

TEST REPORT



Test report no.: 23-1-0144001T007_TR1-R02

Testing laboratory

cetecom advanced GmbH

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Applicant

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Manufacturer

Brose Fahrzeugteile SE & Co. KG, Bamberg Berliner Ring 1 96052 Bamberg, GERMANY

Test standard/s

FCC - Title 47 CFR Part 95 FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 95 - Personal Radio Services

For further applied test standards please refer to section 3 of this test report.

	Test Item	
Kind of test item:	Kick Sensor (HfA)	
Model name:	R-HFA GEN2	
FCC ID:	2AHV8-G69634	
IC:	29958-G69634	
Frequency:	77 – 79 GHz	
Technology tested:	RADAR	
Antenna:	Integrated antenna	
Power supply:	8 V to 16 V DC	
Temperature range:	-40°C to 105°C	

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorized:

Christian Lorenz Lab Manager Radio Communications

Test performed:

Al-Amin Hossain Testing Manager Radio Communications



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2 **General information**

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. cetecom advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2024-02-27
Date of receipt of test item:	2024-08-15
Start of test:*	2024-08-20
End of test:*	2024-09-11
Person(s) present during the test:	-/-

Person(s) present during the test:

*Date of each measurement, if not shown in the plot, can be requested. Dates are stored in the measurement software.



2.3 Involved test locations

Saarbruecken lab

Untertuerkheimer Str. 6-10 66117 Saarbruecken Germany Essen lab

Im Teelbruch 116 45219 Essen Germany

 \boxtimes

2.4 Test laboratories sub-contracted

None

2.5 Laboratory listings and recognitions

	Saarbruecken	Essen
FCC	DE0002	DE0003
ISED	DE0001 3462C	DE0001 3462D



3 Test standard/s, references and accreditations

Test standard	Date	Description
FCC - Title 47 CFR Part 95	2017-09- 20	FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 95 - Personal Radio Services

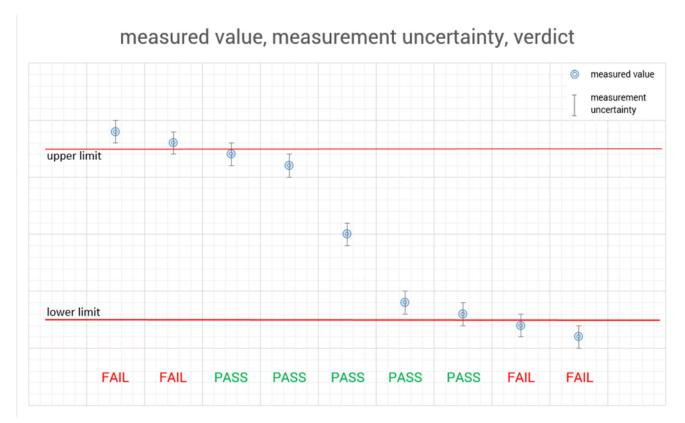
Guidance	Version	Description
		American National Standard for Methods of Measurement of
ANSI C63.4-2014	-/-	Radio-Noise Emissions from Low-Voltage Electrical and Electronic
		Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2020	-/-	American National Standard of Procedures for Compliance
ANSI C03.10-2020	-/-	Testing of Unlicensed Wireless Devices
ANSI C63.26-2015	-/-	American National Standard for Compliance Testing of
		Transmitters Used in Licensed Radio Services
76-81 GHz Radars KDB	v01r02	653005 D01 76-81 GHz Radars v01r02: EQUIPMENT
		AUTHORIZATION GUIDANCE FOR 76-81 GHz RADAR DEVICES



4 Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3.

The measurement uncertainty is mentioned in this test report, see chapter 9, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.





5 Test environment

Temperature	:	T _{nom} T _{max} T _{min}	 20 °C during room temperature tests 50 °C during high temperature tests -20 °C during low temperature tests 		
Relative humidity content	:		55 % - 65 %		
Barometric pressure	:		985 hPa		
Power supply	:	V _{nom}	12 V DC		
		V _{max}	13.8 V DC (115% V _{nom})		
		V_{min}	10.2 V DC (85% V _{nom})		

6 Test item

6.1 General description

Kind of test item	•	Kick Sensor (HfA)
Model name	•	AWRL 1422
PMN	:	R-HFA GEN2
HVIN	:	R-HFA GEN2
FVIN	:	G8C574-000
S/N serial number	:	Engineering Sample / 23-1-01440S11_C01 (PMT Sample No.)
Hardware status	:	G69634-100
Software status	:	B013
Firmware status	:	G8C574-000
Frequency band	:	77 – 79 GHz
Type of modulation	:	FMCW
Number of modes	:	1
Antenna	:	Integrated antenna
Power supply	:	8.0 V to 16.0 V DC (Powered by Vehicular Battery)
Temperature range	:	-40°C to 105°C



6.2 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup and EUT photos are included in test report:

- 23-1-0144001T007_TR1-A101-R01 (External photographs of EUT)
- 23-1-0144001T007_TR1-A102-R01 (Internal photographs of EUT)
- 23-1-0144001T007_TR1-A103-R01 (Test set-up photographs)
- Note: The referenced photos show EUT delivered by the customer in this project, not necessarily the exact one used for the specific tests. EUT identification shown in the photos may differ.

Additional measurement reports:

• 23-1-0144001T007_TR1-A201-R01

Additional declarations (manufacturer's declarations, declarations of conformity, etc.):



7 Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Agenda: Kind of Calibration

K (cal)	calibration / calibrated
Ne (cnn)	not required (k, ev, izw, zw not required)
(chili) Ev (chk)	periodic self verification
Ve vlkl! NK!	long-term stability recognized Attention: extended calibration interval Attention: not calibrated

- EK limited calibration
- zw cyclical maintenance (external cyclical maintenance)
- izw internal cyclical maintenance
- g blocked for accredited testing
- cpu Verification before usage
- *) next calibration ordered / currently in progress

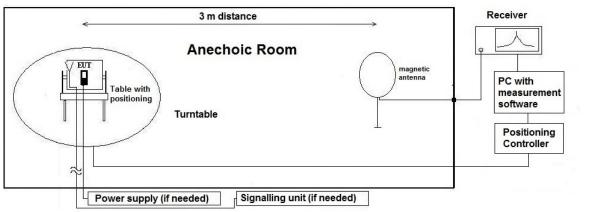


7.1 Shielded semi anechoic chamber

Evaluating the radiated field emissions are done first by an exploratory emission measurement and a final measurement for most critical frequencies determined.

The loop antenna was placed at 1 m height above ground plane and 3 m measurement distance from set-up for investigations. Because of reduced measurement distance, correction data were applied, as stated in chapter 9.2.1. The tests are performed in the semi anechoic room recognized by the regulatory commission.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses: (See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and it's associated accessories are placed on a non-conductive position manipulator (tipping device) of 0.8 m height which is placed on the turntable. By rotating the turntable (step 90°, range 0°to 360°) and the EUT itself either on 3-orthogonal axis (portable equipment) or 2-orthogonal axis (defined operational position of EUT), the emission spectrum was recorded.

The loop antenna was moved at least to 2-perpendicular axes (antenna vector in direction of EUT and parallel to EUT) in order to maximize the emissions. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a data reduction table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by maintaining the EUT's worst-case operation mode, cable position, etc.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself either over 3-orthogonal axis (not defined usage position) or 2-orthogonal axis (defined usage position).

On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out.



Formula:

 $E_{C} = E_{R} + AF + C_{L} + D_{F} - G_{A}$

 $M = L_T - E_C$

 $\begin{array}{l} \mathsf{AF} = \mathsf{Antenna} \ \mathsf{factor} \\ \mathsf{C}_\mathsf{L} = \mathsf{Cable} \ \mathsf{loss} \\ \mathsf{D}_\mathsf{F} = \mathsf{Distance} \ \mathsf{correction} \ \mathsf{factor} \ (\mathsf{if} \ \mathsf{used}) \\ \mathsf{E}_\mathsf{C} = \mathsf{Electrical} \ \mathsf{field} - \mathsf{corrected} \ \mathsf{value} \\ \mathsf{E}_\mathsf{R} = \mathsf{Receiver} \ \mathsf{reading} \\ \mathsf{G}_\mathsf{A} = \mathsf{Gain} \ \mathsf{of} \ \mathsf{pre-amplifier} \ (\mathsf{if} \ \mathsf{used}) \\ \mathsf{L}_\mathsf{T} = \mathsf{Limit} \\ \mathsf{M} = \mathsf{Margin} \end{array}$

All units are dB-units, positive margin means value is below limit.

7.1.1 Sar	7.1.1 Sample calculation											
Raw- Value [dBuV/m]	Antenna factor	Distance Correction [dB]	Cable Loss	Preamplifier	Resulting correction value [dB]	Final result [dBuV/m]	Remarks					
19.83	18.9	-70.75	0.18		-51.67	-31.83	30 to 3 m correction used according ANSI C63.10-2020					

Remark: This calculation is based on an example value at 458 kHz



7.1.2 Correction factors due to reduced meas. distance (f < 30 MHz):

The used correction factors when the measurement distance is reduced compared to regulatory measurement distance, are calculated according Extrapolation formulas valid for EUT's with maximum dimension of 0.625xLambda. Formula 2+3+4 as presented in ANSI C63.10, Chapter 6.4.4 are used for the calculations of proper extrapolation factors

Frequency Range	[kHz/MHz]	[m]	Field	Limit	0		
		•••			Condition	(Limit distance	Correction
			Point	accord.	(dmeas <	bigger dnear-	accord.
			[m]	15.209 [m]	Dnear-	field)	Formula
			[]	10.207 [iii]	field)	iicid)	i onnulu
	9	33333.33	5305.17		fullfilled	not fullfilled	-80.00
-	9 10	30000.00	4774.65		fullfilled	not fullfilled	-80.00
	20	15000.00	2387.33		fullfilled	not fullfilled	-80.00
	30	10000.00	1591.55		fullfilled	not fullfilled	-80.00
	40	7500.00	1193.66		fullfilled	not fullfilled	-80.00
	50	6000.00	954.93		fullfilled	not fullfilled	-80.00
	60	5000.00	795.78		fullfilled	not fullfilled	-80.00
	70	4285.71	682.09	300	fullfilled	not fullfilled	-80.00
	80	3750.00	596.83	300	fullfilled	not fullfilled	-80.00
	90	3333.33	530.52		fullfilled	not fullfilled	-80.00
kHz	100	3000.00	477.47		fullfilled	not fullfilled	-80.00
	125	2400.00	381.97		fullfilled	not fullfilled	-80.00
	200	1500.00	238.73		fullfilled	fullfilled	-78.02
	300	1000.00	159.16		fullfilled	fullfilled	-74.49
	400	750.00	119.37		fullfilled	fullfilled	-72.00
	490	612.24	97.44		fullfilled	fullfilled	-70.23
	500	600.00	95.49		fullfilled	not fullfilled	-40.00
	600	500.00	79.58		fullfilled	not fullfilled	-40.00
	700	428.57	68.21		fullfilled	not fullfilled	-40.00
	800	375.00	<u>59.68</u>		fullfilled	not fullfilled	-40.00
	900	333.33	53.05		fullfilled	not fullfilled	-40.00
	1.00 1.59	<u>300.00</u> 188.50	47.75 30.00		fullfilled fullfilled	not fullfilled not fullfilled	-40.00 -40.00
	2.00	150.00	23.87		fullfilled	fullfilled	-38.02
	3.00	100.00	15.92		fullfilled	fullfilled	-34.49
	4.00	75.00	11.94		fullfilled	fullfilled	-32.00
	5.00	60.00	9.55		fullfilled	fullfilled	-30.06
	6.00	50.00	7.96		fullfilled	fullfilled	-28.47
	7.00	42.86	6.82		fullfilled	fullfilled	-27.13
	8.00	37.50	5.97		fullfilled	fullfilled	-25.97
	9.00	33.33	5.31		fullfilled	fullfilled	-24.95
	10.00	30.00	4.77	30	fullfilled	fullfilled	-24.04
	10.60	28.30	4.50		fullfilled	fullfilled	-23.53
MHz	11.00	27.27	4.34		fullfilled	fullfilled	-23.21
	12.00	25.00	3.98		fullfilled	fullfilled	-22.45
	13.56	22.12	3.52		fullfilled	fullfilled	-21.39
	15.00	20.00	3.18		fullfilled	fullfilled	-20.51
	15.92	18.85	3.00		fullfilled	fullfilled	-20.00
	17.00	17.65	2.81		not fullfilled	fullfilled	-20.00
-	18.00	16.67	2.65		not fullfilled	fullfilled	-20.00
-	20.00	15.00	2.39		not fullfilled	fullfilled	-20.00
-	21.00	14.29	2.27		not fullfilled	fullfilled	-20.00
-	23.00	<u>13.04</u> 12.00	2.08		not fullfilled not fullfilled	fullfilled fullfilled	-20.00 -20.00
-	25.00 27.00	12.00	<u>1.91</u> 1.77		not fullfilled	fullfilled	-20.00
-	29.00	10.34	1.65		not fullfilled	fullfilled	-20.00
-	30.00	10.34	1.59		not fullfilled	fullfilled	-20.00



7.1.3 Measurement Location Test site

SAC 3

7.1.4 Limit

	Radiated emissions limits (3 meters)									
Frequency Range [MHz]	Limit [µV/m]	Limit [dBµV/m]	Distance [m]	Detector	RBW [kHz]					
0.009 - 0.09	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	0.2					
0.09 - 0.11	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Quasi peak	0.2					
0.11 - 0.15	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	0.2					
0.15 - 0.49	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	9					
0.49 - 1.705	24000 / f [kHz]	87.6 - 20Log(f) (kHz)	30	Quasi peak	9					
1.705 - 30	30	29.5	30	Quasi peak	9					

*Remark: In Canada same limits apply, just unit reference is different

7.1.5 Result

Note: For more information Check Chapter 12.5

Equipment table:

No.	Lab / Item	Equipment	Туре	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	20341	Digital Multimeter	Digital Multimeter Fluke 112	Fluke Deutschland GmbH / Glottertal	81650455	-	cal	13.05.2024	13.05.2026
2	20442	Semi Anechoic Chamber	Semi Anechoic Chamber SAC3	ETS-Lindgren Gmbh / Taufkirchen	without	-	cnn	02.08.2013	-/-
3	20482	Filter Matrix	Filter Matrix SAC3	cetecom advanced GmbH / Essen	without	-	cnn	-/-	-/-
4	20574	Biconilog Hybrid Antenna	Biconilog Hybrid Antenna BTA-L	Frankonia GmbH / Heideck	980026L		cal	15.06.2022	15.06.2025
5	20620	EMI Test Receiver	EMI Test Receiver ESU26	Rohde & Schwarz Messgerätebau GmbH / Memmingen	100362	-	cal	15.05.2024	15.05.2025
6	20885	Power Supply EA3632A	Power Supply EA3632A	Agilent Technologies Deutschland GmbH	75305850	-	cnn	-/-	-/-
7	25038	Loop Antenna	Loop Antenna HFH2- Z2	Rohde & Schwarz Messgerätebau GmbH / Memmingen	879824/13	-	cal	04.07.2022	04.07.2025

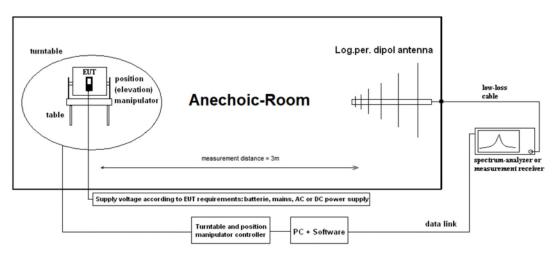


7.2 Radiated field strength emissions 30 MHz – 1000 MHz (Chamber: SAC 3)

7.2.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 16-1-4:2010 compliant Semi anechoic Chamber (SAC) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 1 GHz. A logarithmic periodic antenna is used for the frequency range 30 MHz to 1 GHz.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses: (See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and its associated accessories are placed on a non-conductive position manipulator (tipping device) of 0.8 m height which is placed on the turntable. By rotating the turntable (range 0° to 360°, step 90°) and the EUT itself either on 3-orthogonal axis (portable equipment) or 2-orthogonal axis (defined operational position of EUT) the emission spectrum and it's characteristics was recorded with an EMI-receiver, broadband antenna and software.

Measurement antenna: horizontal and vertical, heights: 1,0 m and 1,82 m as worst-case determined by an exploratory emission measurements. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case of them. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by maintaining the EUT's worst-case operation mode, cable position, etc. either on 10m OATS or 3m semi-anechoic room.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself either over 3-orthogonal axis (not defined usage position) or 2-orthogonal axis (defined usage position). The measurement antenna height between 1 m and 4 m.



On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out

Formula:

$E_{C} = E_{R} + AF + C$	$_{L} + D_{F} - G_{A}$ (1)
M = L _T - E _C	(2)

 $\begin{array}{l} \mathsf{AF} = \mathsf{Antenna} \ \mathsf{factor} \\ \mathsf{C}_\mathsf{L} = \mathsf{Cable} \ \mathsf{loss} \\ \mathsf{D}_\mathsf{F} = \mathsf{Distance} \ \mathsf{correction} \ \mathsf{factor} \ (\mathsf{if} \ \mathsf{used}) \\ \mathsf{E}_\mathsf{C} = \mathsf{Electrical} \ \mathsf{field} - \mathsf{corrected} \ \mathsf{value} \\ \mathsf{E}_\mathsf{R} = \mathsf{Receiver} \ \mathsf{reading} \\ \mathsf{G}_\mathsf{A} = \mathsf{Gain} \ \mathsf{of} \ \mathsf{pre-amplifier} \ (\mathsf{if} \ \mathsf{used}) \\ \mathsf{L}_\mathsf{T} = \mathsf{Limit} \\ \mathsf{M} = \mathsf{Margin} \end{array}$

All units are dB-units, positive margin means value is below limit.

