



FCC RADIO TEST REPORT

FCC ID : 2AJN7-TP00164A
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00164A
Applicant : LC Future Center Limited Taiwan Branch
7F., No.780, Beian Rd., Zhongshan Dist., Taipei 104, Taiwan
Manufacturer : Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay,
Hong Kong, P.R. China
Standard : FCC 47 CFR Part 2, 96

Equipment: Rolling Wireless RW350R-GL tested inside of Lenovo Notebook Computer.

The product was received on Dec. 16, 2024 and testing was performed from Jan. 03, 2025 to Feb. 13, 2025. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory



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History of this test report

Report No.	Version	Description	Issue Date
FG4D1633E	01	Initial issue of report	Mar. 03, 2025
FG4D1633E	02	Revise Section 1.2, 2.1, 2.4, appendix A and appendix B. This report is an updated version, replacing the report issued on Mar. 03, 2025.	Apr. 21, 2025

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	\$2.1046	Conducted Output Power	Pass	-
-	§96.41	Peak-to-Average Ratio	Pass	See Note
3.3	§96.41	Effective Isotropic Radiated Power	Pass	-
-	\$2.1049 §96.41	Occupied Bandwidth	Pass	See Note
-	\$2.1051 §96.41	Conducted Band Edge Measurement	Pass	See Note
-	\$2.1051 §96.41	Conducted Spurious Emission	Pass	See Note
-	\$2.1055	Frequency Stability for Temperature & Voltage	Pass	See Note
4.4	\$2.1051 §96.41	Radiated Spurious Emission	Pass	-

Remark:

- For host device, Radiated Spurious Emission and Equivalent Isotropic Radiated Power are verified and complies with the limit in this test report.
- For host device, the Conducted Output Power is no difference after compared to module (Model: RW350R-GL)

Conformity Assessment Condition:

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

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sheng Kuo

Report Producer: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00164A
FCC ID	2AJN7-TP00164A
Sample 1	EUT with AWAN Antenna
Sample 2	EUT with Luxshare-ICT Antenna
Integrated WLAN Module	Brand Name: Intel Model Name: AX211D2W FCC ID: PD9AX211D2
Integrated WLAN Module	Brand Name: Intel Model Name: BE201D2W FCC ID: PD9BE201D2
Integrated NFC Module	Brand Name: Foxconn Model Name: T77H747
EUT supports Radios application	WCDMA/HSPA/LTE/5G NR/GNSS/NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 WLAN 11be EHT20/EHT40/EHT80/EHT160/EHT320 Bluetooth BR/EDR/LE
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Rolling Wireless RW350R-GL tested inside of Lenovo Notebook Computer.

Support band and evaluated information	
Supported band	n48
Evaluated and Tested band	n48
Main Antenna	n48
MIMO2 Antenna	n48

WWAN Antenna Information				
Main Antenna	Manufacturer	AWAN	Peak gain (dBi)	5GNR n48 : -1.40
	Part number	DC330028K00	Type	PIFA
	Manufacturer	Luxshare-ICT	Peak gain (dBi)	5GNR n48 : -1.40
	Part number	DC330028G00	Type	PIFA
MIMO2 Antenna	Manufacturer	AWAN	Peak gain (dBi)	5GNR n48 : 0.95
	Part number	DC330028K00	Type	PIFA
	Manufacturer	Luxshare-ICT	Peak gain (dBi)	5GNR n48 : 0.95
	Part number	DC330028G00	Type	PIFA

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx Frequency	3550 MHz ~ 3700 MHz
Rx Frequency	3550 MHz ~ 3700 MHz
Bandwidth	<SCS 15kHz>: 5 MHz / 10 MHz / 15 MHz / 20 MHz / 30 MHz / 40 MHz <SCS 30kHz>: 10 MHz / 15 MHz / 20 MHz / 30 MHz / 40 MHz
Maximum Output Power to Antenna	<Main Antenna>: 20.57 dBm <MIMO2 Antenna>: <SCS 15k>: 20.59 dBm <SCS 30k>: 20.36 dBm
Type of Modulation	PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

1.3 Modification of EUT

No modifications are made to the EUT during all test items.

