

Product Name: Smart Phone	Report No: ITEZA2-202400259RF3
Product Model: S200, S200 S, S200 SE, S200 E, S200 X, S200 Plus, S200 Ultra, S200 Max, S200 XS, S200 X Pro, S200 X Plus, S200 X Max, S200 Mini, S200 Note, S200 Air, S200 Lite	Security Classification: Open
Version: V1.0	Total Page:119

TIRT Testing Report

Prepared By:	Checked By:	Approved By:	
Aaron Long	Stone Tang	Joky Wang	
<i>Aaron Long</i>	<i>Stone Tang</i>	<i>Joky Wang</i>	

FCC Radio Test Report

FCC ID: 2AX4YS200

According to

47 CFR FCC Part 15, Subpart C(Section 15.247)

ANSI C63.10:2013

Applicant:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China
Manufacturer:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China
Sample No:	1000040010
Product Name:	Smart Phone
Brand Name:	DOOGEE
Model No.:	S200, S200 S, S200 SE, S200 E, S200 X, S200 Plus, S200 Ultra, S200 Max, S200 XS, S200 X Pro, S200 X Plus, S200 X Max, S200 Mini, S200 Note, S200 Air, S200 Lite
Test No.:	S200

Date of Receipt:	2024/07/02
Date of Test:	2024/07/02~2024/07/14
Issued Date:	2024/07/30
Testing Lab:	TIRT

Note: This report shall not be reproduced except in full, without the written approval of Beijing TIRT Technology Service Co.,Ltd Shenzhen.Laboratory.

This document may be altered or revised by Beijing TIRT Technology Service Co.,Ltd Shenzhen. Laboratory.Personnel only, and shall be noted in the revision section of the document. The test results of this report relate only to the tested sample identified in this report.

Table of Contents**Page**

REPORT ISSUED HISTORY	5
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	8
2 . GENERAL INFORMATION	9
2.1 GENERAL DESCRIPTION OF EUT	9
2.2 DESCRIPTION OF TEST MODES	11
2.3 DUTY CYCLE	13
2.4 BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED	22
2.5 SUPPORT UNITS	22
3 .AC POWER LINE CONDUCTED EMISSIONS	23
3.1 LIMIT	23
3.2 TEST PROCEDURE	23
3.3 DEVIATIONFROMTESTSTANDARD	23
3.4 TESTSETUP	24
3.5 EUT OPERATION CONDITIONS	24
3.6 TEST RESULTS	24
4 . RADIATED EMISSIONS	25
4.1 LIMIT	25
4.2 TEST PROCEDURE	26
4.3 DEVIATIONFROMTESTSTANDARD	27
4.4 TESTSETUP	27
4.5 EUT OPERATIONCONDITIONS	29
4.6 TEST RESULTS - 9 KHZ TO 30MHZ	29
4.7 TEST RESULTS - 30 MHZTO 1000MHZ	29
4.8 TEST RESULTS- ABOVE 1000MHZ	29
5 .BANDWIDTH	30
5.1 LIMIT	30
5.2 TEST PROCEDURE	30
5.3 DEVIATION FROM STANDARD	30
5.4 TEST SETUP	30
5.5 EUT OPERATION CONDITIONS	30
5.6 TESTRESULTS	30

Table of Contents	Page
6 .MAXIMUM OUTPUT POWER	31
6.1 LIMIT	31
6.2 TEST PROCEDURE	31
6.3 DEVIATION FROM STANDARD	31
6.4 TEST SETUP	31
6.5 EUT OPERATION CONDITIONS	31
6.6 TESTRESULTS	31
7 .CONDUCTED SPURIOUS EMISSIONS	32
7.1 LIMIT	32
7.2 TEST PROCEDURE	32
7.3 DEVIATION FROM STANDARD	32
7.4 TEST SETUP	32
7.5 EUT OPERATION CONDITIONS	32
7.6 TESTRESULTS	32
8 .POWER SPECTRAL DENSITY	33
8.1 LIMIT	33
8.2 TEST PROCEDURE	33
8.3 DEVIATION FROM STANDARD	33
8.4 TEST SETUP	33
8.5 EUT OPERATION CONDITIONS	33
8.6 TESTRESULTS	33
9 . MEASUREMENT INSTRUMENTS LIST	34
10 .EUT TEST PHOTO	35
11. PHOTOS OF EUT	37
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	48
APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ	50
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	51
APPENDIXD -RADIATED EMISSION- ABOVE 1000MHZ	53
APPENDIXE - BANDWIDTH	58
APPENDIXF - MAXIMUMOUTPUT POWER	67
APPENDIXG - CONDUCTED SPURIOUS EMISSIONS	77
APPENDIXH - POWER SPECTRAL DENSITY	110

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
ITEZA2-202400259RF3	V1.0	OriginalReport.	2024.07.30	Valid