7.2.2 Sample calculation

7.2.2 Jai	inple calc	ulation					
Raw- Value [dBuV/m]	Antenna factor	Distance Correction [dB]	Cable Loss	Preamplifier	Resulting correction value [dB]	Final result [dBuV/m]	Remarks
32.7	22.25		3.1		25.35	58.05	

Remark: This calculation is based on an example value at 800.4 MHz

7.2.3 Measurement Location

Test site	SAC 3

7.2.4 Limit

	Radiated emissions limits (3 meters)									
Frequency Range [MHz]	Limit [µV/m]	Limit [dBµV/m]	Detector	RBW / VBW [kHz]						
30 - 88	100	40.0	Quasi peak	100 / 300						
88 - 216	150	43.5	Quasi peak	100 / 300						
216 - 960	200	46.0	Quasi peak	100 / 300						
960 - 1000	500	54.0	Quasi peak	100 / 300						

7.2.5 Result

Note: For more information Check Chapter 12.5



Equipment table:

No.	Lab / Item	Equipment	Туре	Manufacturer	Serial No.	Kind of Calibration	Last Calibration	Next Calibration
1	20341	Digital Multimeter	Digital Multimeter Fluke 112	Fluke Deutschland GmbH / Glottertal	81650455	cal	13.05.2024	13.05.2026
2	20442	Semi Anechoic Chamber	Semi Anechoic Chamber SAC3	ETS-Lindgren Gmbh / Taufkirchen	without	cnn	24.10.2024	24.10.2025
3	20482	Filter Matrix	Filter Matrix SAC3	cetecom advanced GmbH / Essen	without	cnn	-/-	-/-
4	20574	Biconilog Hybrid Antenna	Biconilog Hybrid Antenna BTA-L	Frankonia GmbH / Heideck	980026L	cal	15.06.2022	15.06.2025
5	20620	EMI Test Receiver	EMI Test Receiver ESU26	Rohde & Schwarz Messgerätebau GmbH / Memmingen	100362	cal	15.05.2024	15.05.2025
6	20885	Power Supply EA3632A	Power Supply EA3632A	Agilent Technologies Deutschland GmbH	75305850	cnn	-/-	-/-

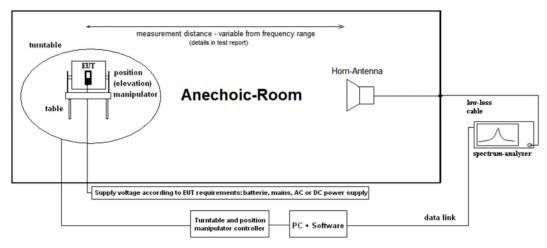


7.3 Shielded fully anechoic chamber (1 GHz – 18 GHz / Chamber: FAC 2)

7.3.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 18-1-4:2010 compliant fully anechoic room (FAR) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 12.4 GHz and 2 meter up to 18 GHz. Horn antennas are used for frequency range 1 GHz to 65 GHz.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses: (See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and its associated accessories are placed on a non-conductive position manipulator (tipping device) of 1.55 m height which is placed on the turntable. By rotating the turntable (range 0° to 360°, step 15°) and the EUT itself either on 3-orthogonal axis (portable equipment) or 2-orthogonal axis (defined operational position of EUT) the emission spectrum and it's characteristics was recorded with an EMI-receiver, broadband antenna and software.

The measurements are performed in horizontal and vertical polarization of the measurement antennas. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case of them. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by maintaining the EUT's worst-case operation mode, cable position, etc.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself over 3-orthogonal axis and the height for EUT with large dimensions or three axis scan for portable/small equipment.

On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out.



Formula:

$P_{EIRP} = P_{MEAS} + C_{L} + FSL - G_{A} (1)$	
	P _{MEAS} = measured power at instrument
	M = Margin
	L _T = Limit
FSL = Free Space loss = Function(frequency, me	easurement distance)
$M = L_T - P_{EIRP}$	C⊾= cable loss G _A = Gain of pre-amplifier (if used)

All units are dB-units, positive margin means value is below limit.

7.3.2 Sample calculation

Raw- Value [dBuV/m]	Antenna factor	Distance Correction [dB]	Cable Loss + Preamplifier	Resulting correction value [dB]	Final result [dBuV/m]	Remarks
29.37	41.20	-	24.28	16.92	46.3	CableLoss and PreAmp data in one data correction file

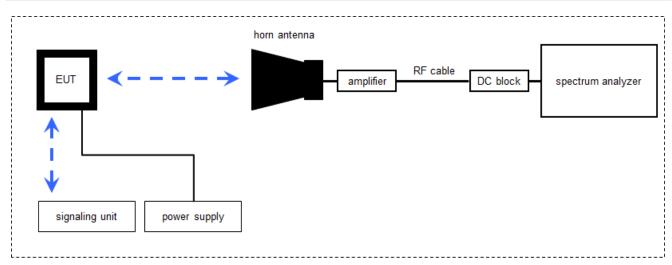
Remark: This calculation is based on an example value at 10 GHz

7.3.3 Equipment table

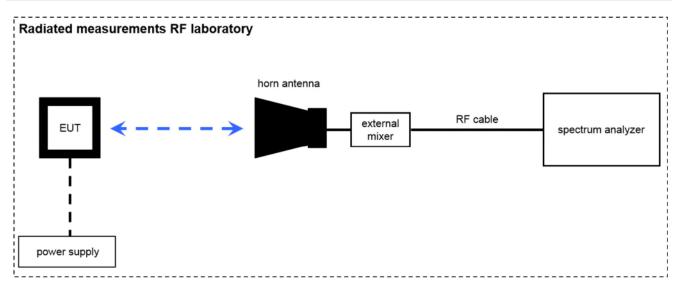
No.	Lab / Item	Equipment	Туре	Manufacturer	Serial No.	Kind of Calibration	Last Calibration	Next Calibration
1	20133	Double-Ridged Waveguide Horn Antenna	Double-Ridged Waveguide Horn Antenna 3115 (Meas 1)	EMCO Elektronik GmbH / Gilching	9012-3629	cal	22.05.2023	22.05.2026
2	20354	DC - Power Supply 40A	DC - Power Supply 40A NGPE 40/40		448	сри	05.03.2008	-/-
3	20412	Fully Anechoic Chamber	Fully Anechoic Chamber 2	ETS-Lindgren Gmbh / Taufkirchen	without	chk	15.03.2024	15.03.2025
4	20972	Signal- and Spectrum Analyzer	Signal- and Spectrum Analyzer FSW50	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101929	cal	05.01.2024	05.01.2025
5	20811	Horn Antenna	Horn Antenna ASY- SGH-124-SMA	Antenna Systems Solutions S.L / Santander	29F14182337	chk	20.10.2021	07.10.2025
6	20816	SGH Antenna	SGH Antenna SGH-26- WR10	Anteral S.L.	1144	cnn	-/-	-/-
7	20817	Waveguide Rectangular Horn Antenna	Waveguide Rectangular Horn Antenna SAR-2309-22- S2	ERAVANT / Torrance	13254-01	chk	16.10.2024	20.10.2026
8	20836	Amplifier	1-18 GHz Amplifier	Wright Technologies, Inc., Inc. / Roseville	0001	chk	18.10.2024	18.10.2026
9	20912	Low noise Amplifier Module 0.5-4GHz	Low noise Amplifier Module 0.5-4GHz	RF-Lambda Europe GmbH / Rüsselsheim	19041200083	сри	18.10.2024	18.10.2025
10	20913	Phase Amplitude Stable Cable Assembly	Phase Amplitude Stable Cable Assembly DC-40GHz	RF-Lambda Europe GmbH	AC19040001	cnn	-/-	-/-
11	25457	DRG Horn Antenna	DRG Horn Antenna SAS-574	A.H. Systems, Inc. / Chatsworth	383	cal	28.03.2022	28.03.2025



7.4 Radiated measurements > 18 GHz



7.5 Radiated measurements > 50/85 GHz



Measurement distance: horn antenna e.g. 75 cm

FS = UR + CA + AF (FS-field strength; UR-voltage at the receiver; CA-loss signal path & distance correction; AF-antenna factor)

<u>Example calculation:</u> FS [dB μ V/m] = 40.0 [dB μ V/m] + (-60.1) [dB] + 36.74 [dB/m] = 16.64 [dB μ V/m] (6.79 μ V/m)

OP = AV + D - G + CA

(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain+amplifier gain; CA-loss signal path)

<u>Example calculation:</u> OP [dBm] = -59.0 [dBm] + 44.0 [dB] - 20.0 [dBi] + 5.0 [dB] = -30 [dBm] (1 µW)

Note: conversion loss of mixer is already included in analyzer value.



7.5.1 Equipment table

No.	Lab / Item	Equipment	Туре	Manufacturer	Serial No.	Kind of Calibration	Last Calibration	Next Calibration
1	20133	Double-Ridged Waveguide Horn Antenna	Double-Ridged Waveguide Horn Antenna 3115 (Meas 1)	EMCO Elektronik GmbH / Gilching	9012-3629	cal	22.05.2023	22.05.2026
2	20354	DC - Power Supply 40A	DC - Power Supply 40A NGPE 40/40		448	cpu	05.03.2008	-/-
3	20412	Fully Anechoic Chamber	Fully Anechoic Chamber 2	ETS-Lindgren Gmbh / Taufkirchen	without	chk	15.03.2024	15.03.2025
4	20729	Harmonic Mixer	FS-Z140	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101004	cal	16.06.2023	16.06.2026
5	20730	Harmonic Mixer	FS-Z110	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101468	cal	02.06.2023	02.06.2026
6	20731	Harmonic Mixer	FS-Z75	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101022	cal	18.05.2022	18.05.2025
7	20732	Signal- and Spectrum Analyzer	Signal- and Spectrum Analyzer FSW67	Rohde & Schwarz Messgerätebau GmbH / Memmingen	104023	cal	30.07.2024	30.07.2025
8	20733	Harmonic Mixer	Harmonic Mixer FS- Z220	RPG-Radiometer Physics GmbH / Meckenheim	101009	cal	24.05.2024	24.05.2027
9	20734	Harmonic Mixer	Harmonic Mixer FS- Z325	RPG-Radiometer Physics GmbH / Meckenheim	101005	cal	24.05.2024	24.05.2027
10	20765	Pickett-Potter Horn Antenna	Pickett-Potter Horn Antenna FH-PP 40-60	RPG-Radiometer Physics GmbH / Meckenheim	010001	chk	16.10.2024	16.10.2026
11	20767	Pickett-Potter Horn Antenna	Pickett-Potter Horn Antenna FH-PP 140- 220	RPG-Radiometer Physics GmbH / Meckenheim	010011	chk	09.10.2024	09.10.2026
12	20811	Horn Antenna	Horn Antenna ASY- SGH-124-SMA	Antenna Systems Solutions S.L / Santander	29F14182337	cal	08.10.2024	08.10.2027
13	20813	Pickett-Potter Horn Antenna	Pickett-Potter Horn Antenna FH-PP 075	RPG-Radiometer Physics GmbH / Meckenheim	10006	chk	16.10.2024	16.10.2026
14	20814	Pickett-Potter Horn Antenna	Pickett-Potter Horn Antenna FH-PP 140	RPG-Radiometer Physics GmbH / Meckenheim	10008	chk	09.10.2024	09.10.2026
15	20815	Pickett-Potter Horn Antenna	Pickett-Potter Horn Antenna FH-PP 110	RPG-Radiometer Physics GmbH / Meckenheim	10014	chk	22.03.2024	22.03.2026
16	20817	Waveguide Rectangular Horn Antenna	Waveguide Rectangular Horn Antenna SAR-2309-22- S2	ERAVANT / Torrance	13254-01	chk	16.10.2024	16.10.2026
17	20836	Amplifier	1-18 GHz Amplifier	Wright Technologies, Inc., Inc. / Roseville	0001	chk	18.10.2024	18.10.2026
18	20912	Low noise Amplifier Module 0.5-4GHz	Low noise Amplifier Module 0.5-4GHz	RF-Lambda Europe GmbH / Rüsselsheim	19041200083	cpu	18.10.2024	18.10.2025
19	20913	Phase Amplitude Stable Cable Assembly	Phase Amplitude Stable Cable Assembly DC-40GHz	RF-Lambda Europe GmbH	AC19040001	cnn	-/-	-/-
20	25457	DRG Horn Antenna	DRG Horn Antenna SAS-574	A.H. Systems, Inc. / Chatsworth	383	cal	28.03.2022	28.03.2025



8 Sequence of testing

8.1 Sequence of testing radiated spurious 9 kHz to 30 MHz

Setup Note: Check Chapter 7.1

Premeasurement* Note: Check Chapter 7.1

Final measurement Note: Check Chapter 7.1

*)Note: The sequence will be repeated two times with different EUT orientations.

8.2 Sequence of testing radiated spurious 30 MHz to 1 GHz

Setup Note: Check Chapter 7.2

Premeasurement Note: Check Chapter 7.2

Final measurement Note: Check Chapter 7.2

8.3 Sequence of testing radiated spurious 1 GHz to 18 GHz

Setup Note: Check Chapter 7.3

Premeasurement Note: Check Chapter 7.3

Final measurement Note: Check Chapter 7.3



8.4 Sequence of testing radiated spurious above 18 GHz up to 50 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The DC power port of the EUT is connected to a power outlet.
- The measurement distance is specified in chapter 10.
- The EUT is set into operation.

Premeasurement

• The test antenna is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.

Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.



8.5 Sequence of testing radiated spurious above 50 GHz with external mixers

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The DC power port of the EUT is connected to a power outlet.
- The measurement distance is specified in chapter 10.
- The EUT is set into operation.

Premeasurement

- The test antenna with external mixer is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.
- Caution is taken to reduce the possible overloading of the external mixer.

Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- As external mixers may generate false images care is taken to ensure that any emission measured by the spectrum analyzer does indeed originate in the EUT. Signal identification feature of spectrum analyzer is used to eliminate false mixer images (i.e., it is not the fundamental emission or a harmonic falling precisely at the measured frequency).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.



9 Measurement uncertainty

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor k, such that a confidence level of approximately 95% is achieved. For uncertainty determination, each component used in the concrete measurement set-up was taken in account and it contribution to the overall uncertainty according its statistical distribution calculated.

lssue No.	Measurement type	Reference	of meas	uency range easurement Hz] Stop [MHz] Calculated Uncer based on confidence level of		Remarks
1	Magnetic Field Strength	EN ,FCC, JP, IC	0.009	30	4.86	Magnetic loop antenna, Pre-Amp on
			30	100	4.57	without Pre-Amp
			30	100	4.91	with Pre-Amp
			100	1000	4.02	without Pre-Amp
			100	1000	4.26	with Pre-Amp
			1000	18000	4.36	without Pre-Amp
			1000	18000	5.23	with Pre-Amp
	RF-Output Power (EIRP)		18000	33000	4.92	Schwarzbeck BBHA9170 (#20302) Antenna set-up non-waveguide antenna)
2	Unwanted emissions (EIRP)	EN, FCC, JP, IC	33000	50000	4.17	Set-up for Q-Band (WR-22), non-wave guide antenna
	[dB]		40000	60000	4.69	Set-up U-Band (WR-19), non-waveguide antenna
			50000	75000	4.06	External Mixer set-up V-Band (WR-15)
			75000	110000	4.17	External Mixer set-up W-Band (WR-6)
			90000	140000	5.49	External Mixer set-up F-Band (WR-8)
			140000	225000	6.22	External Mixer set-up G-Band (WR-5)
			225000	325000	7.04	External Mixer set-up (WR-3)
			325000	500000	8.84	External Mixer set-up (WR-2.2)
			1000	18000	2.85	Typical set-up with microwave generator and antenna, value for 7 GHz calculated
		EN	18000	33000	4.66	Typical set-up with microwave generator and antenna
3	Radiated Blocking [dB]		33000	50000	3.48	WR-22 set-up
	[05]		50000	75000	3.73	WR-15 set-up
			75000	110000	4.26	WR-6 set-up
	Frequency Error / UWB+FMCW		40000	77000	276.19	calculated for 77 GHz (FMCW) carrier
	[kHz]	EN, FCC, JP, ISED	6000	7000	33.92	calculated for 6.5 GHz UWB Ch.5
4	Frequency Error / NFC [Hz]	EN, FCC, JP, ISED	11.00	14.00	20.76	calculated for 13.56 MHz NFC carrier
			30	6000	1.11	1. Power measurement with Fast-sampling-detector
			30	6000	1.20	2. Power measurement with Spectrum-Analyzer
			30	6000	1.20	3. Power Spectrum-Density measurement
			30	7500	1.20	4. Conducted Spurious emissions
	75 0007		0.009	30	2.56	5. Conducted Spurious emissions
5	TS 8997 Conducted Parameters	FCC15/18 / ISED	2.4	2.48	1.95 ppm	6a. Bandwidth / 2-Marker Method for 2.4 GHz ISM
	conducted Parameters		5.18	5.825	7.180 ppm	6b. Bandwidth / 2-Marker Method for 5 GHz WLAN
			5.18	5.825	1.099 ppm	7. Frequency (Marker method) for 5 GHz WLAN
			30	6000	0.11561 µs	8. Medium-Utilization factor / Timing
			30	6000	1.85	9a. Blocking-Level of companion device
			30	6000	1.62	9b. Blocking Generator level
6	Conducted Emissions	EN, FCC	0.009	30	3.57	general EMI-measurements on AC/DC ports



10 Far field consideration for measurements above 18 GHz

Far field distance calculation:

 $D_{ff} = 2 \times D^2/\lambda$

with

D_{ff} Far field distance

D Antenna dimension

 λ wavelength

Spurious emission measurements:

Antenna frequency range in GHz	Highest measured frequency in GHz	D in m	λinm	D _{ff} in m
18 - 40	40	0.0450	0.00749481	0.54
40-55	55	0.0384	0.005450772	0.54
55-75	73.5	0.03072	0.004078810	0.46
55-75	74.5	0.03072	0.004024060	0.47
55-75	75	0.03072	0.003997233	0.47
75-110	76	0.020757	0.003944640	0.22
75-110	78.5	0.020757	0.003819010	0.23
75-110	79.5	0.020757	0.003770974	0.23
75-110	81	0.020757	0.003701141	0.23
75-110	90	0.020757	0.003331027	0.26
75-110	98	0.020757	0.003059107	0.28
75-110	110	0.020757	0.002725386	0.32
90-140	122	0.016696	0.002457315	0.23
90-140	130	0.016696	0.002306100	0.24
140-220	220	0.010700	0.001362693	0.17
220-325	250	0.007050	0.001199170	0.08



Measurement distance used during measurements:

Measurement frequency range, [GHz]:	Measurement distance, [m]	Boundary for near/far field, [m]
18 - 40	1	0.54
40 - 50	1.5	0.49
50 - 55	1	0.54
55 - 65	0.5	0.41
65 - 75	0.5	0.47
75 – 95	0.5	0.27
95 - 110	0.5	0.32
110 - 120	0.5	0.22
120 - 140	0.5	0.26
140 - 150	0.5	0.11
150 - 160	0.5	0.12
160 - 170	0.5	0.13
170 – 180	0.5	0.14
180 - 190	0.17	0.15
190 - 200	0.17	0.15
200 - 220	0.17	0.17
220 - 243	0.17	0.08



11 Summary of measurement results

11.1 Summary

\boxtimes	No deviations from the technical specifications were ascertained
	There were deviations from the technical specifications ascertained
	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.