1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333
Test Site No.	Sporton Site No.
	TH03-HY
Test Engineer	Mike Yeh
Temperature (°C)	22.2~23.9
Relative Humidity (%)	43.8~51.6

Test Site	Sporton International Inc. Wensan Laboratory.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010
Test Site No.	Sporton Site No.
	03CH12-HY (TAF Code: 3786)
Test Engineer	Jack Cheng, Tim Lee and Wilson Wu
Temperature (°C)	20~25
Relative Humidity (%)	50~60
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786

1.5 Applied Standards

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

- ♦ ANSI C63.26-2015
- ♦ FCC 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in Tablet Mode (three orthogonal axis (X: flat, Y: portrait, Z: landscape)) and Notebook Mode, and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report..

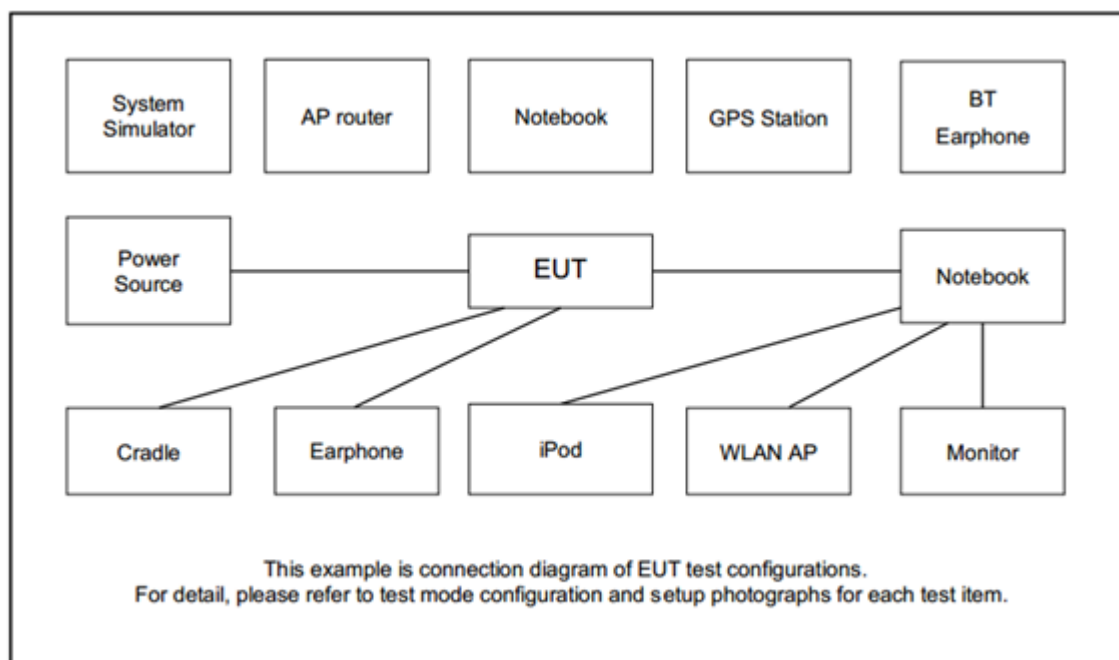
Modulation Type	Modulation	Modulation Type	Modulation
A	DFT-s-OFDM pi/2 BPSK	N/A	N/A
B	DFT-s-OFDM QPSK	F	CP-OFDM QPSK
C	DFT-s-OFDM 16QAM	G	CP-OFDM 16QAM
D	DFT-s-OFDM 64QAM	H	CP-OFDM 64QAM
E	DFT-s-OFDM 256QAM	I	CP-OFDM 256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B, C	All	1RB	L, M, H
EIRP	A, B, C	All	1RB	L, M, H
RSE	A	40 MHz or less	Inner_1RB	L, M, H

Remark:

1. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
3. During the RSE preliminary test, the standalone mode and charging modes were verified. It is determined that the charging modes is the worst case for the official test.
4. For modulation of Pi/2 BPSK & QPSK & 16QAM, the maximum power of Pi/2 BPSK & QPSK & 16QAM is higher than other modulation(64QAM/256QAM), therefore, according to engineering evaluation, we choose higher power (Pi/2 BPSK & QPSK & 16QAM) to perform tests and show in the report.
5. 5GNR n48 supports antenna Main & antenna MIMO2, this report only presents the worst case for radiated spurious emission.
6. Since n48 mainly uses MIMO2 antennas for testing, the Main antenna acts as the secondary antenna. Therefore, the Main antenna is only used to measure pi/2 BPSK, QPSK, and 16QAM at the maximum bandwidth. For other bandwidths, only pi/2 BPSK is measured.
7. For 5G NR UL CA combination is EN-DC B2+n48.
8. All the radiated test cases were performed with Sample 2.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A