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	-----
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS	-----
15.247(a)(2)	Bandwidth	APPENDIX E	PASS	-----
15.247(b)(3)	Maximum Output Power	APPENDIX F	PASS	-----
15.247(d)	Conducted Spurious Emissions	APPENDIX G	PASS	-----
15.247(e)	Power Spectral Density	APPENDIX H	PASS	-----
15.203	Antenna Requirement	-----	PASS	Note(2)

Note:

- (1) "N/A" denotes test is not applicable in this test report.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.
- (3) The device supports WLAN MIMO CDD mode

1.1 TEST FACILITY

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	104 Building C, Xinmingsheng Industrial Park No.132, Zhangge Old Village East Zone, Zhangge Community, Fucheng Street, Longhua District, Shenzhen, Guangdong, P. R. China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Accredited Lab.Designation Number:	CN1366
FCC Test Firm Registration Number:	820690
Telephone:	+86-0755-27087573

1.2 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))

The TIRT measurement uncertainty as below table:

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (30MHz~1GHz)	±4.6dB
Spurious emissions, radiated (1GHz~18GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temprature	±0.7°C
Time	±1.2%

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25.1°C	52%	DC 11V from adapter	Stone Tang
Radiated Emissions-9kHz to 30 MHz	24.5°C	50%	DC 3.87V from battery or DC 11V from adapter	Stone Tang
Radiated Emissions-30MHz to 1000MHz	24.2°C	53%	DC 3.87V from battery or DC 11V from adapter	Stone Tang
Radiated Emissions-Above 1000MHz	26.0°C	53%	DC 3.87V from battery or DC 11V from adapter	Stone Tang
Bandwidth	25.0°C	56%	DC 3.87V from battery or DC 11V from adapter	Stone Tang
Maximum Output Power	24.9°C	54%	AC 120V/60Hz from Adapter	Stone Tang
Conducted Spurious Emissions	25.1°C	62%	DC 3.87V from battery or DC 11V from adapter	Stone Tang
Power Spectral Density	26.0°C	60%	DC 3.87V from battery or DC 11V from adapter	Stone Tang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Phone
Brand Name	DOOGEE
Test Model	S200
Series Model	S200, S200 S, S200 SE, S200 E, S200 X, S200 Plus, S200 Ultra, S200 Max, S200 XS, S200 X Pro, S200 X Plus, S200 X Max, S200 Mini, S200 Note, S200 Air, S200 Lite
Model Difference(s)	There is no difference except the name of the model
Software Version	DOOGEE-S200-Android14.0-20240614_20240614-1857
Hardware Version	M162-MUB-V2
Power Rating	DC 3.87V from battery or DC 11V from adapter
Operation Frequency	2412 MHz~ 2462 MHz
Modulation Type	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)
Maximum Output Average Power	IEEE 802.11N20MIMO: 14.44dBm (0.027797W)

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20)							
CH03 - CH09 for IEEE 802.11n(HT40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Antenna Specification:

Ant.	Manufactured	Model Name	Antenna Type	Connector	Gain (dBi)
1	Shenzhen 3Good Wireless Communication Co.,LTD..	M24P	PIFA	N/A	0.44
2	Shenzhen 3Good Wireless Communication Co.,LTD..	M24P	PIFA	N/A	-3.22

Note:

- The antenna gain is provided by the manufacturer.
- The antenna is for fixed use

4. Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS}=1)$ dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with

G_{ANT} set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

Mode	ANT1(dBi)	ANT2(dBi)	DG for Power (dBi)	DG for PSD(dBi)	Power Limit Reduction (dBi)	PSD Limit Reduction (dBi)
2.4GWIFI	0.44	-3.22	0.44	3.45	0	0

Power Limit Reduction = $DG(Power) - 6dBi$, (min = 0)

PSD Limit Reduction = $DG(PSD) - 6dBi$, (min = 0)

2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1 SISO	TX B Mode Channel 01/06/11 ANT1
Mode 2 SISO	TX G Mode Channel 01/06/11 ANT1
Mode 3 SISO	TX N(HT20) Mode Channel 01/06/11 ANT1
Mode 4 SISO	TX N(HT40) Mode Channel 03/06/09 ANT1
Mode 5 SISO	TX B Mode Channel 01/06/11 ANT2
Mode 6 SISO	TX G Mode Channel 01/06/11 ANT2
Mode 7 SISO	TX N(HT20) Mode Channel 01/06/11 ANT2
Mode 8 SISO	TX N(HT40) Mode Channel 03/06/09 ANT2
Mode 9 MIMO	TX N(HT20) Mode Channel 01/06/11 ANT1+ANT2
Mode 10 MIMO	TX N(HT40) Mode Channel 03/06/09 ANT1+ANT2

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test	
Final Test Mode	Description
Mode 9 MIMO	TX N(HT20) Mode Channel 01 ANT1+ANT2