TC Identifier	Description	Verdict	Date	Remark	
RF-Testing	47 CFR Part 95 Subpart M	see below	2025-02-14	-/-	

Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Remark
§2.1046 §95.3367 (a) / (b)	Radiated power	Nominal	Nominal	X				complies
§2.1047	Modulation characteristics	s -//- 🗆				\boxtimes	Provided by customer, see chapter 12.2	
§2.1049	Occupied bandwidth (99% bandwidth)	Nominal	Nominal	\boxtimes				complies
§2.1051	Spurious emissions at antenna terminals	Nominal	Nominal			\boxtimes		see note 2, DUT has integral antenna
§2.1053 §95.3379 (a)(1) §95.3379 (a)(2) §95.3379 (a)(3)	Unwanted emissions (radiated spurious)	Nominal	Nominal	×				complies
§2.1055 §95.3379 (b)	Frequency stability	Nominal and Extreme	Nominal and Extreme	\boxtimes				complies

Note:

1) C = Compliant; NC = Not compliant; NA = Not applicable; NP = Not performed

2) ANSI C63.26-2015, chapter 5.5.1:

"...many contemporary portable transmitters utilize integral antennas, precluding access to an antenna output port from which to perform conducted compliance measurements. For these types of transmitters, all of the data necessary to demonstrate compliance must be measured in a radiated test configuration..."



11.2 Additional comments

Reference documents:	None
----------------------	------

Special test descriptions: AWRI1422_Manual Switch-Cable Certification.docx

Configuration descriptions: None



12 Measurement results

12.1 Radiated power

Description:

<u>§95.3367:</u>

The fundamental radiated emission limits within the 76-81 GHz band are expressed in terms of Equivalent Isotropically Radiated Power (EIRP) and are as shown below.

Limits:

FCC §95.3367 (a) (b)

Frequency	Limit (eirp)
76.0 - 81.0 GHz	50 dBm/MHz (Average)
76.0 - 81.0 GHz	55 dBm/MHz (PEAK)

Measurement: Average Power

Measurement parameter						
Detector:	RMS					
Resolution bandwidth:	1 MHz					
Video bandwidth:	3 MHz					
Trace-Mode:	Max Hold					



Measurement: Peak Power

Measurement parameter						
Detector: Pos-Peak						
Resolution bandwidth:	50 MHz					
Video bandwidth:	80 MHz					
Trace-Mode:	Max Hold					

Note: KDB 653005 4.(c)(1)

Peak power measurements of swept frequency radar implementations (e.g., high sweep rate FMCW) may require a desensitization correction factor to be applied to the measurement results.

Consequence:

Worst case measurement, the peak power measurement is performed with a greater resolution bandwidth to solve the problem with the desensitization.

Measurement results:

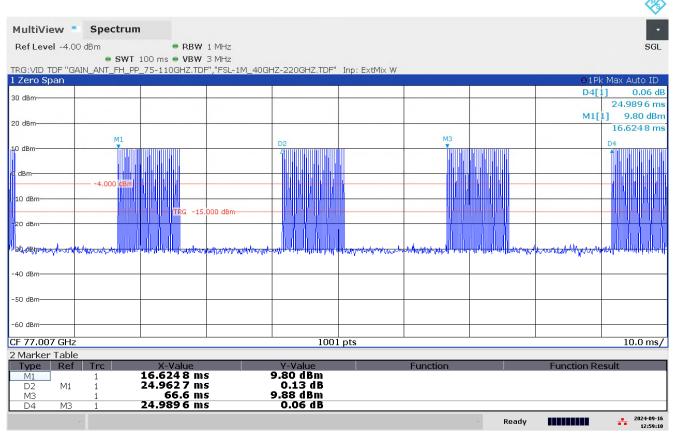
EUT	Mode	Test condition	Radiated peak power (eirp)	Radiated Mean Power (eirp)				
1	1	T _{nom} / V _{nom}	13.86	4.07				

Verdict: Complies

Test report no.: 23-1-0144001T007_TR1-R02



TID100_23-1-0144001T007_EUT_Cycle_Time_AntH_25ms



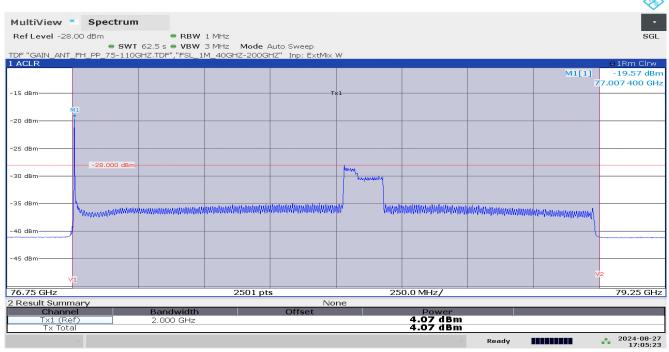
12:59:10 PM 09/16/2024

Note: EUT Cycle time has been verified according to customer declaration, EUT cycle Time = 25 ms.

Test report no.: 23-1-0144001T007_TR1-R02



TID113_02_23-1-0144001T007_Mean_Power_AntH_single_sweep



05:05:23 08/27/2024

Note:

TID106_23-1-0144001T007_Peak_Power_AntH_RBW_50MHz_auto_id

5 GHz			4001 pt	s	30	0.0 MHz/			79.5 C
Bm									
Bm									
Bm									
	0.000 dBm							TRAA	
m haithlight haithdalach an	had had								t de line de la de line
m									
m								ſ	
m									
Bm									
								and a second	
3m	Marthalite	والأوالد ومعلمة ومارين وماحا المرافق	all an and the state of the second states	an a subsection of the sector	A DESCRIPTION OF THE OWNER OF THE	water and a set of the second	White had a with the state of t	de 1.	
Bm				I have been as to be	M1				
Bm									-78.101 970
equency Sw	eep							M1[1	1Pk Max Auto [] 13.86 (
	1-250GHZ.TDF",	GAIN_ANT_FH_F			×W				
f Level 0.00 c		 RBW 50 M 0 s = VBW 80 M 		ito Sweep					S
	Spectrum								

03:34:39 08/27/2024

Note: Antenna Polarization Horizontal,

RBW 50 MHz has been used to avoid desensitization factor.Maximum Peak EIRP = 13.86 dBm



Note: Different RBW are used to avoid desensitization factor and to get a stable Peak EIRP, TID106 is the Final test result but the below TIDs are only for information,

TID101_23-1-0144001T007_Peak_Power_AntH_RBW_1MHz

MultiView	Spect	trum	1										-
Ref Level 0.0	0 dBm		• RBW 1 M	Hz									SGL
			5 s – VBW 3 MH										
TDF "FSL_1M_3 1 Frequency S		Z.TDF	","GAIN_ANT_FH_	_PP_75-110GHZ	.TDF" Inp: ExtMi	×W					0 1 DI	z Mav	(Auto ID
I frequency 3	weep										M1[1]		10.60 dBm
						M1						8.02	9 000 GHz
10 dBm						tother a site of the	1						
5 dBm													
0 dBm	0.000 0	dBm—											
-5 dBm		Nes	History and plate like of particular in the	a an an an a sha a s	individualiti india adama		WWWW	ANNINA MADANA ANA ANA ANA ANA ANA ANA ANA ANA AN	Milliohaddia ann a				
-5 0611		1 MAN	Withanson	noblem the contract of a		· ·	double of	en station and the station of the station of the state of	a na ang ang ang ang ang ang ang ang ang	MMM			
										1			
-10 dBm													
-15 dBm	1 .												
A CONTRACTOR OF A CONTRACT	ALLAN IN A MARKEN AN										WAR AND WAR	and mak	Hard Market Hard
-20 dBm												<u> </u>	Constant of the
-25 dBm													
76.5 GHz				3001 pt	s		30	0.0 MHz/					79.5 GHz
									Ready			- e-	2024-08-27 16:21:13

04:21:13 08/27/2024

Note: Only for information, for final result check TID106.

TID102_23-1-0144001T007_Peak_Power_AntH_RBW_10MHz

									~~
MultiView	Spectrum	1							-
Ref Level 0.00	dBm	• RBW 101	MHz						SGL
			MHz Mode Aut						
TDF "FSL_1M_30 1 Frequency Sv		", "GAIN_ANT_FH	_PP_75-110GHZ.	TDF" Inp: Extini	× W			01	Pk Max Auto ID
							-	M1[1]	12.62 dBm
									78.116 90 GHz
20 dBm									
15 dBm					M1				
					muniting .				
	frine	and the second second with the	a where we want the second		a anala	and a start and a start and a start a s	an management		
10 dBm									
5 dBm									
S dbiir									
-0-dBm									
-5 dBm									
When the work will be a from the	AMANINAN							monorm	man want half when many
-10 dBm									
-15 dBm			1001	-					79.5 GHz
76.5 GHz			1001 pts	5	30	0.0 MHz/			79.5 GHz 2024-08-27
							Ready		16:23:32

04:23:32 08/27/2024

Note: Only for information, for final result check TID106.

Test report no.: 23-1-0144001T007_TR1-R02



6

TID103_23-1-0144001T007_Peak_Power_AntH_RBW_20MHz

										~~
MultiView	Spectrum									-
Ref Level 0.00 c	dBm	• RBW 20	MHz							SGL
			MHz Mode Aut							
TDF "FSL_1M_30M 1 Frequency Swo		"GAIN_ANT_FF	1_PP_75-110GHZ.	IDF Inp: Extimit	× W				01P	< Max Auto ID
									M1[1]	13.16 dBm
										78.056 90 GHz
20 dBm										
15 dBm										
15 UBM					M1					
	promision		man a surrow weather	an a	mannum	man have been and	managener			
10 dBm								mond		
								1		
5 dBm										
-0-dBm	- 0.000 dBm									
o ubiii	0.000 000									
Mary marking	hand of the second									a na sta na
-5 dBm	all and the								Manyum	howman
-10 dBm										
-15 dBm										
76.5 GHz			1001 pts	3	30	0.0 MHz/				79.5 GHz
			1001 pt	-			Ready			2024-08-27

04:25:45 08/27/2024

Note: Only for information, for final result check TID106.

TID104_23-1-0144001T007_Peak_Power_AntH_RBW_30MHz

									\$
MultiView =	Spectrum								
Ref Level 0.00 di	Bm	• RBW 30 N	1Hz						SGL
		5 s 🗢 VBW 80 M							
TDF "FSL_1M_30M 1 Frequency Swe	E250GHZ.TDF*	, "GAIN_ANT_FH	_PP_/5-110GHZ.	TDF" Inp: ExtMix	< 99			0	1Pk Max Auto ID
								M1[1	
									78.065 90 GHz
20 dBm									
15 dBm									
15 UBM					MT				
	provide	reasonan	ennermande	and and a second	and the second second	mound	milanonemen	Anna ha	
10 dBm									
	1								
5 dBm									
	{							1	
								<u> </u>	
-O-dBm-	- 0.000 dBm								
on the second of	11-200 127							Working	WMMan Million Market
-5 dBm									
5 dbiii									
-10 dBm									
-15 dBm									
76.5 GHz			1001 pts	5	30	0.0 MHz/			79.5 GHz
w.						Ψ.	Ready		2024-08-27 16:27:39

04:27:39 08/27/2024

Note: Only for information, for final result check TID106.

Test report no.: 23-1-0144001T007_TR1-R02



6

TID105_23-1-0144001T007_Peak_Power_AntH_RBW_40MHz

										~~
MultiView	Spectrum									-
Ref Level 0.00	dBm 🗧	RBW 401	MHz							SGL
TDE "ECL 114 201	SWT 25 s M-250GHZ.TDF","GA		MHz Mode Aut							
1 Frequency Sw			_PP_/3-IIUGHZ.	TDF IND: EXUMI	X VV				●1PI	« Max Auto ID
									M1[1]	13.81 dBm
										78.140 90 GHz
20 dBm										
15 dBm					M1					
13 0011			M	Mar Market and	mahrmad	a duntal un su su su				
	puhanonia	water and many second	own when the man			- Andrew and a straight and a straight and a straight a straight a straight a straight a straight a straight a	nert the pharmant	riding		
10 dBm								\rightarrow		
								1		
5 dBm										
									1	
9 dBm throught	0.000 dBm								1	1
where we	Wanthank								muning	where manual support
-5 dBm										
-10 dBm										
-15 dBm										
76.5 GHz			1001 pts	5	30	0.0 MHz/	1	1		79.5 GHz
							Ready			+ 2024-08-27 16:29:16

04:29:17 08/27/2024

Note: Only for information, for final result check TID106.

TID108_03_23-1-0144001T007_Peak_Power_AntV_RBW_50MHz_auto_id

MultiView Spe	ctrum							
Ref Level 0.00 dBm	• RBW 50							SGL
TDF "FSL_1M_30M-250GH	SWT 100 s - VBW 80 HZ.TDF","GAIN_ANT_FH			< W				
1 Frequency Sweep								Max Auto ID
16 dBm							M1[1] 	12.05 dBm 7.005 750 GHz
14 dBm								
12 dBm	Mi .							
10 dBm	An and a provide the provided and a provide the providence of the	whymid with Marthauth progra	-					
8 dBm					Wheel all the base in the			
6 dBm							hadday.	
4 dBm								
2 dBm								
	dBm						hadrike line	
-2 dBm								
-4 dBm								
-6 dBm								
76.5 GHz		4001 pts		30	0.0 MHz/			79.5 GHz
		1001 pta		50.		Ready		2024-08-27 17:38:26

05:38:27 08/27/2024

Note: Antenna polarization Vertical. Only for information, for final result check TID106.



12.2 Modulation characteristics

Description:

§2.1047 (d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

KDB 653005 D01 76-81 GHz Radars v01r02, section 3 (g)

Concerning the Section 2.1047 modulation characteristics requirement, the following information should be provided:

1) Pulsed radar: pulse width and pulse repetition frequency (if PRF is variable, then report maximum and minimum values).

2) Non-pulsed radar (e.g., FMCW): modulation type (i.e., sawtooth, sinusoid, triangle, or square wave) and sweep characteristics (sweep bandwidth, sweep rate, sweep time).

Information from manufacturer on modulation characteristics:

Modulation Type	FMCW		
Modulation characteristics:			
Sweep bandwidth	Sweep bandwidth = 1989.9MHz		
Sweep rate	Sweep rate = 111.79 MHz/us		
Sweep time	Sweep time = 17.8us		



12.3 Occupied bandwidth

Description:

§2.1049 The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Limits:

FCC	IC		
FCC §95.3379 (b)	RSS-251 chapter 7.2:		
The occupied bandwidth from intentional radiators operated within the specified frequency band shall comply with the following:			
Frequency range			
76 GHz – 81 GHz			

Measurement:

Parameters		
Detector:	Pos-Peak	
Resolution bandwidth:	50 MHz	
Video bandwidth:	80 MHz	
Trace-Mode:	Max Hold	

Results:

EUT	TEST CONDITIONS	f∟ in GHz	f _H in GHz	Occupied Bandwidth (99%) in GHz	Plot
EUT 1	T _{nom} / V _{nom}	77.005853	78.970421	1.964568	TID111

Verdict: Complies



Plot: TID111_23-1-0144001T007_99%OBW_AntH_Peak_RBW_1MHz

									~~
MultiView	Spectru	m							
Ref Level 0.00	- D dBm	• RBW 11	ИНz						SGL
	● SWT	150 s 🗢 VBW 3 M							
TDF "GAIN_ANT_	_FH_PP_75-11	OGHZ.TDF","FSL_0	_5M_40GHZ-330	OGHZ.TDF" Inp:	ExtMix W				
1 Occupied Ba	ndwidth								k Max Auto ID 5,69 dBm
10 dBm								M1[1]	7.007 170 GHz
	M1								7.007 170 0Hz
5 dBm					In a local division	-			
	1								
-0-dBm-	0.000 dam-								
-5 dBm									
1.575.0	. Ma	ANA MANANA M	A DATA DATA AND A DATA	WWWWWWWWWW	La WANN	MADAMAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ha a sha	witte	
-10 dBm	- m		nallalahahahahahaan	an a	<u>la</u>	and the state of the second	nd number of the second se	RINES	
-15 dBm									
-20 dBm									
And a triada an fu	an an a daman								
-25 dBm									
CF 78.0 GHz			6001 pt		L	300.0 MHz/			Span 3.0 GHz
			6001 pt	s	•	300.0 MHZ/			Span 3.0 GHZ
2 Marker Table Type Ref		X-Value		Y-Value		Function		Function R	esult
M1	1	77.007 17 G	Hz	5.69 dBm	Occ Bw	Tancaon		1.964 568 4	102 GHz
T1	1	77.005 853 0		-0.20 dBm	Occ Bw (36 95 GHz
T2	1	78.970 421 0	iHz	-10.96 dBm	Occ Bw F	req Offset		-11.863.04	
							Ready		2024-08-20

03:16:10 08/20/2024



12.4 Band edge compliance

Description:

Investigation of the emission limits at the band edge.