2.4 Frequency List of Low/Middle/High Channels

<SCS 15kHz>

NR Band n48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	638000	641666	645332
	Frequency	3570.0	3624.99	3679.98
30	Channel	637668	641666	645666
	Frequency	3565.02	3624.99	3684.99
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690.0
15	Channel	637168	641666	646166
	Frequency	3557.52	3624.99	3692.49
10	Channel	637000	641666	646332
	Frequency	3555.0	3624.99	3694.98
5	Channel	636834	641666	646500
	Frequency	3552.51	3624.99	3697.5

<SCS 30kHz>

NR Band n48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	638000	641666	645332
	Frequency	3570.0	3624.99	3679.98
30	Channel	637668	641666	645666
	Frequency	3565.02	3624.99	3684.99
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690.0
15	Channel	637168	641666	646166
	Frequency	3557.52	3624.99	3692.49
10	Channel	637000	641666	646332
	Frequency	3555.0	3624.99	3694.98

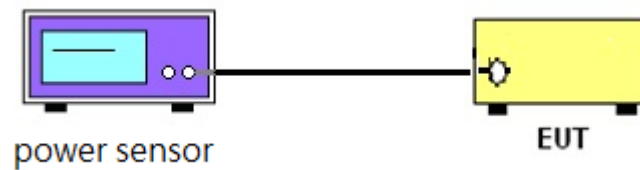
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power Measurement

A power sensor was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.2.2 Test Procedures

1. The transmitter output port was connected to the power sensor.
2. Set EUT at maximum power.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the power sensor
5. The measure-and-sum technique is used for measuring in-band transmit power of a device.

Total power is the sum of the conducted power levels measured at the various output ports.

3.3 EIRP

3.3.1 Description of the EIRP Measurement

The EIRP of category A CBSD must not exceed 30 dBm / 10 megahertz.

The EIRP PSD of category A CBSD must not exceed 20 dBm / 1 megahertz.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - LC$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a

3.3.2 Test Procedures

1. The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2) and 3.2(b)(3)
2. Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.

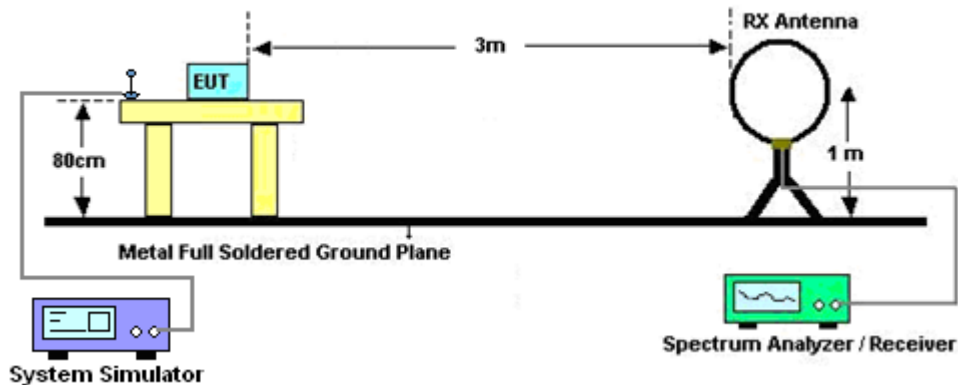
4 Radiated Test Items

4.1 Measuring Instruments

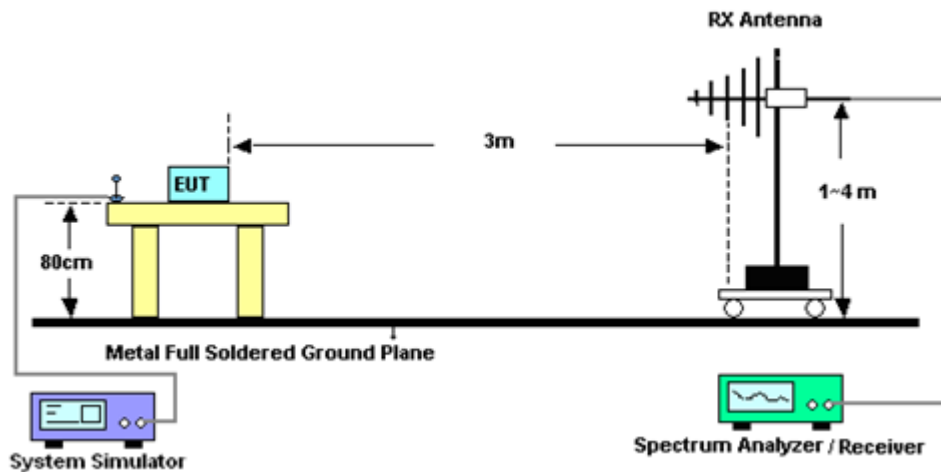
See list of measuring instruments of this test report.