Radiated emissions test - Below 1GHz	
Final Test Mode	Description
Mode 9 MIMO	TX N(HT20) Mode Channel 01 ANT1+ANT2

Radiated emissions test- Above 1GHz	
Final Test Mode	Description
Mode 9 MIMO	TX N(HT20) Mode Channel 01/06/11 ANT1+ANT2

Final Test Mode	Conducted RF test
Mode 1 SISO	TX B Mode Channel 01/06/11 ANT1
Mode 2 SISO	TX G Mode Channel 01/06/11 ANT1
Mode 3 SISO	TX N(HT20) Mode Channel 01/06/11 ANT1
Mode 4 SISO	TX N(HT40) Mode Channel 03/06/09 ANT1
Mode 5 SISO	TX B Mode Channel 01/06/11 ANT2
Mode 6 SISO	TX G Mode Channel 01/06/11 ANT2
Mode 7 SISO	TX N(HT20) Mode Channel 01/06/11 ANT2
Mode 8 SISO	TX N(HT40) Mode Channel 03/06/09 ANT2
Mode 9 MIMO	TX N(HT20) Mode Channel 01/06/11 ANT1+ANT2
Mode 10 MIMO	TX N(HT40) Mode Channel 03/06/09 ANT1+ANT2

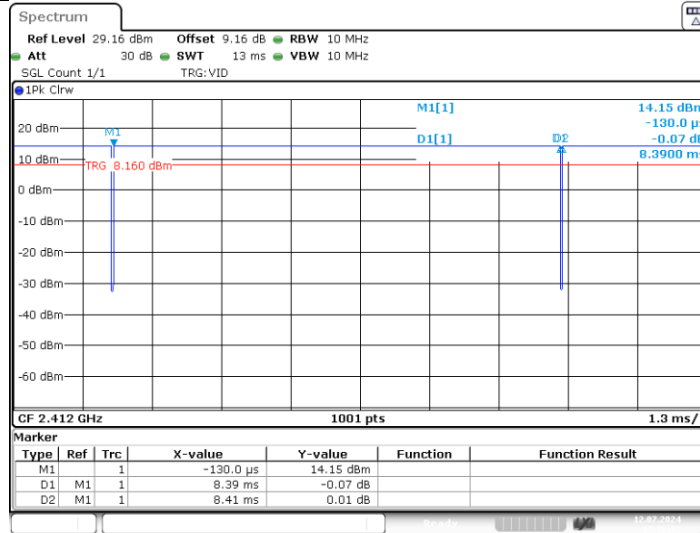
NOTE:

- (1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (2) For radiated emission above 1 GHz test, the spurious points of 1GHz~18GHz and 18GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.

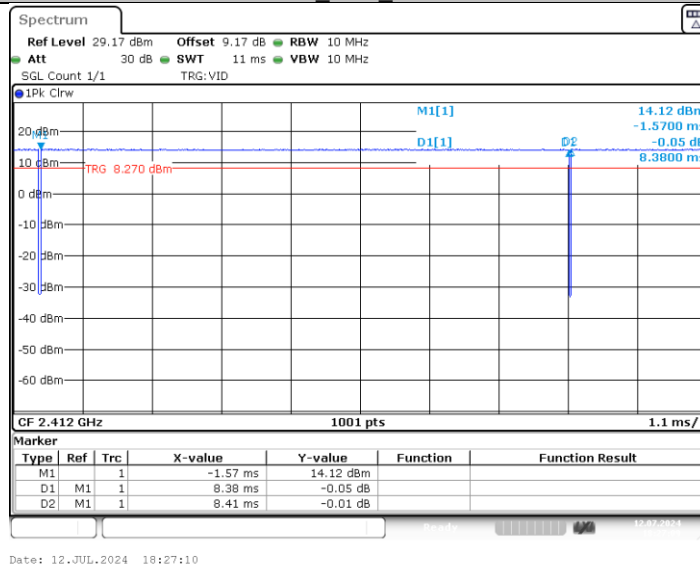
2.3 DUTY CYCLE

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	8.39	8.41	99.76
	Ant2	2412	8.38	8.41	99.64
	Ant1	2437	8.39	8.42	99.64
	Ant2	2437	8.39	8.42	99.64
	Ant1	2462	8.38	8.42	99.52
	Ant2	2462	8.38	8.41	99.64
11G	Ant1	2412	1.39	1.43	97.20
	Ant2	2412	1.39	1.43	97.20
	Ant1	2437	1.40	1.43	97.90
	Ant2	2437	1.39	1.43	97.20
	Ant1	2462	1.39	1.43	97.20
	Ant2	2462	1.39	1.43	97.20
11N20MIMO	Ant1	2412	0.17	0.20	85.00
	Ant2	2412	0.17	0.20	85.00
	Ant1	2437	0.16	0.20	80.00
	Ant2	2437	0.17	0.20	85.00
	Ant1	2462	0.17	0.20	85.00
	Ant2	2462	0.17	0.20	85.00
11N40MIMO	Ant1	2422	0.10	0.14	71.43
	Ant2	2422	0.10	0.13	76.92
	Ant1	2437	0.10	0.14	71.43
	Ant2	2437	0.10	0.13	76.92
	Ant1	2452	0.10	0.14	71.43
	Ant2	2452	0.10	0.13	76.92