Limits:

FCC §95.3379 (a) (2) (i) + (ii) / ANSI C63.10-2020 / 6.10

Frequency Range [GHz]	Measurement distance	Power Density
40 – 76 and 81 – 200	3.0 m	600 pW/cm ² → -1.7 dBm

FCC §95.3367 (a) (b)

Frequency Range [GHz]	Power Density	
76 - 81	50 dBm/MHz (e.i.r.p)	

Measurement:

Parameters			
Detector:	RMS		
Resolution bandwidth:	1 MHz		
Video bandwidth:	3 MHz		
Trace-Mode:	Max Hold		

Measurement results:

• Results are part of chapter 12.5

Verdict: Complies



12.5 Unwanted emissions

Description:

Measurement of the radiated unwanted emissions.

<u>Limits:</u>

FCC §95.3379

- (a) The power density of any emissions outside the 76-81 GHz band shall consist solely of spurious emissions and shall not exceed the following:
 - (1) Radiated emissions below 40 GHz shall not exceed the field strength as shown in the following emissions table.

FCC					
CFR Pa	CFR Part 95.3379 (a) (1) / CFR Part 95.3379 (a) (3)				
	Radiated unwanted emissions				
Frequency (MHz)	Field Strength (µV/m)	Measurement distance (m)			
0.009 - 0.490	2400/F[kHz]	300			
0.490 - 1.705	24000/F[kHz]	30			
1.705 - 30.0	1.705 - 30.0 30				
30 88	30 88 100 3				
88 - 216	150	3			
216 - 960	216 - 960 200 3				
960 - 40 000	500	3			

- (i) In the emissions table in paragraph (a)(1) of this section, the tighter limit applies at the band edges.
- (ii) The limits in the table in paragraph (a)(1) of this section are based on the frequency of the unwanted emissions and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
- (iii) The emissions limits shown in the table in paragraph (a)(1) of this section are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9.0-90.0 kHz, 110.0-490.0 kHz, and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector with a 1 MHz RBW
- (2) The power density of radiated emissions outside the 76-81 GHz band above 40.0 GHz shall not exceed the following, based on measurements employing an average detector with a 1 MHz RBW:
 - (i) For radiated emissions outside the 76-81 GHz band between 40 GHz and 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 600 pW/cm2 at a distance of 3 meters from the exterior surface of the radiating structure.



(ii) For radiated emissions above 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 1000 pW/cm2 at a distance of 3 meters from the exterior surface of the radiating structure.

Frequency Range (GHz)	Power Density	EIRP
40 - 200	600 pW/cm² @ 3m	-1.7 dBm
200 – 231	1000 pW/cm² @ 3m	+0.5 dBm

(3) For field disturbance sensors and radar systems operating in the 76-81 GHz band, the spectrum shall be investigated up to 231.0 GHz.

Limit conversion (ANSI C63.10-2020 9.2.3):

 $EIRP[dBm] = 10 \times log(4 \times \pi \times d^2 \times PD[W/m^2])$

- Power density at the distance specified by the limit: PD [W/m²]
- Equivalent isotropically radiated power: EIRP [dBm]
- Distance at which the power density limit is specified: d [m]

According to this formula, an emission limit of PD = 600 pW/cm^2 at a distance of d = 3 m corresponds to an equivalent isotropically radiated power of EIRP = -1.7 dBm.

Measurement:

Measurement parameter			
Detector:	Quasi Peak / Pos-Peak / LinAV / RMS		
Resolution bandwidth:	F < 1 GHz: 100 kHz		
	F > 1 GHz: 1 MHz		
Video bandwidth:	F < 1 GHz: 300 kHz		
video bandwidth.	F > 1 GHz: 3 MHz		
Trace-Mode:	Max Hold		



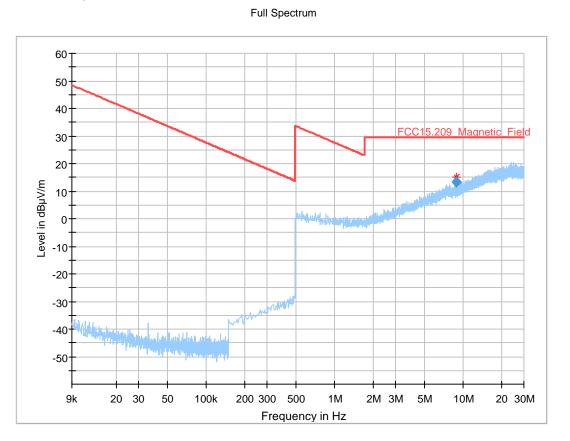
Measurement results:

Frequency [GHz]	Detector	Bandwidth [MHz]	Level	Limit	Margin [dB]	
0.000009 - 0.03	Max Peak	0.009	13.32 dBµV	29.54 dBµV	16.22	
0.03 - 1	Quasi Peak	0.12	41.31 dBµV	46 dBµV	4.69	
1 - 12.4	Max Peak	1	61.87 dBµV	74 dBµV	12.13	
1 12.4	LinAV	1	46.98 dBµV	54 dBµV	7.02	
12.4 - 18	Max Peak	1	57.65 dBµV	74 dBµV	16.35	
	LinAV		51.60 dBµV	54 dBµV	2.40	
18 - 40	Max Peak	1	63.41 dBµV	74 dBµV	10.59	
	LinAV		48.10 dBµV *No critical	54 dBµV	5.90	
40 - 50	RMS	1	Emission found	-1.7 dBm	Only noise level	
50 - 55	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
55 - 65	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
65 - 75	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
75 - 95	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
95 - 110	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
110 - 120	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
120 - 140	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
140 - 150	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
150 - 160	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
160 - 170	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
170 - 180	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
180 - 190	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
190 - 200	RMS	1	*No critical Emission found	-1.7 dBm	Only noise level	
200 - 220	RMS	1	*No critical Emission found	0.5 dBm	Only noise level	
220 - 243	RMS	1	*No critical Emission found	0.5 dBm	Only noise level	
Please refer to the following plots for more information on the level of spurious emissions						

Note: *No critical Emission found = more than 20 dB from Limit line has considered as no critical emission. Only worst-case result stated in this Table.

Verdict: Complies





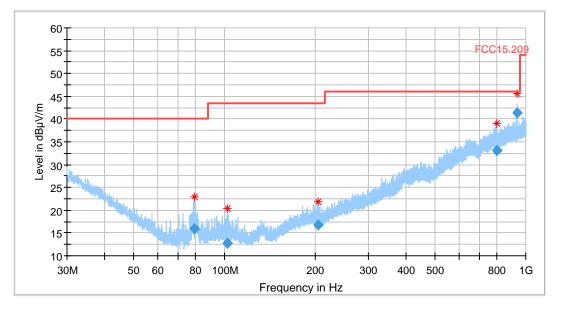
Final_Result

Frequency (MHz)	MaxPe ak (dBµV /m)	Limit (dBµV /m)	Margin (dB)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
8.870000	13.32	29.54	16.22	9.000	Н	216.0	-5.7	18:19:05 - 23.08.2024





TID118_RSE_E-Field_S12_30-1GHz



Final_Result

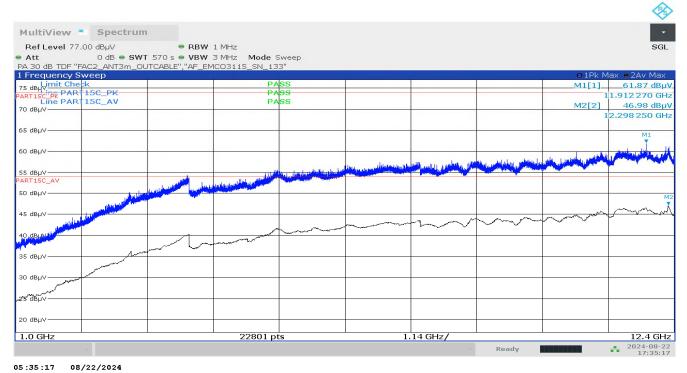
Frequency (MHz)	Quasi Peak (dBµV /m)	Limit (dBµV /m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)
79.723000	15.99	40.00	24.01	120.000	137.0	V	60.0	6.9	0.0
101.843000	12.66	43.50	30.84	120.000	121.0	V	252.0	7.7	0.0
204.315000	16.78	43.50	26.72	120.000	109.0	V	70.0	11.1	0.0
798.635000	33.08	46.00	12.92	120.000	163.0	Н	92.0	25.5	0.0
934.805000	41.31	46.00	4.69	120.000	264.0	V	0.0	27.1	0.0

(continuation of the "Final_Result" table from column $\ 17 \ldots)$

Frequency (MHz)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)	Comment
79.723000	0.9	6.0	9.1	19:17:17 - 23.08.2024
101.843000	0.9	6.8	4.9	19:22:16 - 23.08.2024
204.315000	1.4	9.7	5.7	19:12:41 - 23.08.2024
798.635000	3.1	22.4	7.6	19:07:47 - 23.08.2024
934.805000	3.4	23.7	14.2	19:27:26 - 23.08.2024



TID119a_RSE_TX_S12_1-12.4GHz_AntH



Note: Limit Line: Peak: 74 dBµV, Average: 54 dBµV, Result: Peak: Pass, Average: Pass.

TID119b_RSE_TX_S12_1-12.4GHz_AntV

MultiView Spec	trum					-
Ref Level 77.00 dBµV	RBW 1 MHz					SGL
	SWT 570 s . VBW 3 MHz Mode s	Sweep				
	m_OUTCABLE","AF_EMCO3115_SN_13					
1 Frequency Sweep					O1Pk M	lax e 2Av Max
75 dB _H V PART15C_PK Line PART15C_PK Line PART15C_AV		SS			M1[1]	<u>60.79 dBµV</u>
PARTISC PK		ss				2.298 250 GHz
	PA	ss			M2[2]	46.85 dBµV
70 dBμV					1	2.297 250 GHz
65 dBµV						
						M1
60 dвµ∨						manufactor and the state
			مادن المعمس المسرو والمسرور بارهاد	and address parties and	AND	A second s
55 dBµV		A STREET WE AND		And the second se		
PART15C_AV						
50 dBµ∨						M2
45 dBuV						mm
45 GBHV			month month	\sim	$\sim \sim \sim \sim$	J • • •
40,dBµW						
35 dBµV	Ama					
30 dBµV						
25'35UV						
ME2 ODDA						
20 dBµV						
1.0 GHz	22801 p	ts	1.14 GHz/			12.4 GHz
				Ready		2024-08-23 17:47:09
, and the second s			, v	Reauy		17:47:09

05:47:09 08/23/2024

Note:

Limit Line: Peak: 74 dBµV, Average: 54 dBµV, Result: Peak: Pass, Average: Pass.

~



TID120a_RSE_TX_S12_12.4-18GHz_AntH

MultiView Spectrum	1						-
Ref Level 80.00 dBµV	RBW 1 MHz						SGL
• Att 10 dB • SW1	T 280 s 🖷 VBW 3 MHz Mode S	Sweep					
	1790","Correction_3m_to_2m","C		<τ"				
1 Frequency Sweep						O1Pk №	lax 🗧 2Av Max
90 dBHUine PART 15C_PK		IL				M1[1]	59.33 dBµV
		SS				1	7.515290 GHz
Line PART15C_AV	E F	AIL				M2[2]	50.44 dBµV
85 dBµV						1	6.000 430 GHz
-80-dBµV							
75 dBµV							
PART15C_PK							
70 dBµV							
/o dbp v							
65 dBµV							
							M1
60 dBµ∨							V
	the force of the body of the	البداء ويستطعها التبار	an an an hattant tashaa		أرجنة والبابية ومسالا المارية	and the second building on the	and a state of the second state
PARTIESC_AV	A second life in the second			and the second se	The second second second second second second	Anna Alexand Contraction of Contractor	
				M2			
50 dBµV							
45 dBµV							
40 dBµV							
· ·							
35 dBµV							
12.4 GHz	11201 pt	l I	56	0.0 MHz/		1	18.0 GHz
12.1 012	11201 p		50	0.0 101127			2024-08-22 19:35:31
					Ready		19:35:31

07:35:32 08/22/2024

Note: Maximum Emission found at 16.000430 GHz (M2) with average detector, for Final test check below test TID120a_02 with Zero span, Limit line: Peak: 74 dB μ V, Average: 54 dB μ V.

TID120a_01_S12_f1_16GHz_A138deg_E95deg__AntH

MultiView = Spe	ectrum								
Ref Level 80.00 dBµ\	V	• RBW 1 MHz							
		ms 🖷 VBW 3 MHz							
PA 30 dB TDF "AF_SGH_	_124_SN790",'	"Correction_3m_to	_2m","CABLE_BLUE	_SHORT"					
1 Frequency Sweep				AIL	1		6		Max • 3Av Clrw
90 dBµVLine PART 15C_F	PK			SS				M1[1]	59.67 dBµV 16.000 430 0 GHz
Line PART15C_/			E.	AIL				M2[2]	
85 dBµV								WIZ	16.000 430 0 GHz
									10.000 400 0 012
-80-dBµV	80.000 dBµV								
75 dBµV									
PART15C_PK									
70 dBµV									
i o dopi									
65 dBµV									
05 UBHV									
				N	1				
60 dBµ∨					h				
PARTERCAN	manufan	Markhallanenanderland	monounderst	mahannender	moundedawas	montheman	how and from the	Mr. Munhammen	Mathemanduran
PARTESC_AV				N	2				
					×.				
50 dBμV					1				
45 dBμV									
Construction of the Constr	and the second second		and the second	common war	and the second s		part of the second s		- and the second second second
40 dBμV									
35 dBµV									
CF 16.000 43 GHz	1		1001 pts	5	. 1	0.0 MHz/			Span 100.0 MHz
T							- Aborted	t i i i i i i i i i i i i i i i i i i i	2024-08-22 19:44:53

07:44:53 08/22/2024

Note: Maximum Emission search and found at TT138°, TD95°



TID120a_02_S12_f1_16GHz_ZeroSpan_100ms_A138deg_E95deg__AntH

MultiView	Spectrum								
Ref Level 80.00									SGL
Att PA 30 dB TDF "AF_	5 dB • SWT 20 _SGH_124_SN790'	s = VBW 3 MHz ',"Correction_3m_tc	_2m","CABLE_BLU	E_SHORT"					
1 Zero Span								o1Pk Max ●2Av Ma	
								M1[1]	57.65 dBµ\ 7.000 0 s
70 dBµV			1					M2[2]	51.60 dBµ\
									12.5000
60 dBµ∨			M1						
						 M2			
50 dBµV						MZ V			
50 dBpv									
40 dBµV−−−−									
30 dBµV									
20 dBµ∨									
10 dBµ∨									
0 dBµV									
-10 dBµ∨									
CF 16.00043 GHz	7			201	nts				2.0 s/
5. 101000 10 0112				201	pro				2024-08-22

07:46:27 08/22/2024

Note:

Maximum Emission found with Average Detector: 51.60 dBµV, Limit Line: 54 dBµV, Result: Pass.

Maximum Emission found with Peak Detector: 57.65 dBµV, Limit Line: 74 dBµV, Result: Pass.



6

TID120b_RSE_TX_S12_12.4-18GHz_AntV

									~
MultiView	Spectrum								-
Ref Level 80.0	0 dBuV	• RBW 1 MHz							SGL
 Att 	10 dB • SWT 280	s 🖷 VBW 3 MHz	Mode Sweep						
PA 30 dB TDF "AF	_SGH_124_SN790",	"Correction_3m_to	_2m","CABLE_BLUE	_SHORT"					
1 Frequency Sw									Max e 2Av Max
90 dBµV				SS				M1[1	
Line PART				ss ss					17.780 770 GHz
85 dBµV	JOC_AV			.55				M2[2]	
05 0000									16.000 430 GHz
-80-dBµV	80.000 dBµV								
75 dBµ∨									
PART15C_PK									
70 dBµV									
65 dBµV									
00 00011									
									M1
60 dBµ∨							a state a data		and a state
PARTISC AV	وروبا ورويا والعامة والمعارفة والعروان	والالتيانية فيتحر في الم	وتواجار والدينية ألوسوني ويناوره	فترطيك فالترجي والاخلاف وملاحل وأردت	ويروا التراجية أولوا والمريسين ومراجع المراؤية	A Realized to all belief algorithms and		الإيلال فالمخط والمتحص فوجيس	
PARTISC_AV		يجاد محد مالا الاستعام ورجيا (محد أسراع الر	and a strange of the plane of the second sector fields	Table in the second	all services and services	under Marine Provide P		-	
50 dBµ∨						M2			
						I I			
45 dBµV									~
40 dBµV									
35 dBµ∨									
10.4.6115			11201						18.0 GHz
12.4 GHz			11201 pt	5	51	60.0 MHz/			
							Ready		2024-08-22 21:34:20

09:34:20 08/22/2024

Note: Maximum Emission found at 16.000430 GHz (M2) with average detector, for Final test check below test TID120a_02 with Zero span, Limit line: Peak: 74 dBµV, Average: 54 dBµV.