4.2 Test Setup

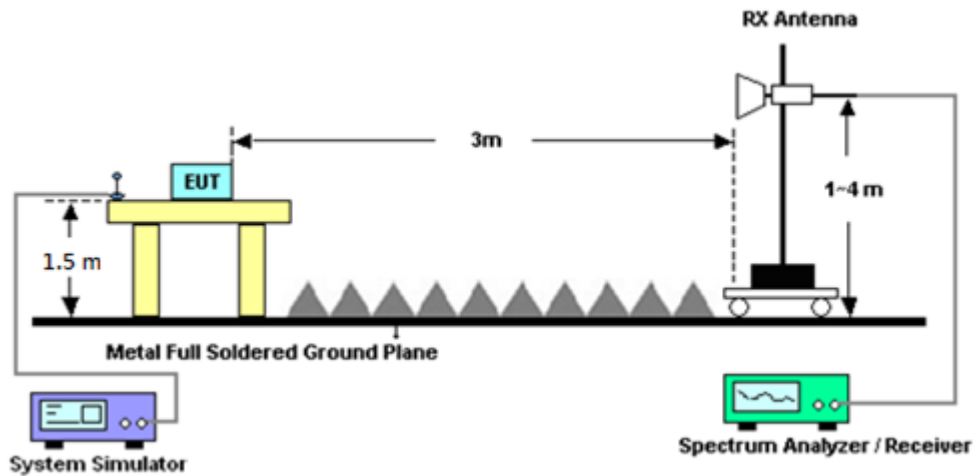
For radiated emissions below 30MHz



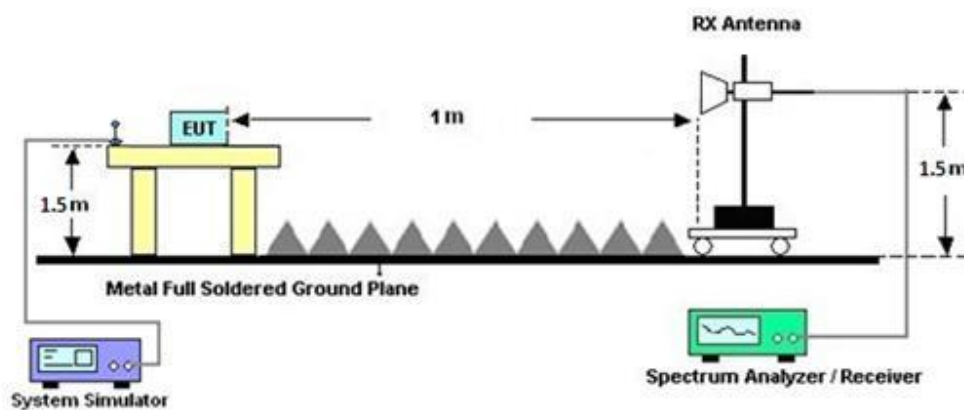
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI C63.26-2015.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz .

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI C63.26-2015 section 5.5.4 Radiated measurement using the field strength method.