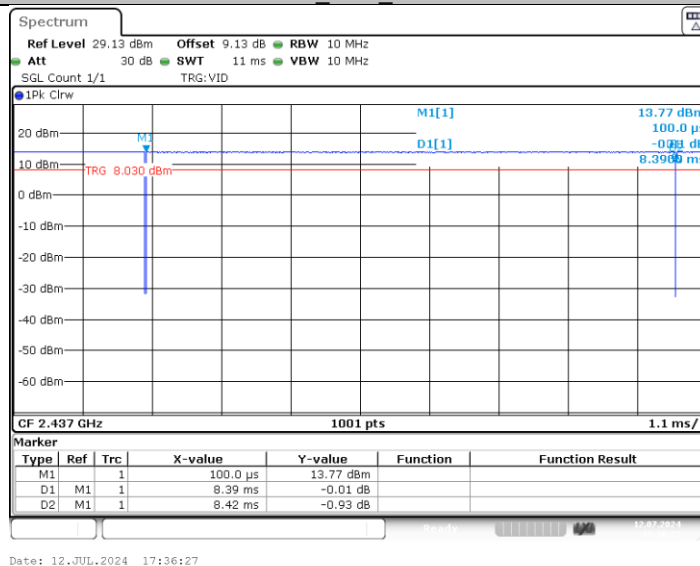
11B_Ant1_2412



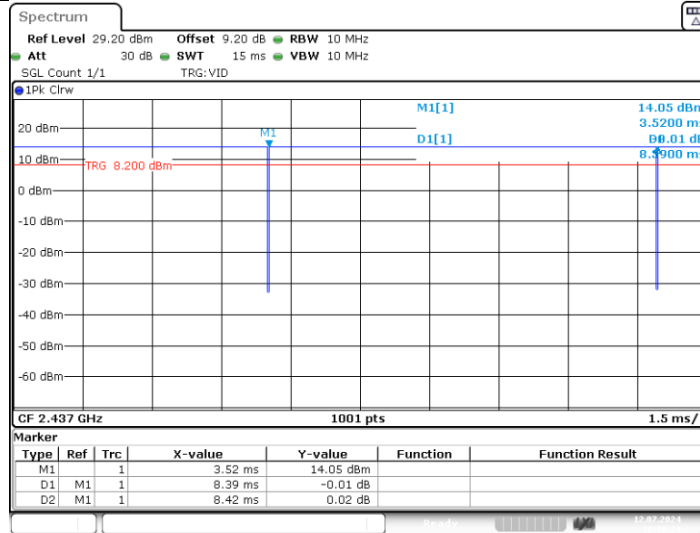
11B_Ant2_2412



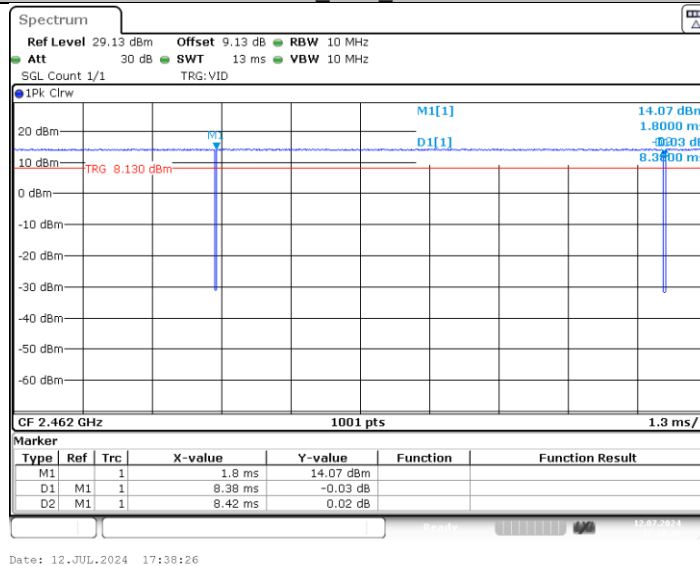
11B_Ant1_2437



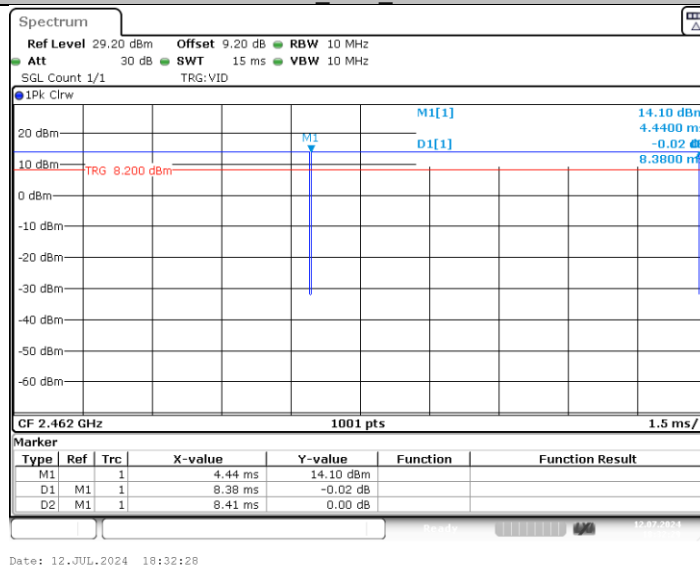
11B_Ant2_2437