TID120b_01_S12_f1_16GHz_A329deg_E11deg_AntV

MultiView Spectrum								-
Ref Level 80.00 dBµV	• RBW 1 MH;	z						
	00 ms 🗢 VBW 3 MH:							
A 30 dB TDF "AF_SGH_124_SN79	0","Correction_3m_to	_2m","CABLE_BLUE	_SHORT"					
Frequency Sweep		P/	ss				○ 1Pk Max ● 2Av M1[1]	Max • 3Av Clrw 54,63 dBµ
0 dBµy Line PART15C_PK		PA	SS				M1[1]	16.000 330 0 GH
Line PART15C_AV		P/	SS				M2[2]	48.38 dBµ
5 dBµV							WIZ[Z]	16.000 430 0 GH
ю-dвµv								
5 dBµV								
ART15C_PK								
70 dвµV								
o dop i								
i5 dBuV								
is uppy								
i0 dBµV								
				M1				
ARTESC_AV				Å				
	1		(a) (1 1	
puskawanter and photos and photos and	MM MAR MAN MAN	power white white a power of the second s	Marga Margaret	M2 Marchon Ar work Ard	And many have the state	approximate and marked and	marker was here and the second second	Martin and a starter
				Λ.				
+5 dBµV				/ \				
				1				
ю dвµV			/					
and a second	***	-	and the second second	prostation and a second	an and the second second	-4000000000000000000000000000000000000	and a second and the second	and a second
35 dBuV								
o dep :								
F 16.000 43 GHz	1	1001 pts	i i		0.0 MHz/			Span 100.0 MH

09:41:59 08/22/2024

Note: Maximum Emission search and found at TT329°, TD11°



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TID120b_02_S12_f1_16GHz_ZeroSpan_100ms_A329deg_E11deg__AntV

									×
MultiView									
Ref Level 80.00		RBW 1 MHz							SGL
	5 dB • SWT 20 s _SGH_124_SN790","		2m"."CABLE_BLUE	SHORT"					
1 Zero Span		0011000001_011_00						●1Pk Max ●2Av	
								M2	[2] 48.46 dBμ\
									1.0000 9 [1]—56,28 dBµ\
70 dBµV									12.400 0 s
60 dBµ∨						M1			
								~~~~~~	
50 dBµV <mark>▼</mark>									
40 dBµV									
30 dвµV									
20 dBµV									
20 ubµv									
10 dBµ∨									
0 dBµ∨									
-10 dBµ∨									
CF 16.00043 GH				201	nte				2.0 s/
51 10:00045 GH				201	pts		- Ready		2024-08-22 21:42:57

09:42:58 08/22/2024

Note:

Maximum Emission found with Average Detector: 48.46 dBµV, Limit Line: 54 dBµV, Result: Pass.

Maximum Emission found with Peak Detector: 56.28 dBµV, Limit Line: 74 dBµV, Result: Pass.



# TID121a_RSE_TX_S12_18-40GHz_AntH

					<b>\$</b>
MultiView Spectrum	1				-
Ref Level 80.00 dBµV	RBW 1 MHz				SGL
• Att 5 dB • SW1	T 1100 s = VBW 3 MHz Mode Sw	/eep			
	83","Correction_3m_1m","CABLELOS	S_10_40GHZ_BLUERFLAMBDA			
1 Frequency Sweep					ax 😐 2Av Max
Limit Check	PASS			M1[1]	61.92 dBµV
Line PART15C_PK	PASS				8.468 280 GHz
-80-dBµV	PASS			M2[2]	48.11 dBµV
				3	8.468 280 GHz
75 dBμV					
PART15C_PK					
70 dBµV					
65 dBµV					
65 dBµV					M1
					The second
60 dBµV					سيالك الأسيك السي
		1	a state of the second stat	أأنيه فالاستطار بالأبير بالراري	
	1	والمعادية والمتلك والمتلج المحافظ فالمحاف والمراوي والمراجع والمعادي	والمتعالية والمتعالية والمتعالية والمتعاد والمتعاد والمتعاد		
PARTERCAN		A STATE OF A	Alatha Manager and Anna Alatha and	And the second second	
Polyngt the light states and the second stat	and the second state of th				
and the second state of th					
50 dBµV					M2
					<u>~</u> ~~
					$\sim \sim \sim$
45 dBμV					v
	marine la mont				
40°dBµ∨″	<u> </u>				
18.0 GHz	44001 pts	2	.2 GHz/		40.0 GHz
			- Ready		2024-08-23 14:51:09

02:51:10 08/23/2024

Note: Limit Line: Peak: 74 dBµV, Average: 54 dBµV, Result: Peak: Pass, Average: Pass.