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. To convert spectrum reading E(dBuV/m) to EIRP(dBm)
$$\text{EIRP(dBm)} = \text{Level (dBuV/m)} + 20\log(d) - 104.77$$
, where d is the distance at which field strength limit is specified in the rules.
7.
$$\text{Field Strength Level (dBm)} = \text{Spectrum Reading (dBm)} + \text{Antenna Factor} + \text{Cable Loss} + \text{Read Level} - \text{Preamp Factor}.$$
8.
$$\text{ERP (dBm)} = \text{EIRP (dBm)} - 2.15$$
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 23, 2024	Jan. 03, 2025~ Feb. 05, 2025	Feb. 22, 2025	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Nov. 27, 2024	Jan. 03, 2025~ Feb. 05, 2025	Nov. 26, 2025	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02114	1GHz~18GHz	Jul. 11, 2024	Jan. 03, 2025~ Feb. 05, 2025	Jul. 10, 2025	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18G-5 6-01-A70	EC1900269	1GHz~18GHz	Dec. 19, 2024	Jan. 03, 2025~ Feb. 05, 2025	Dec. 18, 2025	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Aug. 09, 2024	Jan. 03, 2025~ Feb. 05, 2025	Aug. 08, 2025	Radiation (03CH12-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Sep. 09, 2024	Jan. 03, 2025~ Feb. 05, 2025	Sep. 08, 2025	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00993	18GHz~40GHz	Nov. 18, 2024	Jan. 03, 2025~ Feb. 05, 2025	Nov. 17, 2025	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 02, 2024	Jan. 03, 2025~ Feb. 05, 2025	Dec. 01, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX12-2700-30 00-18000-60ST	SN2	3GHz High Pass Filter	Mar. 13, 2024	Jan. 03, 2025~ Feb. 05, 2025	Mar. 12, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WLKS1200-12SS	SN2	1.2GHz Low Pass Filter	Mar. 13, 2024	Jan. 03, 2025~ Feb. 05, 2025	Mar. 12, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX12-900-100 0-15000-60SS	SN11	1GHz High Pass Filter	Mar. 13, 2024	Jan. 03, 2025~ Feb. 05, 2025	Mar. 12, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX8-5872.5-6 750-18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 13, 2024	Jan. 03, 2025~ Feb. 05, 2025	Mar. 12, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Jan. 03, 2025~ Feb. 05, 2025	Mar. 05, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 19, 2024	Jan. 03, 2025~ Feb. 05, 2025	Dec. 18, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803955/2	30MHz~40GHz	Nov. 01, 2024	Jan. 03, 2025~ Feb. 05, 2025	Oct. 31, 2025	Radiation (03CH12-HY)
RF Cable	EMCI	EMC101Y-KM-KM -100	240907	30MHz~40GHz	Nov. 14, 2024	Jan. 03, 2025~ Feb. 05, 2025	Dec. 13, 2025	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP210090	N/A	Aug. 29, 2024	Jan. 03, 2025~ Feb. 05, 2025	Aug. 28, 2025	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jan. 03, 2025~ Feb. 05, 2025	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jan. 03, 2025~ Feb. 05, 2025	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jan. 03, 2025~ Feb. 05, 2025	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Jan. 03, 2025~ Feb. 05, 2025	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
DC Power Supply	GW Instek	GPE2323	GET910896	0V~64V ;0A~6A	Nov. 26, 2024	Feb. 06, 2025~ Feb. 13, 2025	Nov. 25, 2025	Conducted (TH03-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101544	10Hz~44GHz	Jul. 17, 2024	Feb. 06, 2025~ Feb. 13, 2025	Jul. 16, 2025	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Oct. 08, 2024	Feb. 06, 2025~ Feb. 13, 2025	Oct. 07, 2025	Conducted (TH03-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	NA	Nov. 01, 2024	Feb. 06, 2025~ Feb. 13, 2025	Oct. 31, 2025	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8821C	6261849015	LTE	Nov. 26, 2024	Feb. 06, 2025~ Feb. 13, 2025	Nov. 25, 2025	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8000A	6261940327	FR1	Nov. 28, 2024	Feb. 06, 2025~ Feb. 13, 2025	Nov. 27, 2025	Conducted (TH03-HY)
Coupler	MVE	MVE-4816-10	A400024	N/A	Jun. 27, 2024	Feb. 06, 2025~ Feb. 13, 2025	Jun. 26, 2025	Conducted (TH03-HY)
Power divider	Anritsu	K241C	2143398	9KHz~40GHz	Jun. 13, 2024	Feb. 06, 2025~ Feb. 13, 2025	Jun. 12, 2025	Conducted (TH03-HY)
RF Cable	MVE	MCBL-LL403P.50	E80002C	9KHz~40GHz	Aug. 23, 2024	Feb. 06, 2025~ Feb. 13, 2025	Aug. 22, 2025	Conducted (TH03-HY)
Software 1	Sporton	FCC 5GNR_FSV3044_ 20231106	N/A	Conducted Test Item	N/A	Feb. 06, 2025~ Feb. 13, 2025	N/A	Conducted (TH03-HY)