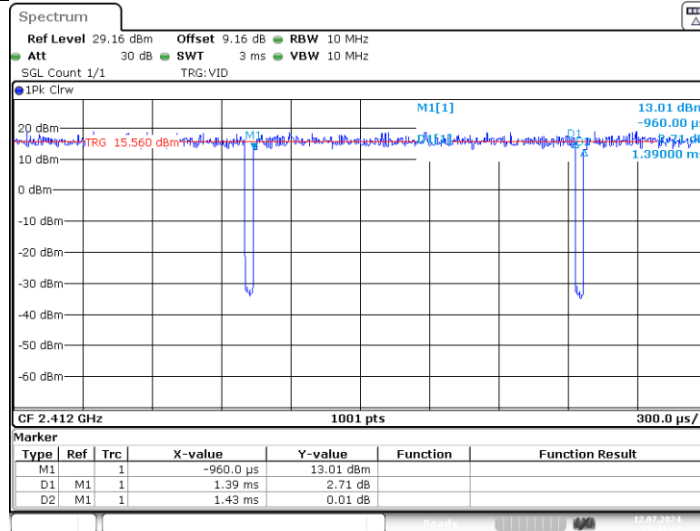
11B_Ant1_2462



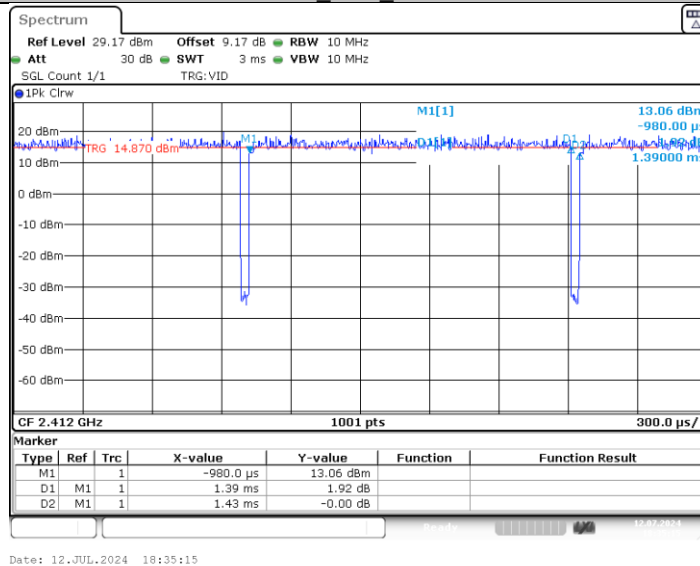
11B_Ant2_2462



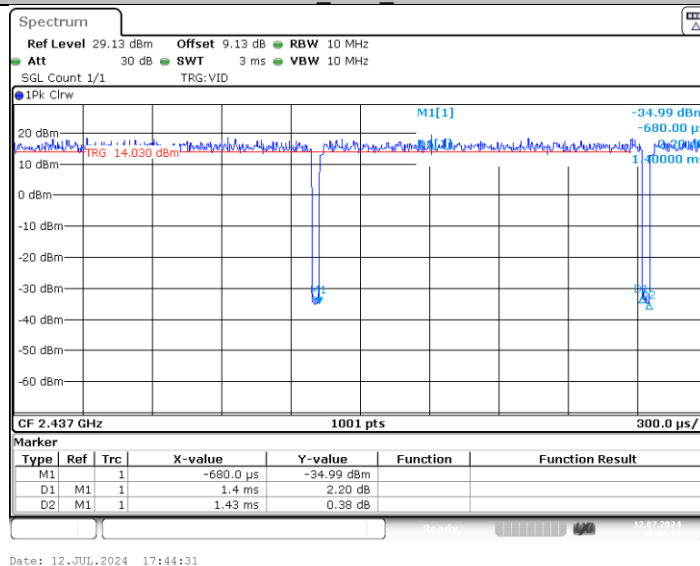
11G_Ant1_2412



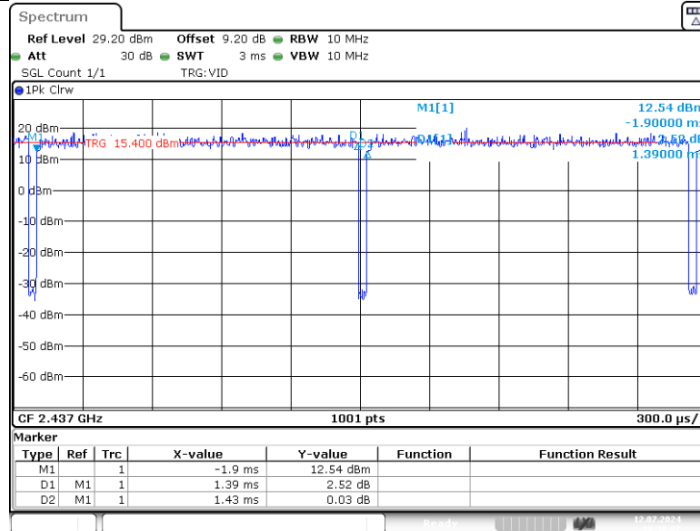
11G_Ant2_2412