# TID121b_RSE_TX_S12_18-40GHz_AntV

MultiView	Spectrum								-
Ref Level 80.00	) dBuV	RBW	1 MHz						SGL
Att	5 dB 🖷 SWT 1	100 s 🗢 VBW	3 MHz Mode	Sweep					
PA 30 dB TDF "AF_		","Correction_3	m_1m","CABLEL	.0SS_10_40GHZ	_BLUERFLAMBDA	λ"			
1 Frequency Sw					1				1ax ●2Av Max
Limit Check Line PART1			PA					M1[1]	
Line PARTI	SC_PK		PA						9.200 770 GHz
BO dBµV	00.000 dBµV		E A	55					48.10 dBµV
								3	9.200 770 GHz
75 dBµV									
PART15C_PK									
70 dBµV									
65 dBµ∨									VI1
60 dBµV									
					ر المروران ومشاهل والعلام أوال المرور رو	المنجا با	والماقلة المطل وأخلفا فتخف أأعاقت الأرار	أعاطا أتعر والشسارة أأخلال وللغرب	AND A REAL PROPERTY.
	السريني المرارين	is net condition and a	alah Hundherry Markad	الأحاقان والالتور أأسترار العقا	aldered a real approximation of the second o	and the call spectra proves	ورويقيال فيتعاط أحجى والتربيقين	The state of the s	
PARTISC AV	NEWSON OF STREET		and a second second	المطبر المتني أرحاكم وبالتلاح والألاح		All the state of the second field of		-	
and the second sec	The Charles of the Ch	No. of							
50 dBµV									M2
									win
									$\sim \sim \sim$
45 dBµV						~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Y
	~~~~	m	$\sim\sim\sim\sim\sim$	$\sim\sim\sim\sim$	- · · ·				
40'dBuv	$\sim\sim$]							
18.0 GHz			44001 pt	· · · · · · · · · · · · · · · · · · ·	2	.2 GHz/	1	I	40.0 GHz
1010 0112			. 1001 pt				Deedu		• 2024-08-23
							Ready		14:28:21

02:28:22 08/23/2024

Note:

Limit Line: Peak: 74 dB μ V, Average: 54 dB μ V, Result: Peak: Pass, Average: Pass.



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TID122a_RSE_TX_S12_40G-50GHz_AntH

MultiView Spectr	um						-
Ref Level -25.00 dBm	• RBW 1 MHz						SGL
	SWT 250 s - VBW 3 MHz Mod	e Sweep					
	22_33_50GHz","FSL_1_5M-40GH		oss_Farnell_black_	_33_67GHz"			
1 Frequency Sweep						o1Pk Ma	ax 😐 2Rm Max
Limit Check		PASS				M1[1]	-25.53 dBm
FCC_95Mne RSS-251		PASS				4	9.741 500 GHz
-5 dBm		PASS				M2[2]_	-38.18 dBm
						4	9.808 500 GHz
-10 dBm							
-15 dBm							
-15 UBM							
-20 dBm							
							M1
-25-dBm-25.000 (dBm-						1.
						Latartan i	وخذ الالتقالية المتعالية وسخاله المراجى
RSS-251			and the second second	the design of the	الالتقريب بلغر ليعز أيتر والتر	and the second second second	and the providence of the second s
-30 dBm		مالى المربية بالمالية المراجعة ال	die gestele die behalte bestelen.	likel with the day whether a state	approximation for the second statements	the part of the parts	
وهورا المزار وراويان وأحرار الأطور وأخطاره والريان المقدول أراري	والمنازي فألب استعطاؤك والأنبا والمائد وعريتك وعليتهم فتقاصلونا سيتحد ويقرما ويد	The second s	and a particular of the second s	and here and a second			
35 GBM Annual States Condition	Manual and the set of						
							M2
-40 dBm					~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
			-				
~45 dBm							
40.0 GHz	10001	pts	1.0) GHz/			50.0 GHz
					Ready		2024-08-26 09:18:50

09:18:51 08/26/2024

Note: No Critical Emission found, Only Noise Level from Spectrum Analyzer.

TID122b_RSE_TX_S12_40G-50GHz_AntV

MultiView	Spectrum								-
Ref Level -25	.00 dBm	• RBW	1 MHz						SGL
Att		250 s 🗢 VBW	3 MHz Mode	Sweep					
PA 30 dB TDF "G		33_50GHz","FSL	_1_5M-40GHZ-2	200GHZ","Cable_	Loss_Farnell_blac	:k_33_67GHz"			
1 Frequency St						1			ax 🛛 2Rm Max
Limit Che FCC_95Mne RSS-				SS SS				M1[1]	-25.60 dBm
-5 dBm	251 05M			SS					9.832 500 GHz
-5 dBm	20M		- FA	55					-37.90 dBm-
								4	9.814500 GHz
10 40.0									
-10 dBm									
-15 dBm									
-20 dBm									
									M1
-25-dBm	-25.000 dBm-								. بأدارية
								الرار وبالكرانين بال	a and a ball has a stand of the
RSS-251					- West - attack	Lune of the other of the other	Line Marine and the	a hiterary and hereits there us d	Participation and a second
and all a second	к	and the second	C. A. H. C. MARKER	dial distant for the statistics		an per la participa de la compaña de participada de la compaña de la compaña de la compaña de la compaña de la	المرجوة فالملاقين وسيب ماديا يتطنن		
 Vitalistada (galetas preto del tra literativa) 	والمتلقق أعلى والمتأخط والمتحد التلا			and Billing and a state of the state of					
-35 dBm	ferred beschedering and a second statements	And solution of a second second	···· ···						
									M2
-40 dBm								~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
						h			
-45 dBm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~						
-45 0011									
40.0 GHz		[10001 pt		1	.0 GHz/			50.0 GHz
40.0 GHZ			10001 pi	15	1				- 2024-09-26
							Ready		2024-08-26

09:13:14 08/26/2024



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TID223a_23-1-0144001T007_RSE_50 G - 55 GHz_FCC_AntH

									×>
MultiView	Spectrum								-
Ref Level -20.	00 dBm	• RBW	1 MHz						SGL
 Att 	10 dB • SWT 1:			Sween					UUL
	VT_FH_PP60_40_6				E LOSS FARNEL	L BLACK 33 67	GHZ.TDF"		
1 Frequency Sv								o 1Pk Ma	ax 😑 2Rm Max
								M1[1]	-25.27 dBm
								5	4.650 600 GHz
								M2[2]	-37.48 dBm
								5	4.452 600 GHz
0 dBm									
-10 dBm									
-10 0811									
-20 dBm		-20.000	IBm						
									M1
									lan 🍸 🔐 ang ang a
Los abarrens of the busides	eneral addition of the Astronomic States and a states of the states of t	بالمتحمية فيسلفان والمليل	فاستعبر برابها أنجر المعريقين ورزي	أأأسبك فالاطلاق والقال والتكأم والقاسر وروي	والأفريل والايمان والفافق الألاد المتعاد		المحادث الإدارية ويرداده ومراجا فالم		and the state of the second state of the secon
-30 dBm	and server and the state of the server of the ser	and the second		Hilfedenda eta cana analda an t		and a state of the			
								M2	
								······	
-40 dBm									
-50 dBm									
50.0 GHz			5001 pts		50	0.0 MHz/			55.0 GHz
30.0 GHZ			5001 pt	5	50				
							 Ready 		2024-08-26 14:54:17

02:54:17 PM 08/26/2024

Note: No Critical Emission found, Only Noise Level from Spectrum Analyzer.

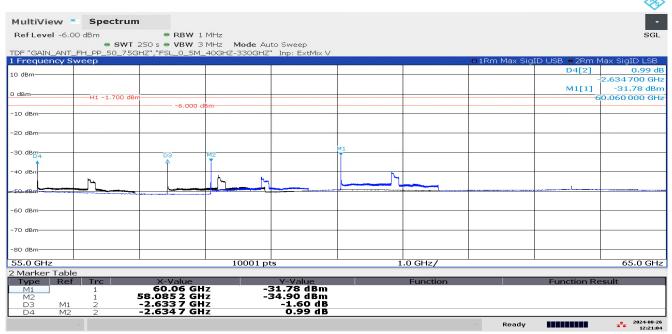
TID223b_23-1-0144001T007_RSE_50 G - 55 GHz_FCC_AntV

MultiView	Spectrum								
Ref Level -20	.00 dBm	RBW	1 MHz						SGL
	10 dB 🖷 SWT								
PA TDF "GAIN_A		_60GHZ.TDF","F	SL_1M_30M-250	GHZ.TDF","CABL	E_LOSS_FARNEL	L_BLACK_33_67	GHZ.TDF"		
1 Frequency Sv	weep					-			ax ●2Rm Max -25.20 dBm
									4.283 600 GHz
								M2[2]	-37.48 dBm
			1 D						4.451 600 GHz
0 dBm									
-10 dBm									
-20-dBm		-20.000	dBm						
								M1	
and a share a second	والأراب المراجعات المتحدي	at freedotes a data to	الحجاز المتحلط المتحمد المحاجب	أمار المراجع والمتعالية المالية المالية	العقاسين بمعيد بتطعيله	والمالية والمعادية والمعادية والمراجع	وملاء والمؤاجلة الطالب أأرف باسترطا والمؤاك	المعالية الإيازة المراجع ومعارية المقالية المقال	والمراجع والمنافع والمستعلم والمراجع والمتعاد
-30 dBm			and the second state of the se		and a first of the second s	Although the second sec			
								M2	
-40 dBm									
-50 dBm									
50.0 GHz			5001 pt	S	50	0.0 MHz/			55.0 GHz
							 Ready 		2024-08-26

02:51:26 PM 08/26/2024



TID224a_23-1-0144001T007_RSE_55 G - 65 GHz_FCC_AntH



12:21:04 PM 08/26/2024

Note: No Critical emission found, only image signal, check below TID224a_01 for more information.

TID224a_01_23-1-0144001T007_RSE_55 G - 65 GHz_FCC_AntH_signal_id

MultiView Spectru	m				
Ref Level -6.00 dBm	RBW 1 MHz				
	30 ms - VBW 3 MHz Me				Count 2918/10000
TDF "GAIN_ANT_FH_PP_50_75 1 Frequency Sweep	5GHZ","FSL_0_5M_40GHZ-3	30GHZ" Inp: ExtMix V		01D M 01-2	D USB • 2Rm Max SigID LSB
I Frequency Sweep				M2[1	-10.39 dBm
				WIZLI	58.083 900 GHz
				M1[1	-6.26 dBm
0 dBm H1 -1.700 d	IBm	M1			60.060 000 GHz
	D3 -6.000 dBm				
-10 dBm	A 7				
-20 dBm					
			Construction of the local division of the lo		M5
-30 dBn			and the second second		
	₩ ⁻				
-40 dBm					والمتعرب والمتروي والمتنافع المتعادين والمتعادين والمتعرب والمتعرب والمتعاد والمتعاد والمتعاد والمتعاد والمتعاد
والمرجوب المكرم ويتعاددون والمحاط والمتحاص والمتحاط وتحريته والمتحاط	and the second	and a second	ويعجب ببلز تربي لفرقهم والمحاصر والمتناز والتخطي	وبالهم ويعديهم التراطية المتراجع الدوالموجد وأمامه والترجيلية	
-50 dBm					
55.0 GHz	10	001 pts	1.0 GHz/		65.0 GHz
2 Marker Table Type Ref Trc	X-Value	Y-Value	Functio	~	Function Result
M1 1	60.06 GHz	-6.26 dBm	Tancao		T diffetion Result
M2 1	58.083 9 GHz	-10.39 dBm			
D3 M1 2	-2.633 5 GHz -2.633 8 GHz	-2.20 dB 1.04 dB			
D4 M2 2 M5 2	-2.6338 GHZ 63.5597 GHZ	-27.23 dBm			
Ma				Non a sumin a	2024-08-26
V.				measuring	. 14:42:33

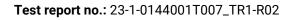
02:42:33 PM 08/26/2024

Note: Continuous Sweep with auto sweep time to verify image/ghost signals, only for information.

All are Image/Ghost Signals, since Mixer products are used.

Image/Ghost Signal: Signals, which are not overlapping(USB+LSB), Real Signal: Signals, which are overlapping(USB+LSB).

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TID224b_23-1-0144001T007_RSE_55 G - 65 GHz_FCC_AntV_auto_id

									× ×
MultiView	Spectrum								-
Ref Level -6.00		- RBW 1							SGL
Rei Level -6.00			MHz Mode Au	to Sween					SGL
TDF "GAIN_ANT_F									
1 Frequency Sw		,		anger erter art o			o 1Pk Max	∢Auto ID ⊜2Rm	n Max Auto ID
							M2[1]	1	-24.78 dBm
0 dBm								6	1.289 900 GHz
	— HI -1.700 dBm—						M1[1]	-24.63 dBm
		6.000 de	im					5	8.085 200 GHz
-10 dBm									
-20 dBm									
			M1			M2			
			T			T.			
			and the second second						
-30 dBm									
					1				
And the standard little to the second	a design of the second s	والمتحد والمتحد والملاح		de la constante	a shall be started as the state of a later		aliye baya hiya kata a kata a kata kata kata kata kat	a al de la caster al tres des tres de la de	
-40 UBM	and the second	والمراجعة المستطلي وبالمسيدية ويري	1						
~50.d8m									
			Januar						
-60 dBm									
55.0 GHz			10001 pt	IS	1	.0 GHz/			65.0 GHz
							 Ready 		2024-08-26 13:13:34

01:13:34 PM 08/26/2024

Note: No critical Emission found, only image/ghost signals, for more information check below TID224b_01

TID224b_01_23-1-0144001T007_RSE_55 G - 65 GHz_FCC_AntV_signal_id

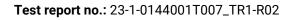
MultiView Sp	ectrum						
Ref Level -6.00 dBm	• RBW 1	MHz				SGL	_
		MHz Mode Auto Sweep					nt 3 000/3 000
DF "GAIN_ANT_FH_PP		40GHZ-330GHZ" Inp: ExtMix V					
Frequency Sweep					⊇1Rm Max SigI	D USB 😐 2Rm I	
dBm-					D4[2]		1.14 d
H1 -	-1.700 dBm						2,633 600 GH
	-6.000 d	Bm			M1[1		-19.85 dBr
.0 dBm						5	8.083 900 GH
			M2				
D4	DB	MIL	T N				
20 dBr	<u></u>	Y					
30 dBm				in the			
يرو المالية المربوبين المربوب	a second and a second as a		and an an an and the second second second	and a standard and a standard a			100
the product of the pr		Contraction of the second states of the second stat	Υ.				
10 dBm							
والمراجعة وأبراده أستخط متعاصلة المتحاط والمحمط	ورجاب ويروي والمحافظ فتنته والمتلاف والمادية المقادية		n le little star and the state in the state is the state of the state	بالأحضين ويغبانه ويتبون والمعومات	ومعاوده والمالية والمحمد والمراحة والمقاط	lah kerdak kelangkakan samulak kerdila	daria si si si dala dari se
and the second second second second							
50 dBm							
50 dBm							
55.0 GHz		10001 pts	1.	.0 GHz/			65.0 GH
Marker Table							
Type Ref Tro		Y-Value		Function		Function Re	esult
M1 1	58.083 9 GH 60.060 1 GH	z -19.85 dBm z -15.49 dBm					
M2 1 D3 M2 2	-2.633 6 GH						
D4 M1 2	-2.633 6 GH						
					- Ready		2024-08-2
~					Reauy		13:23:4

01:23:41 PM 08/26/2024

Note: Continuous Sweep with auto sweep time to verify image/ghost signals, only for information.

All are Image/Ghost Signals, since Mixer products are used.

Image/Ghost Signal: Signals, which are not overlapping(USB+LSB), Real Signal: Signals, which are overlapping(USB+LSB).





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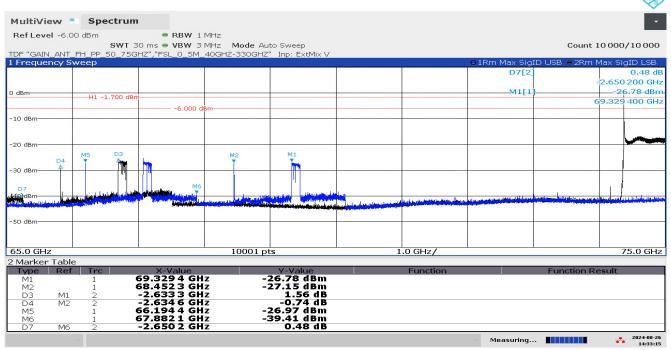
TID225a_23-1-0144001T007_RSE_65 G - 75 GHz_FCC_AntH

									×>
MultiView 🗧	Spectrum								-
Ref Level -6.00	dBm	RBW 1	MHz						SGL
	 SWT 2. 	50 s 👄 VBW 3	MHz Mode Au	to Sweep					
TDF "GAIN_ANT_F		IZ","FSL_0_5M_	40GHZ-330GHZ	' Inp: ExtMix V					
1 Frequency Sw	еер							k Auto ID 😑 2Rm	
							M1[1		-30.43 dBm
0 dBm	-H1 -1.700 dBm-								7.199300 GHz
							M2[2		-47.51 dBm
		-6.000 di	Bm					7	4.986 500 GHz
-10 dBm									
10 0.011									
-20 dBm									
		M1							
-30 dBm		140							
		AND MARKED AND A							
N LITE A CONTRACT	and the second	a and a second		hill a la sa s		ويستعقبه فعاقبنا أدياف يقعر	ومعالمه والمتعادية والمرابع	history alteration is a	in the second station is a station of the
-40 dBm		in the second	and the second state of the second states	واحتى يرمعانها اللعبة تتبعيوا الألاليا	and and a second share of the	and the provide the second	to the second		
									M2
-S0 dBm		· ··· ···		· · · · · · · · · · · · · · · · · · ·					
-60 dBm									
65.0 GHz			10001 pt		1	.0 GHz/		1	75.0 GHz
5510 0112			10001 pt				Deedu		2024-08-26
							 Ready 		14:15:47

02:15:47 PM 08/26/2024

Note: No Critical Emission found, only image signal, check TID225a_02 below for more information.

TID225a_02_23-1-0144001T007_RSE_65 G - 75 GHz_FCC_AntH_signal_id



02:33:15 PM 08/26/2024

Note: Signal ID functions are activated to verify image / ghost signals. No critical Emission found, only image signal.

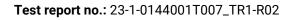
Test report no.: 23	1-0144001T007_TR1-R0
---------------------	----------------------



TID225b_23-1-0144001T007_RSE_65 G - 75 GHz_FCC_AntV

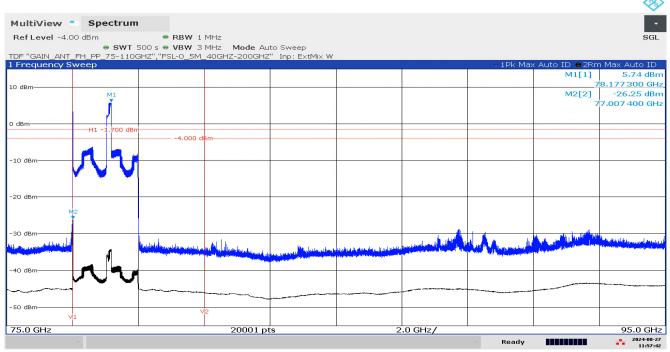
MultiView Spectrum	-
Ref Level -6.00 dBm • RBW 1 MHz	SGL
SWT 250 s • VBW 3 MHz Mode Auto Sweep TDF "GAIN_ANT_FH_PP_50_75GHZ","FSL_0_5M_40GHZ-330GHZ" Inp: ExtMix V	
1 Frequency Sweep • 1Pk Max Auto ID • 2Rm Ma	ax Auto ID
	-34.46 dBm
H1 -1 700 dBm	91 500 GHz
	-48.74 dBm 53 800 GHz
-6.000 dBm /1.4	33 800 GHZ
-10 dBm	
-20 dBm	
-30 dBm	
	M1
	n sullin diastration
	A spok a faithineach à antraicher
M2 M2	
-50 dBm	
-60 dBm	
65.0 GHz 10001 pts 1.0 GHz/	75.0 GHz
	2024-08-26

01:03:40 PM 08/26/2024





TID226a_23-1-0144001T007_RSE_75 G - 95 GHz_FCC_AntH



^{11:57:42} AM 08/27/2024

TID226b_23-1-0144001T007_RSE_75 G - 95 GHz_FCC_AntV

MultiView -	Spectrum								~
Ref Level -4.00	-	• RBW 1	MH-						SGL
Ker Lever -4.00			MHz Mode AL	ito Sweep					302
DF "GAIN_ANT_F		HZ","FSL-0_5M	_40GHZ-200GHZ	" Inp: ExtMix W					
. Frequency Sw	/eep						отрк ма	x Auto ID ●2Rr M1[1]	n Max Auto ID 1.31 dBm
.0 dBm									78.144300 GHz
.U dBm								M2[2]	-30.51 dBm
								-	77.007 400 GHz
	M1								
dBm									
		-4.000 c	Bm						
10 dBm									
	<u>N</u> .								
20 dBm									
M2									
30 dBm						i at	and the second sec	The second state of the second second	والمأترين ليريدون المتعادية
and a second		and the design of the second	and the state of the	التعميل التعاويل المراجع	فاحتبط أدور الاستأسم منيون ومنا		a head method language it	A CARLES AND A CAR	
	L		a second s		and a star start being a strength of the				
40 dBm									
50 dBm			12						
V1									
75.0 GHz			20001 p	ts	2	.0 GHz/	I	1	95.0 GHz

12:28:40 PM 08/27/2024

Note: In this Plot, V1 = 77 GHz, V2 = 81 GHz, RADAR active from 77 – 79 GHz. No critical Emission found.

Note: In this Plot, V1 = 77 GHz, V2 = 81 GHz, RADAR active from 77 – 79 GHz. No critical Emission found.





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TID227_01a_23-1-0144001T007_RSE_95 G - 110 GHz_FCC_AntH

MultiView	Spectrum						-
Ref Level 0.00	dBm 🗧	RBW 1 MHz					SGL
		VBW 3 MHz Mo					
TDF "GAIN_ANT_I 1 Frequency Sv		DF","FSL-0_5M_400	HZ-200GHZ.TDF" Inp: E	×tMi× F	●1Rm Max Sig		Aav SidTD LSB
I frequency 5v	veep					D2[2]	2.05 dB
-0-dBm		- 0.000 dBm					2.634300 GHz
o ubiii	— H1 -1.700 dBm	0.000 0.000				M1[1]	-33.31 dBm
						9	9.222 200 GHz
-10 dBm							
-20 dBm							
-30 dBm	2	MI					
		Ť					
	- ry ry		<u>n</u>				
-40 dBm							
-50 dBm							
-60 dBm							
95.0 GHz		15	5001 pts	1.5 GHz/			110.0 GHz
2 Marker Table							
Type Ref M1	Trc X	-Value 22 2 GHz	Y-Value -33.31 dBm	Function		Function Re	esult
D2 M1	2 - 2.6 3	34 3 GHz	2.05 dB				
МЗ	1 95.92	298 GHz	-30.32 dBm				
					Ready		2024-08-23

03:08:12 PM 08/23/2024

Note: Signal ID functions are activated to verify image / ghost signals. No critical Emission found, only image signal.

TID227_01b_23-1-0144001T007_RSE_95 G - 110 GHz_FCC_AntV

									~~
MultiView	Spectrum								-
