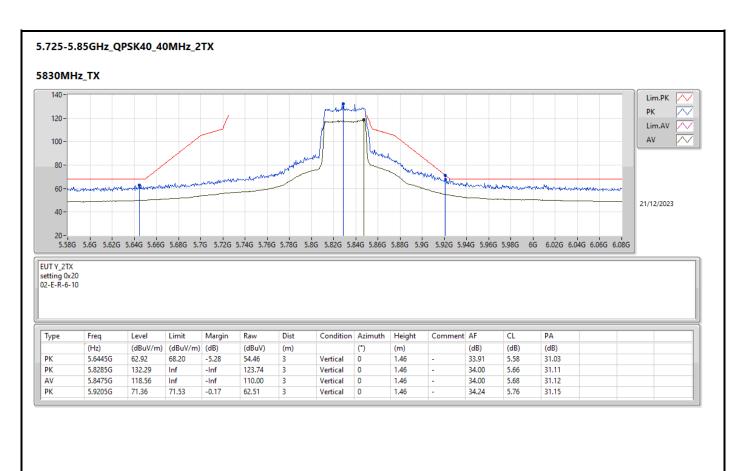
Report No. : FR3D2102





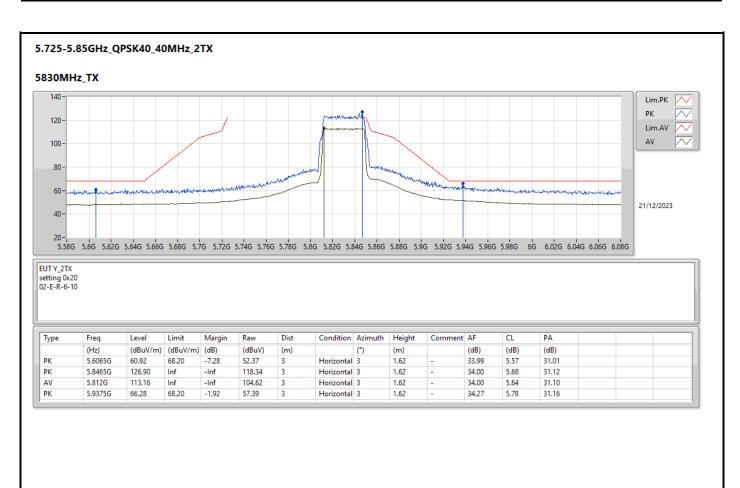






Page No. : 104 of 109 Report No. : FR3D2102





Page No. : 105 of 109 Report No. : FR3D2102