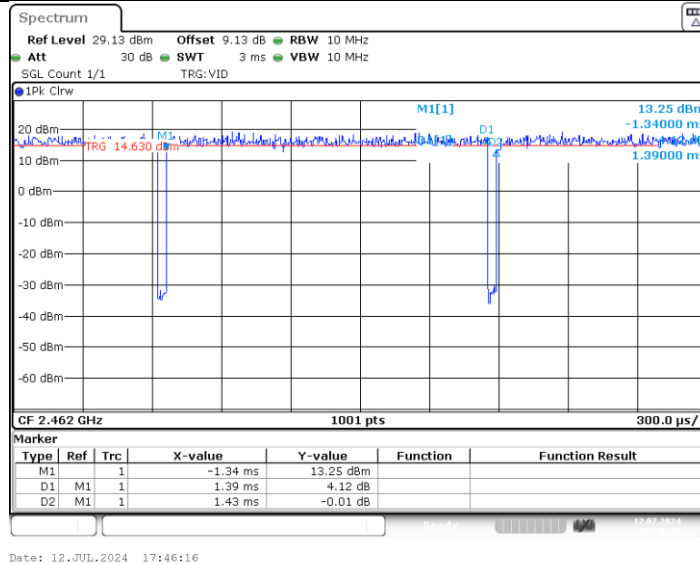
11G_Ant1_2437



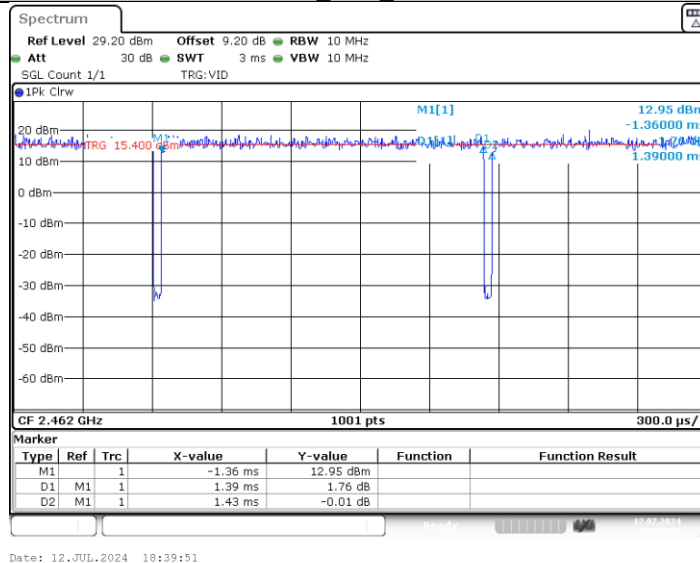
11G_Ant2_2437



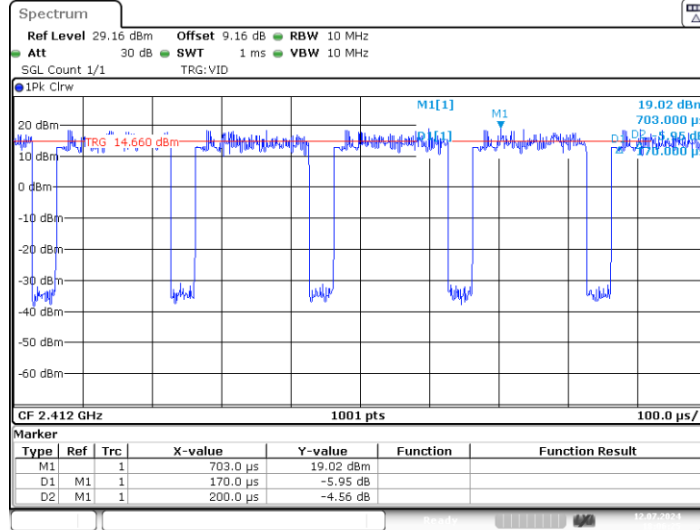
11G_Ant1_2462



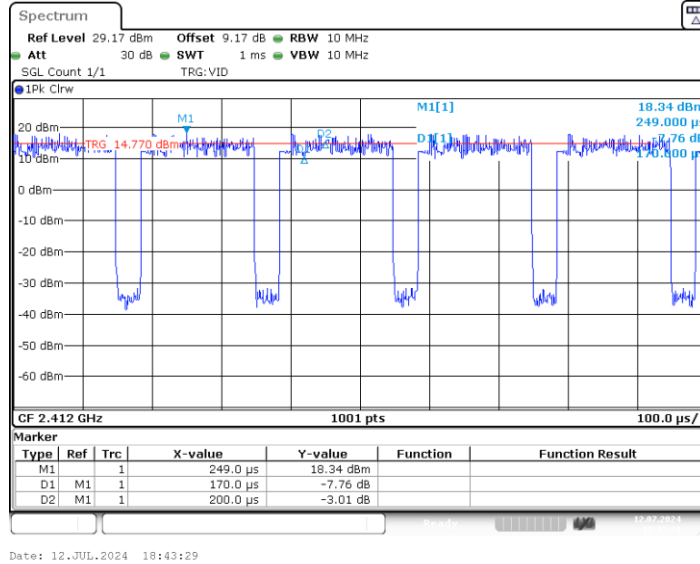
11G_Ant2_2462