Ref Level 0.00	dBm	• RBW 1 M	Hz						SGL
		75 s - VBW 3 M		Sweep					
TDF "GAIN_ANT_F	H_PP_90_1400				ix F				
1 Frequency Sw	/eep					1	IRm Max Sig.		Max SigID LSB
								D2[2]	0.10 dB
-0-dBm		0.000 dBn	n						-2.634300 GHz
	—H1 -1.700 dBm							M1[1]	-36.55 dBm-
									99.222 200 GHz
-10 dBm									
10 000									
-20 dBm									
20 0011									
-30 dBm									
- 30 dBm M3									
	2	M1							
-40 dBm									
-40 dBm-									
-50 dBm									
-60 dBm									
95.0 GHz			15001 pt	s	1	.5 GHz/			110.0 GHz
2 Marker Table			pt	-					
Type Ref	Trc	X-Value		Y-Value		Function		Function R	esult
M1		9.222 2 GHz		6.55 dBm					
D2 M1		-2.634 3 GHz 95.929 8 GHz		0.10 dB 4.56 dBm					
МЗ	1 1	95.9298 GHZ		4.50 abm					
							 Ready 		2024-08-23 14:01:22

02:01:23 PM 08/23/2024

Note: Signal ID functions are activated to verify image / ghost signals. No critical Emission found, only image signal.



TID227_02a_23-1-0144001T007_RSE_110 G - 120 GHz_FCC_AntH

MultiView = S	pectrum							
Ref Level 0.00 dBm		RBW 1 MHz						SGL
TDE "GAIN ANT EH		VBW 3 MHz Mode Auto F","FSL-0_5M_40GHZ-200		× F				
1 Frequency Swee			AGINZ IND. EXUM				o1Pk Ma	ax 😐 2Rm Max
H	1 -1.700 dBm	个 0.000 dBm					M1[1]	-23,43 dBm
								6.814800 GHz
-5 dBm								-36.56 dBm
							11	6.812800 GHz
-10 dBm								
a c albur								
-15 dBm								
-20 dBm								
					M1			
- 25 dBm				in the first		La construction de la Refe	a bar a	a transformer and trade to
-25 UBIII		1	والألية المجانبة والفالي والمرجان والمستعر إطره		ي المحمد الم مستقدم المحمد	an in the second state of the product of the second state of the s	ang series of the second se	A STATE OF A
اللالين المعنية ومن من القاطران المالية ال	العطيلة ميناني أبرو ويتلاد وملااطني وا	And the stand of t	Juli Martinek ma	and a start of the second s				
7=30°dBm	and a stand of the stand of the stand of the stand	here freed days to be a start of the						
-35 dBm					Ma			
CO GDAN					×			
40_dBm		A REAL PROPERTY OF A REAL PROPER						
-45 dBm								
110.0 GHz		10001 pt	· · · · · · · · · · · · · · · · · · ·	1	.0 GHz/			120.0 GHz
		10001 pt				Ready		2024-08-23

12:45:11 PM 08/23/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

TID227_02b_23-1-0144001T007_RSE_110 G - 120 GHz_FCC_AntV

									×9
MultiView	Spectrum								•
Ref Level 0.00	dBm	= RB	N 1 MHz						SGL
	 SWT 2. 	50 s 👄 VBV	N 3 MHz Mode Auto	Sweep					
		GHZ.TDF","F	FSL-0_5M_40GHZ-200	GHZ.TDF" Inp: I	ExtMix F				
1 Frequency Sw									ax 😑 2Rm Max
	——H1 -1.700 dBm).000 dBm						-23,90 dBm
								and the second se	6.071 900 GHz
-5 dBm									-36.53 dBm
								11	6.826 800 GHz
-10 dBm									
-15 dBm									
-20 dBm									
						M1			
-25 dBm						La marca dallada	L. L. M. L. M.	and the second second	La construction de la
20 dbiii				والمالية فتعمدا والخمار مالتها هدور	A state of the second		Professional and programming and	angen spengen om de lief alle de la stande ei Alle men med alle lief alle de la stande ei	e and special provides an attention of the state
mantherity, and out they	أمتد الحقيق محمد وتحمل	والمستعدا المتحدثا والمراجبان		A second statement of the second s	dimetric contract				
-S0rdBm - marchine	A DAMA DATA DATA DATA DATA DATA DATA DAT	a standard and a stan	and the second place in the second						
-35 dBm						M2-			
_40dBm									
	······································								
-45 dBm									
110.0 GHz			10001 pt			.0 GHz/			120.0 GHz
110.0 GHZ			10001 pt	5	1	.0 GHZ/			
							 Ready 		2024-08-23 14:07:35

02:07:36 PM 08/23/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

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TID227_03a_23-1-0144001T007_RSE_120 G - 140 GHz_FCC_AntH

MultiView	Spectrum	1							-
Ref Level 0.00) dBm	• RBW 11	ИНz						SGL
	 SWT 5 	500 s 🗢 VBW 3 M	AHz Mode Aut	o Sweep					
		GHZ.TDF","FSL-0	_5M_40GHZ-200	OGHZ" Inp: E×t№	lix F				
1 Frequency S	weep	1				1	●1Rm Max Sig	ID USB	
								D4[2]	1.25 dB 2.634 000 GHz
10 dBm								M1[1]	-24.31 dBm
									7.467 100 GHz
0-dBm-	H1 -1.700 dBn	0.000 dB	m						
-10 dBm									
-20 dBm									
			M1	D4	M	1			
		D2 4				P-2			
-30 dBm						<u></u>			
-40 dBm									
-50 dBm									
120.0 GHz			20001 pt	TS I	2	2.0 GHz/			140.0 GHz
2 Marker Table	e		•						
Type Ref	Trc	X-Value		Y-Value		Function		Function Re	esult
M1 D2 M1	1 1	27.4671 GH		24.31 dBm -1.99 dB					
M3 MI	∠ 1	131.857 GH	iz -:	23.67 dBm					
D4 M3	2	-2.634 GH	z	1.25 dB					
							Ready		2024-08-23

02:47:33 PM 08/23/2024

Note: Signal ID functions are activated to verify image / ghost signals. No critical Emission found, only image signal

TID227_03b_23-1-0144001T007_RSE_120 G - 140 GHz_FCC_AntV

MultiView	Spectrum								-
Ref Level 0.00) dBm	● RBW 1 M	1Hz						SGL
	 SWT 5 	00 s 🗢 VBW 3 M	1Hz Mode Aut	o Sweep					
TDF "GAIN_ANT_		GHZ.TDF","FSL-0_	_5M_40GHZ-200)GHZ″ Inp∶E×tM	ix F				
1 Frequency Sv	weep						IRm Max Sig	ID USB 2Rm	
								D4[2]	0.91 dB -2.634 000 GHz
10 dBm								M1[1]	-27.59 dBm
									27.467 100 GHz
									100 012
-0-dBm		0.000 dBr	n						
	HI -1.700 UBI								
-10 dBm									
-20 dBm									
			M1	D4	MB				
-30 dBm		D2			Ţ				
-30 uBiii									
-40 dBm									
-50 dBm									
120.0 GHz			20001 pt	S	2	2.0 GHz/			140.0 GHz
2 Marker Table	2								
Type Ref	Trc	X-Value		Y-Value		Function		Function R	esult
M1		27.4671 GH -2.6351 GH		27.59 dBm -2.36 dB					
D2 M1 M3	2	131.857 GH	1Z Z - 2	28.29 dBm					
D4 M3	2	-2.634 GH	z	0.91 dB					
							Ready		2024-08-23
							,		14:26:43

02:26:43 PM 08/23/2024

Note: Signal ID functions are activated to verify image / ghost signals. No critical Emission found, only image signal





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TID227_04a_23-1-0144001T007_RSE_140 G - 150 GHz_FCC_AntH

									~~~
MultiView	Spectrum								-
Ref Level 0.00	dBm	• RBW 11	MHz						SGL
	<ul> <li>SWT 2.</li> </ul>	50 s 🗢 VBW 3 M	MHz Mode Aut	o Sweep					
TDF "GAIN_ANT_F		GHZ.TDF","FSL-	0_5M_40GHZ-20	00GHZ" Inp: Ext	Mix G				
1 Frequency Sw	/eep					1			ax 😑 2Rm Max
								M1[1]	-14.46 dBm
0 dBm		0.000 dB	m						0.105 500 GHz -26.62 dBm
	—H1 -1.700 dBm							M2[2]	-26.62 dBm
								14	0.007 500 GHz
-5 dBm									
-10 dBm									
M1									
15 dBm									
a statistical second									
Contraction of the party of the	u datalat i u	e h				1 .			القصار والمقطعة المقاد والمراجع والمراجع
-20 dBm			وماريد الروايات المراجع	والطاريسة فيراطي الشطور يترقصهما		بالمراجعة المراجع المراجع المراجع	المرابع المرابط المرابع المرابع المرابع	and a picture of the second states of the	
20 0011	a state of the sta	alina hardhadridhiaitea ealard	and the second secon	na di kata bangitapan batan da babin	and the second	and the state of the ball of the state of th	alada aya sharay sigiraali	All distant in the other	
or dow									
M≥S dBm									
-30 dBm									
							a second and a second sec		
-35 dBm									
			1000						150.0.5
140.0 GHz			10001 pt	IS	1	.0 GHz/			150.0 GHz
							<ul> <li>Ready</li> </ul>		2024-08-23 12:04:44

#### 12:04:45 PM 08/23/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

# TID227_04b_23-1-0144001T007_RSE_140 G - 150 GHz_FCC_AntV

MultiView Spectrum						-
Ref Level 0.00 dBm	• RBW 1 MHz					SGL
	• VBW 3 MHz Mode Auto 3					
TDF "GAIN_ANT_FH_PP_140_200GHZ.	.TDF","FSL-0_5M_40GHZ-2000	GHZ" Inp: ExtMix G				
Frequency Sweep					0 IPK M	ax e 2Rm Max -14.36 dBr
						0.033 500 GF
)-dBm-	0.000 dBm				M2[2]	-26.63 dBr
H1 -1.700 dBm						0.012 500 GH
-5 dBm						
-10 dBm						
1						
15 dBm						
and the second se						1 40 10
and the second	an had a substantial she while and	ورجابي المروية المروية والمتعالي والمروية المراجع والمروي	n 1			
20 dBm	er andere er van de fan de ser en een de servere de servere de servere en de servere en de servere en de serve Is andere er van de fan de servere en de s	en a prove a presidente de la contra de la	in a hain bha phippiri bha bara ta	A Darred and the second	and an and the second s	al designed and a state of the state of the
	a statement to be statement of the			in disactificity (particulation)		
55 dBm						
-30 dBm						
-35 dBm						
140.0 GHz	10001 pts		1.0 GHz/	I	I	150.0 GH:
				Ready		2024-08-2

12:12:04 PM 08/23/2024



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# TID227_05a_23-1-0144001T007_RSE_150 G - 160 GHz_FCC_AntH

									- VS
MultiView	Spectrum								-
Ref Level 0.00	) dBm	- RBW 1 N	ИНZ						SGL
		50 s 🗢 VBW 3 N							
TDF "GAIN_ANT_ 1 Frequency Sv		GHZ.TDF","FSL-	0_5M_40GHZ-20	0GHZ" Inp: E×tl	Mix G			o t Dk M	ax 😑 2Rm Max
I frequency 3v	weep				[			M1[1]	-14.22 dBm
									2.626 200 GHz
-0-dBm		0.000 dB	~					M2[2]	-27.17 dBm
0 dBm	——H1 -1,700 dBm	0.000 08						15	4.013 100 GHz
	112 21100 000								
-5 dBm									
-10 dBm									
		M1							
-15 dBm	Id tachtar	المارين الملاحة المارين والمراجع	المرائلة فالمراجبة والمراجعة	A Contraction of the second of	التراج الإوالي المباج والمسرع التراسية والمعاده	alsol hald, ballond talanda Alsol hald a ballond talanda	الملو المعلة المتر أحضر والملح المرا	والالبانية الانتقابية أوطأفه الاقتراب	Markey Directionate
والأليعاة ليسللنوا أحصالهم يقر		a had a second and a second at the	un ann faoirteachan faonachan faoirteacha	yahawalansiaa platisi gipunia dish	that is produced a second start of the second start of the second start of the second start of the second start	in the states of the state of the state	<mark>na) man pharana an </mark>	and a fail of the fail of the second of	
-20 dBm									
LO GDIII									
-25 dBm									
			N	12					
-30 dBm									
150.0 GHz			10001 pt	S	1	.0 GHz/	I	I	160.0 GHz
							- Ready		2024-08-23

11:59:09 AM 08/23/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

# TID227_05b_23-1-0144001T007_RSE_150 G - 160 GHz_FCC_AntV

MultiView 📲	Spectrum								
Ref Level 0.00	•	• RBW 1 M							SGL
Rei Lever 0.00 t			Hz <b>Mode</b> Aut	o Sween					SGL
TDF "GAIN_ANT_F					Mix G				
l Frequency Sw								o 1Pk Ma	ax 😑 2Rm Max
							M1[1]		-14.19 dBr
)-dBm		0.000 dBm	) <del></del>					15	8.654600 GH
	—H1 -1.700 dBm—						M2[2]		-27.16 dBr
								15	3.968 100 GH
5 dBm									
-10 dBm									
								MI	
		1	ata tabil matad	and a statistic control of a		i la companya de la forma	the designment of	lles de la la constante de la	
	والمالية ليستنه والمالية والمرابي		ng tersengk statisficka i faranse an	and the state of the	de se la constitució de la definición de la constitución de la const	nde heelde beloed kaarste ster	allo and the second s		وريدادا والمارا المستخل المراجع المالية
	and the second provide the subsection of the	and a dama a barded out of			<ul> <li>A referenced server from</li> </ul>	a din ta da ante a cara a ca		and the second se	Phillipping interaction of the
-20 dBm									
-25 dBm									
			M	2					
-30 dBm									
-35 dBm									
55 GD.									
150.0 GHz			10001 pt	S	1	.0 GHz/	I	I	160.0 GH
						· · · · ·	Ready		2024-08-23
							,		12:16:

12:16:49 PM 08/23/2024



# TID227_06a_23-1-0144001T007_RSE_160 G - 170 GHz_FCC_AntH

									<b>I</b>
MultiView	Spectrum	i i i i i i i i i i i i i i i i i i i							
Ref Level 0.00	0 dBm	- RBW 1 N	ИНz						SGL
TOT LOAD ANT		50 s - VBW 3 N							
TDF "GAIN_ANT_ 1 Frequency S		UGHZ.TDF","FSL-(	U_5M_40GHZ-20	JUGHZ" Inp: Ext	MIX G			●1Pk Ma	ax e2Rm Max
								M1[1]	-14.45 dBm
									3.937 100 GHz
-0-dBm		0.000 dB	<i></i>					M2[2]	-27.18 dBm
o ubiii								16	3.323 200 GHz
	111 1.700 0.01								
-5 dBm									
5 dbm									
-10 dBm									
10 0011									
			ма						
-15 dBm			<b>•</b>	1					
-15 dBhi dhitlatha e Litera A	يواريا والمحاصل المارية		n ar Bhaile Bhaile, an A		a duna an in tr		ليراد المراجع المراجع	وريقها لالعاق أيلاد بلاريس ور	وروارية المتحليل المطلو
President and a state of the st	n special manufacture of a standard state of the second state of t	and the second state of th	and a state of the production of the state o	the lease the birth alk burd at	an an in the second	ndes wate is de de all's die s	And a state of the second s	and the state of the second state of the	والمحمد ويتطلب التصاد المالية
-20 dBm					The second second second	and the second se	Address and a second second		
-20 ubiii									
-25 dBm									
-25 dBm			M2						
			······						
00 d0									
-30 dBm									
160.0 GHz	1	1	10001 pt	S	1	.0 GHz/	1		170.0 GHz
	~						Ready		2024-08-23

11:53:07 AM 08/23/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

# TID227_06b_23-1-0144001T007_RSE_160 G - 170 GHz_FCC_AntV

Aulth Course	o strum							Ě
MultiView = Sp	ectrum							
	RBW 1							SGL
	• SWT 250 s • VBW 3							
DF "GAIN_ANT_FH_PP Frequency Sweep	_140_200GHZ.TDF","FSL	-0_5M_40GHZ-20	00GHZ" Inp: Ext	Mix G			o t Dk Ma	ax e2Rm Max
Trequency Sweep						M1[1]	O TEK MK	-14.58 dB
							16	3.108 200 GH
dBm	0.000 d	Bm				M2[2]		-27.18 dB
H1	-1.700 dBm	1					16	3.365 200 GI
5 dBm								
LO dBm								
		M1						
15 dBm								
الماغدانيين أوافيت المتعققين وال	والمتعاقلة والمتعاد والمتعادية والمتعادية والمتعادية والمتعادية	alleaner i feirige and an	all solution and a state of a	والمراجع والقوار المراطق	a landar i tara da anta	ومصيفه بدرابات بالمتقدين أل		لارية أيولي وطوزها والطواور
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20 dBm					and a second second	allocated in a		
.o dbiii								
25 dBm		M2						
					+			······································
30 dBm								
35 dBm								
.60.0 GHz		10001 pt			.0 GHz/			170.0 GF

12:21:41 PM 08/23/2024



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TID228_23-1-0144001T007_RSE_170 G - 180 GHz_AntH_FCC

									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MultiView 🗧	Spectrum								-
Ref Level 0.00 d	1Bm	RBW 1	MHz						SGL
		0 s = VBW 3	MHz Mode Aut	o Sweep					
TDF "GAIN_ANT_FI					o: ExtMix G				
1 Frequency Sw	еер							o1Pk Ma	ax 😑 2Rm Max
5 dBm							M1[1]		-19.43 dBm
								17	9.462 600 GHz
-0-dBm		0.000 di	\m				M2[2]		-37.16 dBm
	—H1 -1.700 dBm—							17	9.462 600 GHz
-5 dBm									
o dom									
-10 dBm									
-10 ubiii									
15.0									
-15 dBm									
									M1
-20 dBm									
-25 dBm	ورجابي أربيا ألاحته ومحافظ والمتعارية	البابية بالمحمل المعمل المرابع	وريوانيان فلر مردامية والرامينيوس	والمروال يعتموا فرائح ومطلبه ويرز	والقار بالمعتما ومايته والمتعار الأربا	A LANSING MERCHANNEL STREET	فتتحر ومقار وأحصانهمأ والقنيم وماسهم	ألفا فالتقيير والمحارية والمحار والمحار	and the set of the second second second
	A design president and and a second product and	in the second participation of	and the second	frank, horse philes for front where	and the second secon		nan selara sering dari perioda da selara	new parate providents of the last of providents of providents of providents of providents of providents of prov	alation of a Digital and a second second
-30 dBm									
-35 dBm									M2
									Y
-40 dBm									
-45 dBm									
-50 dBm									
170.0 GHz			10001 pt	ts	1	.0 GHz/			180.0 GHz
							 Ready 		2024-08-22

02:15:07 PM 08/22/2024

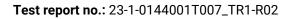
Note: Emission at 179.4626 GHz is image signal, no critical emission, for more information, check below TID228_01

TID228_01_23-1-0144001T007_RSE_179.46 GHz_AntH_FCC_image_signal

MultiView	Spectrum								-
Ref Level 0.00) dBm	• RBW 1 MH	Ηz						SGL
			Hz Mode Auto						
TDF "GAIN_ANT_	_FH_PP_140_200	GHZ.TDF","FSL-(0_17M_40GHZ-2	200GHZ.TDF" Inp	o: ExtMix G				
1 Frequency Sv	weep	m 个 0.000 d	19 m				•1Rm Max Sig		
-28 dBm	·		.5.11				M1[1]		-37.11 dBm - 462 800 0 GHz -
-28 dBm								1/9	462 800 0 GH2
-30 dBm									
-32 dBm									
52 dbiii									
-34 dBm									
-36 dBm									
				м	1				
-38 dBm									
-40 dBm									
-42 dBm									
-44 dBm									
-46 dBm									
I 1									
CF 179.463 GH	lz		1001 pts	5	10	D.0 MHz/		Sp	an 100.0 MHz
							Ready		2024-08-22

02:23:02 PM 08/22/2024

Note: Signal ID function are activated to verify image / ghost signal, Emission at 179.46 GHz is image signal. No critical emission. Signal which are not overlapping(USB+LSB)(USB+LSB) is image / ghost signal.





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TID229_23-1-0144001T007_RSE_170 G - 180 GHz_AntV_FCC

									V 9
MultiView 🗧	Spectrum								-
Ref Level 0.00 d	1Bm	• RBW 1 N	1Hz						SGL
			Hz Mode Aut	o Sweep					
TDF "GAIN_ANT_FI					o: ExtMix G				
1 Frequency Sw	еер							o 1Pk Ma	ax 🗧 2Rm Max
5 dBm								M1[1]	-19.51 dBn
									9.463 600 GH
-0-dBm		0.000 dB	m					M2[2]	-37.63 dBn
	—H1 -1.700 dBm—	0.000 45						17	9.463 600 GH
-5 dBm									
-5 ubin									
10.10									
-10 dBm									
-15 dBm									
									M1
-20 dBm									
-25 dBm	والمعارية والمعار	A. D.L. J. LINSON	منا ويعربه بالاعتران أيسرون	a additional Rev Later and	والإيلام وترويناك والمستركف أوار	ener, höhrteitika andar kalte	aillitheit de sectores laboratio	tational authors and callence of	
							Dis statistical data (species and section and	and a subscription of the state	a la fa fa se an air an
-30 dBm									
-35 dBm									M2
									T T
-40 dBm									
-45 dBm									
10 0011									
-50 dBm									
-50 dBm									
170.0 GHz			10001 pt	S	1	.0 GHz/	1		180.0 GHz
	,					· ·	Ready		2024-08-23
							nouny		10:32:05

10:32:05 AM 08/23/2024

Note: Emission at 179.4626 GHz is image signal, no critical emission, for more information, check below TID229_01

TID229_01_23-1-0144001T007_RSE_179.46 GHz_AntH_FCC_image_signal

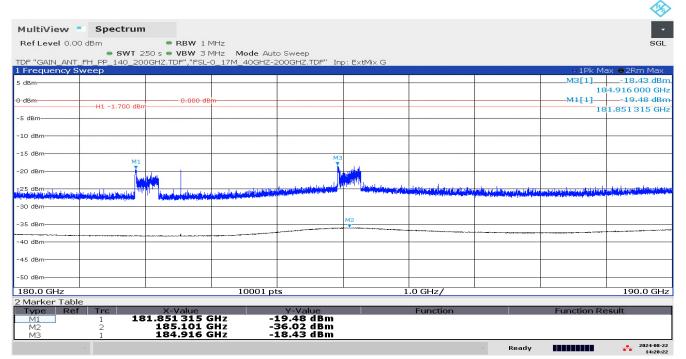
4ultiView •	Spectrum								
Ref Level 0.00	•	• RBW 1 MH:	z						SGL
			z Mode Auto S						Count 25/25
DF "GAIN_ANT_F Frequency Sw	H_PP_140_2000	GHZ.TDF","FSL-	0_17M_40GHZ-2	200GHZ.TDF" Inp	o: ExtMix G		● 1Rm Max Sig	ID USB 😑 2Rm N	4ax SigID LSB
	个H1 -1.700 dBm	i ↑ 0.000 d	lBm					M1[1]	-36.84 dB
28 dBm								179	463 400 0 GI
30 dBm									
32 dBm									
34 dBm									
36 dBm				r	41 V				
Maryon and and and and and and and and and an	and a set of the set o	the mar designed to be	~~~~	and more thank	Marcator Approximation	manymoder	mantine hadres and marked and	the construction of the cost	and a superior and a superior de
38 dBm									
10.40.0									
40 dBm									
42 dBm									
+2 UDIII									
14 dBm									
46 dBm									
			1001						
F 179.463 GHz	2		1001 pt	S	10	0.0 MHz/		Sp	an 100.0 MH

10:34:12 AM 08/23/2024

Note: Signal ID function are activated to verify image / ghost signal, Emission at 179.46 GHz is image signal. No critical emission. Signal which are not overlapping(USB+LSB)(USB+LSB) is image / ghost signal.



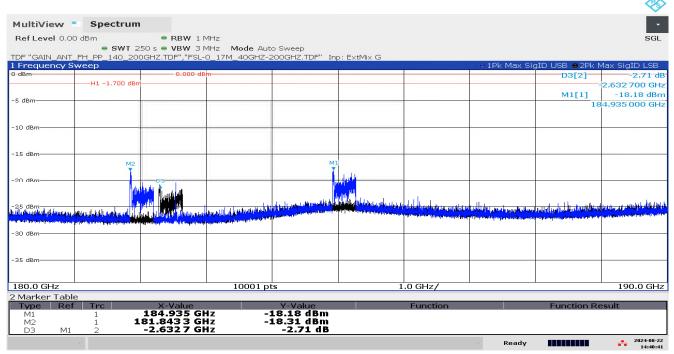
TID230_23-1-0144001T007_RSE_180 G - 190 GHz_AntH_FCC



02:28:22 PM 08/22/2024

Note: Emission at Marker-1 and Marker-2 are image signals, check below TID230_01 for more information.

TID230_01_23-1-0144001T007_RSE_180 G - 190 GHz_AntH_FCC_signal_id

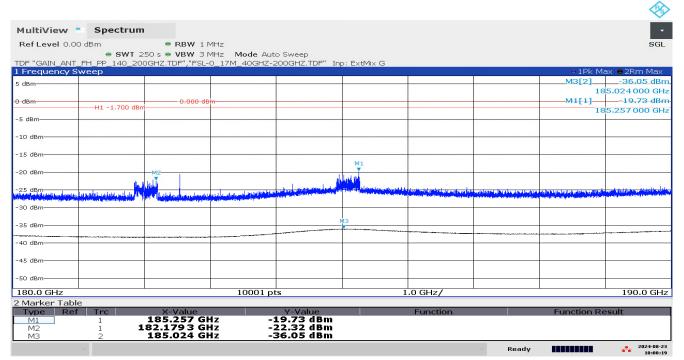


02:40:41 PM 08/22/2024

Note: Signal ID function are activated to verify image / ghost signal, in this plot all are image signal. No critical emission. Signal which are not overlapping(USB+LSB)(USB+LSB) is image / ghost signal.



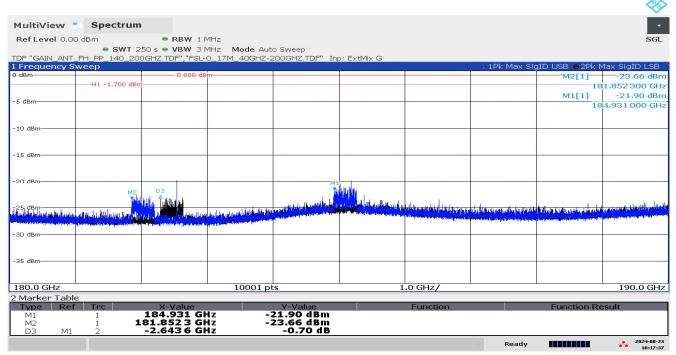
TID231_23-1-0144001T007_RSE_180 G - 190 GHz_AntV_FCC



10:08:19 AM 08/23/2024

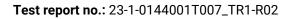
Note: Emission at Marker-1 and Marker-2 are image signals, check below TID231_01 for more information.

TID231_01_23-1-0144001T007_RSE_180 G - 190 GHz_AntV_FCC_signal_id



10:17:37 AM 08/23/2024

Note: Signal ID function are activated to verify image / ghost signal, in this plot all are image signal. No critical emission. Signal which are not overlapping(USB+LSB) (USB+LSB) is image / ghost signal.





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TID232_23-1-0144001T007_RSE_190 G - 200 GHz_AntH_FCC

									×>
MultiView =	Spectrum								-
Ref Level 0.00 d	dBm	• RBW 1 N	1Hz						SGL
			Hz Mode Aut	o Sweep					
TDF "GAIN_ANT_F					o: ExtMix G				
1 Frequency Sw	reep							o 1Pk Ma	ax 😑 2Rm Max 👘
							M1[1]		-22.55 dBm
								19	2,498 300 GHz
-0-dBm		0.000 dB	m				M2[2]-		-35.30 dBm
	—H1 -1.700 dBm—								2.274300 GHz
-5 dBm-									
-5 dBm									
-10 dBm									
-15 dBm									
-20 dBm									
		M1							
	and an or the kinds	والمراجع والمراجع ألاله بالامراق	a la sur a di su						
la 26 la State contra church de			is the set of the set of the set	a publication of the public of	almada n datut iki a		distance first the balance	and the state of the second state of the	and Belalan all and a second
Additional and a second			and the second	and the second	a period and an and a first state of the	Hard and the Brad Market Street	and the second	notella blea kan ag blean gha an fra	
-30 dBm						and the state of the			
-30 uBm									
		M2							
-35 dBm		M2 7							
-40 dBm									
190.0 GHz			10001 pt	S	1	.0 GHz/			200.0 GHz
							 Ready 		2024-08-22

03:36:16 PM 08/22/2024

Note: No critical Emission found, only noise level from Spectrum Analyzer.

TID233_23-1-0144001T007_RSE_190 G - 200 GHz_AntV_FCC

MultiView	Spectrum								-
Ref Level 0.00	dBm	• RBW 11	ИHz						SGL
			MHz Mode Aut						
TDF "GAIN_ANT_F 1 Frequency Sw		DGHZ.TDF","FSL-	0_17M_40GHZ-2	200GHZ.TDF" In	o: ExtMix G			O I DL M	ax 😑 2Rm Max
I Frequency Sw	veep							M1[1]	-22.90 dBm
									1.899 300 GHz
0 dBm		0.000 dB	m						-35.33 dBm-
	—_H1 -1.700 dBm							19	2.155 300 GHz
-5 dBm									
-10 dBm									
-15 dBm									
-20 dBm	M1								
		المراجع والمراجع المراجع والمراجع الم	due and the second						
142Hoold in the second children				and distant the stand to be	lat alking de la Tarra de la		A superior in the second second	a standard a standard a se	and the second second second second second
And the second second second second second			and the second second second	the state of the s		and a state of a state of the s	the conductive data and similar to the second	fid-dissignations is detroised, if the	
-30 dBm						and the second se			
		M2							
-35 dBm		×							
- I									
-40 dBm									
190.0 GHz			10001 pt	s	1	.0 GHz/			200.0 GHz
							- Ready		2024-08-23

09:47:55 AM 08/23/2024



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TID234_23-1-0144001T007_RSE_200 G - 220 GHz_AntH_FCC

									×>
MultiView -	Spectrum								-
Ref Level 0.00 d	dBm	• RBW 1 N	1Hz						SGL
			1Hz Mode Aut	o Sweep					
TDF "GAIN_ANT_FI	H_PP_140_220GH				× G				
1 Frequency Sw								∢ Auto ID ⊜2Rm	
-0-dBm	H1 0.500 dBm		m				M1[1]		-25.09 dBm
								21	7.967 600 GHz
-5 dBm							M2[2]		-37.92 dBm
								20	4.565 300 GHz
-10 dBm									
10 00.00									
-15 dBm	· · · · · · · · · · · · · · · · · · ·								
-15 ubm									
-20 dBm									
								M	1
-25 dBm	a	And the second					la.	and the second	adat atta
(algebra and the trans			and the second states and a second state	the bracket proton all and	ويرجع والأسعيد والبقا ومالط ويري	the transfer billion of the balance of	A DESCRIPTION OF THE OWNER OF THE		and the second s
-30 dBm			the second s	and of the local sector of the		a second s	and the second		
-35 dBm		42							
		V							
-40 dBm									· · · · · · · · · · · · · · · · · · ·
-45 dBm									
-50 dBm									
50 ubiii									
55.10									
-55 dBm									
200.0 GHz			20001 pt	'S	2	2.0 GHz/		<u> </u>	220.0 GHz
22010 0112			20001 pt		2		D = = du		2024-08-22
							 Ready 		16:17:35

04:17:35 PM 08/22/2024

Note: Peak Detector is only for information, No Critical frequency found.Emission at M1 (217.9676 GHz is image signal)

Limit Line: 0.5 dBm, Result: Pass

TID234_01_23-1-0144001T007_RSE_200 G - 220 GHz_AntH_FCC_signal_id

MultiView	Spectrum								-
Ref Level 0.00 dE	- 3m	• RBW 1 M	Hz						SGL
		5 s – VBW 3 MH		Sweep					
TDF "GAIN_ANT_FH		GHZ","FSL-0_17	7M_140GHZ-250	IGHZ" Inp: ExtM	ix G				
1 Frequency Swe	ер Тн1 0.500 dBr	n 1`0.000 g	Bm				O IPK Max SI M1[1]	gID USB 😐 2Pk N	-18.27 dBm
							WILII	217	955 110 0 GHz
-5 dBm							M2[2]	217	-26.80 dBm
								217	955 100 0 GHz
-10 dBm									
-15 dBm									
			M1						
			Ann and Arrest		a an de				
-20 dBm		ſ	 Alternation of the second s 	han war and a start and a start	htter and the second				
				1.1.1.1.1.1.1	Lula .	ton hand had	in all really blacks	at a cost the mar	سيد وبدا بالمار
					Not the second sec	a na Mharahaith Indint	an with the mediation of the t	WANNA WANT	h., Add Libudd A AMAL Day
-25 dBm			M2					a franciska se	
ally the Advantin and Mill	U. Walker Walk	bilisher watcher whether the	han ann an tha tha ann an tha	with strand and an in where	htwo MMAAAAM	have been and	had a total what a state	approximation	and the set touther
addition of the set to be watch.	Alter a contraction of the second	, Makanah, Manah, Jaka I	the contraction of the fit	u , a sendete ∧a Aldeko da s	Male and a second to	A MARK MARK	ad the solid of second of the solidate	what is the book sets so from	n the and the o a the other and a second
-30 dBm									
-35 dBm									
-40 dBm									
CF 217.968 GHz			1001 pt	s	10	0.0 MHz/	·	Sp	an 100.0 MHz
~							 Ready 		2024-08-22

04:21:51 PM 08/22/2024

Note: Since Mixer Products are used, there are some image/ghost signal.

Signals, which are overlapping (USB+LSB), are real signal, in this plot there is only image signal not related to assessment.



TID235_23-1-0144001T007_RSE_200 G - 220 GHz_AntV_FCC

									I
MultiView	Spectrum	1							
RefLevel 0.00		- RBW 11							SGL
TDF "GAIN_ANT_		00 s 🗢 VBW 3 M			nn: ExtMix G				
1 Frequency S		56H2.HDF , F6E	0_1711_1406112	2000112.1101			●1Pk Ma	k Auto ID ⊜2Rm	n Max Auto ID
-0-dBm	H1 0.500 dBm	0.000 dB	m						-25.85 dBm
									4.846 300 GHz
-5 dBm		1						M2[2]	-37.91 dBm
								20	4.619300 GHz
-10 dBm									
-15 dBm									
10 000									
-20 dBm									L
-20 ubm									
or dow		M1							
-25 dBm	to the standard standards	hand have the state and sectors and the			المرعمين فلار فيتبع والمراجع		, Juilden .	. I	laalo titui
The Constitution provides built and the second second			and a still of the balance she had	to a start of the second s		And which any second burning second a	a subscription of the second		
-30 dBm									
-35 dBm		M2							
		<u>▼</u>							
-40 dBm							and the second se		
-45 dBm									
-50 dBm									
-55 dBm									
200.0 GHz			20001 pt	ts	2	.0 GHz/			220.0 GHz
							Ready		2024-08-23

09:42:48 AM 08/23/2024

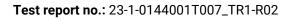
Note: Peak Detector is only for information, No Critical frequency found. Limit Line: 0.5 dBm, Result: Pass

TID236_23-1-0144001T007_RSE_220 G - 243 GHz_AntH_FCC

									×9
MultiView =	Spectrum								-
Ref Level 0.00	dBm	● RBW 1 M	1Hz						SGL
			1Hz Mode Aut	o Sweep					
TDF "GAIN_ANT_F	H_PP_220_2430	GHz","FSL-0_17	M_140GHZ-250	GHZ" Inp: ExtMi	хJ				
1 Frequency Sw	/eep								ax 😑 2Rm Max
								M1[1]	-12.82 dBm
									0.919500 GHz
-0-dBm-	H1 0.500 dBm	0.000 dBr	m					M2[2]	-25.33 dBm 0.737 500 GHz
								22	0.737500 GHZ
-5 dBm-									
-10 dBm									
M1									
and the state									
715 dBm ^{fall} Huffligh									
theid contract with a fail	n a la segui de la la la segui de la deserva de la segui de la deserva de la segui de la segui de la segui de l A la segui de la	Marth Barley and	and all						
	and the second s	Constanting of the second s	attilda, ha antifit dha	and the last well black and	لارداريني الأليطالي أستندر يتا	Street U. Hilton and state	manufact hat adalet in the	A CHARLES AND A COMPANY	paghanna hymnilliau
-20 dBm		Descipation	يمتع المتلافظت الأماريتانين وموسا المسالحات وار	how the left of the party of the second strength of the second stren	والمؤسم ويرور ومحمد ومعاط أكتر الرباح وجامع	The second se	Approximate a substance and provide a substance of the su	al solution of balance are supported	a substanting on the second
						a second second		and the second	
-25 🚾 m									
-30 dBm									
00 00									
-35 dBm									
220.0 GHz			23001 pt	S	2	2.3 GHz/	I	I	243.0 GHz
	~						Ready		2024-08-23
									11:18:18

11:18:18 AM 08/23/2024

Note: Peak Detector is only for information, No Critical frequency found. Limit Line: 0.5 dBm, Result: Pass 5





TID237_23-1-0144001T007_RSE_220 G - 243 GHz_AntV_FCC

									I
MultiView -	Spectrum								
Ref Level 0.00	dBm	• RBW 1 P	ИНz						SGL
TDF "GAIN_ANT_		75 s - VBW 3 M			. 1				
1 Frequency Sv		3GH2 , 1 3L-0_17	M_140GH2-230	Griz Inp. Extimi	xJ			o1Pk Ma	ax 😑 2Rm Max
								M1[1]	-12.49 dBm
								22	0.066 500 GHz
0-dBm		0.000 dB	m					M2[2]	-25.33 dBm
								22	0.727 500 GHz
-5 dBm									
5 dbm									
-10 dBm						-			
M1									
T III III IIII									
the hard with the hard of the house of	a sud								
-15.dBm	a ship a ship a ship and a ship a	elli data peline terbata jara en fr							
	"Interpolitican have	ditter to the second	ورار الأرور وروز والتعالية ال	ار داد از از اه اه ا	Market Inc.				ملين فلار ا
	a series and	Department in the	aller of sed of costs of selections	ing pagagagagagagagagagaga ang sang sang sang	a manata berdaren (alerta) bar	The full of the full a human	القباء وارته فالشروقية أتريعوا والمعاقبا	dalah punguna dalah se	أحلمان شيعويته والشقومية المعاداتهم وا
-20 dBm			and and help the second second	and a second second second second second	an a su an an an an ann an an an an an an an an	in the second	وريحو وأفاسط موافلهم والباف فأستنع	an and the second s	Management of the second s
M2									
-25 3m									
-30 dBm									
-35 dBm									
220.0 GHz		·	23001 pt	s	2	.3 GHz/			243.0 GHz
							- Ready		2024-08-23 11:30:05

11:30:05 AM 08/23/2024

Note: Peak Detector is only for information, No Critical frequency found. Limit Line: 0.5 dBm, Result: Pass



12.6 Frequency stability

Description:

§95.3379 (b) Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

Limits:

FCC
FCC §95.3379 (b)
The occupied bandwidth from intentional radiators operated within the specified frequency band shall comply with the following:
Frequency range
76 GHz – 81 GHz

Measurement:

Parameters					
Detector:	Pos-Peak				
Resolution bandwidth:	50 MHz				
Video bandwidth:	80 MHz				
Trace-Mode:	Max Hold				

Measurement results:

Test condition	Frequency f _L [GHz]	Frequency f _H [GHz]	Bandwidth [GHz]
-20 °C / V _{nom}	77.008053	78.942130	1.934077
-10 °C / V _{nom}	77.007406	78.945789	1.938378
0 °C / V _{nom}	77.006951	78.956179	1.949228
10 °C / V _{nom}	77.006337	78.962884	1.956547
20 °C / V _{nom}	77.005933	78.966823	1.960890
20 °C / V _{min}	77.005837	78.965884	1.960051
20 °C / V _{max}	77.005801	78.965736	1.959934
30 °C / V _{nom}	77.005328	78.968232	1.962904
40 °C / V _{nom}	77.005369	78.971956	1.966587
50 °C / V _{nom}	77.004802	78.972297	1.967495

Note:

- The EUT is measured in the temperature range from -20°C to 50°C specified by §95.3379 (b) and RSS Gen 6.11.
- If the operating temperature range of the device specified by the manufacturer exceeds the test temperature range (-20°C to +50°C), the customer is responsible for ensuring the frequency stability and proper functioning of the device within the extended operating temperature range.

Verdict: Complies

Note: For measurement diagrams, check another document "23-1-0144001T007_TR1-A201-R1.pdf"



13 Glossary

EUT	Equipment under test		
DUT	Device under test		
UUT	Unit under test		
GUE	GNSS User Equipment		
ETSI	European Telecommunications Standards Institute		
EN	European Standard		
FCC	Federal Communications Commission		
FCC ID	Company Identifier at FCC		
IC	Industry Canada		
PMN	Product marketing name		
HMN	Host marketing name		
HVIN	Hardware version identification number		
FVIN	Firmware version identification number		
EMC	Electromagnetic Compatibility		
HW	Hardware		
SW	Software		
Inv. No.	Inventory number		
S/N or SN	Serial number		
С	Compliant		
NC	Not compliant		
NA	Not applicable		
NP	Not performed		
PP	Positive peak		
QP	Quasi peak		
AVG	Average		
00	Operating channel		
OCW	Operating channel bandwidth		
OBW	Occupied bandwidth		
OOB	Out of band		
DFS	Dynamic frequency selection		
CAC	Channel availability check		
OP	Occupancy period		
NOP	Non occupancy period		
DC	Duty cycle		
PER	Packet error rate		
CW	Clean wave		
MC	Modulated carrier		
WLAN	Wireless local area network		
RLAN	Radio local area network		
DSSS	Dynamic sequence spread spectrum		
OFDM	Orthogonal frequency division multiplexing		
FHSS	Frequency hopping spread spectrum		
GNSS	Global Navigation Satellite System		
C/N ₀	Carrier to noise-density ratio, expressed in dB-Hz		



14 Document history

Version	Applied changes	Date of release
R01	Initial release	2024-11-20
R02	Frequency band corrected. R01 of the report is replaced and not valid anymore.	2025-02-14