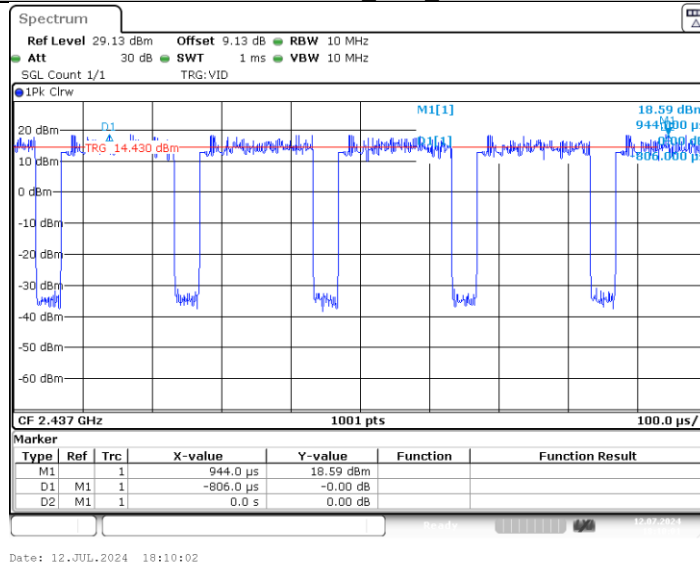
11N20MIMO_Ant1_2412



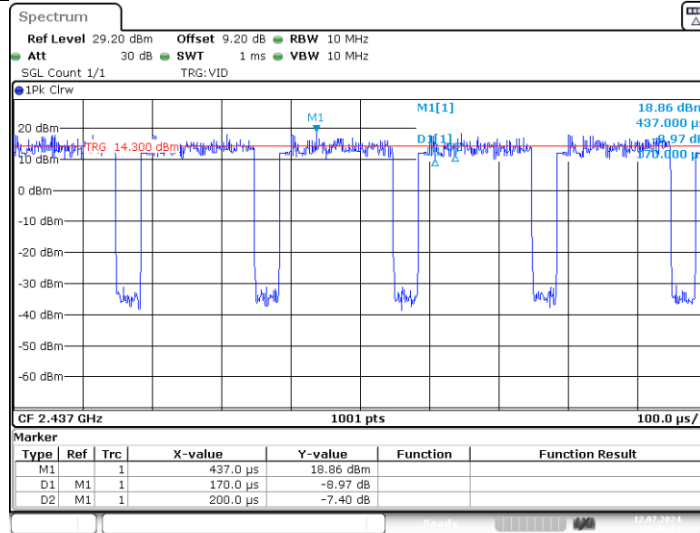
11N20MIMO_Ant2_2412



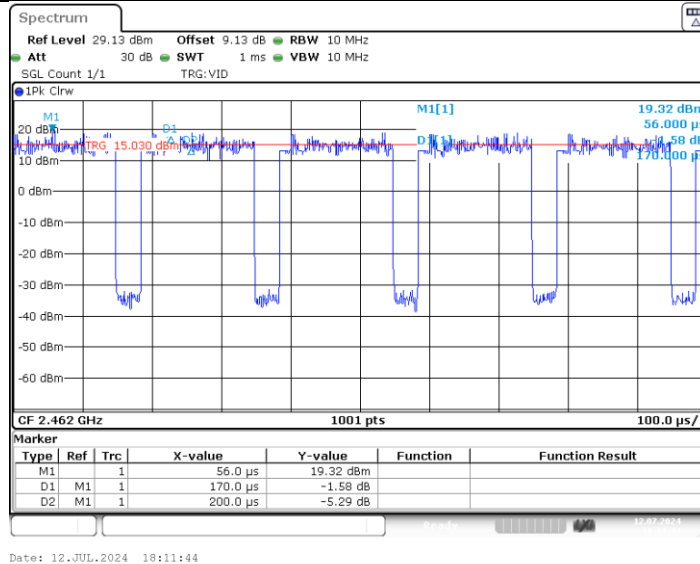
11N20MIMO_Ant1_2437



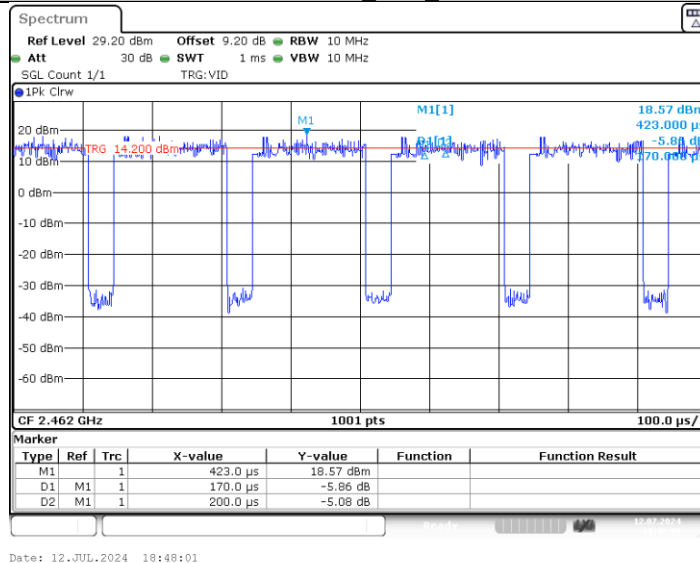
11N20MIMO Ant2_2437



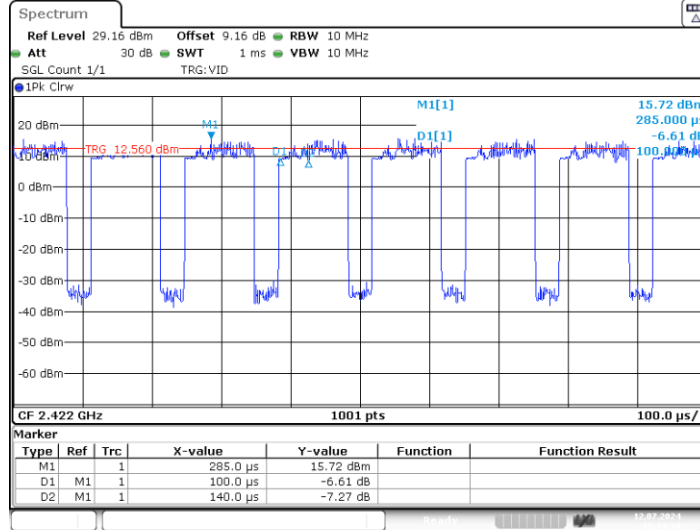
11N20MIMO Ant1_2462



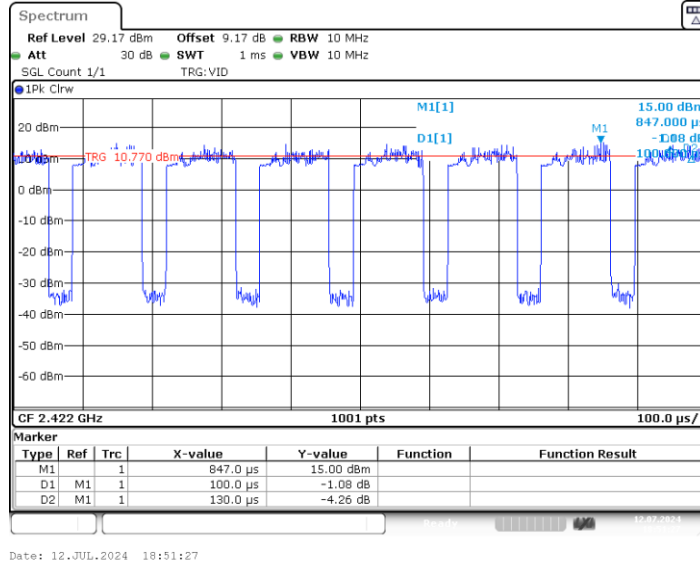
11N20MIMO Ant2_2462



11N40MIMO_Ant1_2422



11N40MIMO_Ant2_2422



11N40MIMO_Ant1_2437