6 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 6 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7 dB
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Uncertainty of Radiated Emission Measurement (6 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power and EIRP)

<Main Antenna>

NR n48 Maximum Average Power [dBm] (GT - LC = -1.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
10	1	1	PI/2 BPSK	20.47	20.34	20.01	19.07	0.0807
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = -1.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
15	1	1	PI/2 BPSK	20.43	20.39	20.06	19.03	0.0800
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = -1.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
20	1	1	PI/2 BPSK	20.40	20.37	20.08	19.00	0.0794
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = -1.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
30	1	1	PI/2 BPSK	20.39	20.37	20.00	18.99	0.0793
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = -1.4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
40	1	1	PI/2 BPSK	20.57	20.53	20.18	19.17	0.0826
40	1	1	QPSK	20.57	20.46	20.17		
40	1	1	16-QAM	19.45	19.42	19.16	18.05	0.0638
Limit	EIRP < 23dBm/10MHz			Result			Pass	

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



<MIMO 2 Antenna>

<SCS 15k>

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
5	1	1	PI/2 BPSK	19.60	19.88	19.13	21.07	0.1279
5	1	1	QPSK	20.05	20.07	20.12		
5	1	1	16-QAM	19.51	18.67	18.30	20.46	0.1112
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
10	1	1	PI/2 BPSK	19.16	20.23	19.05	21.33	0.1358
10	1	1	QPSK	20.38	19.38	19.40		
10	1	1	16-QAM	18.75	18.78	18.44	19.73	0.0940
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
15	1	1	PI/2 BPSK	19.62	19.89	19.13	21.54	0.1426
15	1	1	QPSK	20.59	20.48	20.12		
15	1	1	16-QAM	19.51	18.54	18.30	20.46	0.1112
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
20	1	1	PI/2 BPSK	19.61	19.41	20.14	21.09	0.1285
20	1	1	QPSK	19.55	19.38	20.12		
20	1	1	16-QAM	19.75	19.45	18.36	20.70	0.1175
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
30	1	1	PI/2 BPSK	19.55	19.84	18.99	20.79	0.1199
30	1	1	QPSK	19.54	19.32	19.40		
30	1	1	16-QAM	18.72	18.56	18.19	19.67	0.0927
30	1	1	64-QAM	17.01	16.88	16.51		
30	1	1	256-QAM	15.10	14.94	14.60		
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
40	1	1	PI/2 BPSK	19.30	19.68	18.89	20.68	0.1169
40	1	1	QPSK	19.73	19.12	18.84		
40	1	1	16-QAM	18.51	18.38	18.04	19.46	0.0883
Limit	EIRP < 23dBm/10MHz			Result			Pass	

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



<SCS 30k>

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
10	1	1	PI/2 BPSK	20.36	20.25	20.04	21.31	0.1352
10	1	1	QPSK	20.33	20.23	20.03		
10	1	1	16-QAM	19.30	19.21	19.00	20.25	0.1059
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
15	1	1	PI/2 BPSK	20.36	20.27	20.07	21.31	0.1352
15	1	1	QPSK	20.33	20.18	20.03		
15	1	1	16-QAM	19.34	19.18	19.09	20.29	0.1069
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
20	1	1	PI/2 BPSK	20.24	20.27	20.00	21.22	0.1324
20	1	1	QPSK	20.27	20.22	19.96		
20	1	1	16-QAM	19.30	19.15	18.83	20.25	0.1059
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
30	1	1	PI/2 BPSK	20.28	20.23	19.90	21.23	0.1327
30	1	1	QPSK	20.27	20.19	19.89		
30	1	1	16-QAM	19.24	19.13	18.78	20.19	0.1045
Limit	EIRP < 23dBm/10MHz			Result			Pass	

NR n48 Maximum Average Power [dBm] (GT - LC = 0.95 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
40	1	1	PI/2 BPSK	20.08	20.07	19.77	21.03	0.1268
40	1	1	QPSK	20.02	20.03	19.74		
40	1	1	16-QAM	19.08	18.97	18.70	20.03	0.1007
Limit	EIRP < 23dBm/10MHz			Result			Pass	

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



Appendix B. Test Results of Radiated Test

B1. Summary of each worse mode

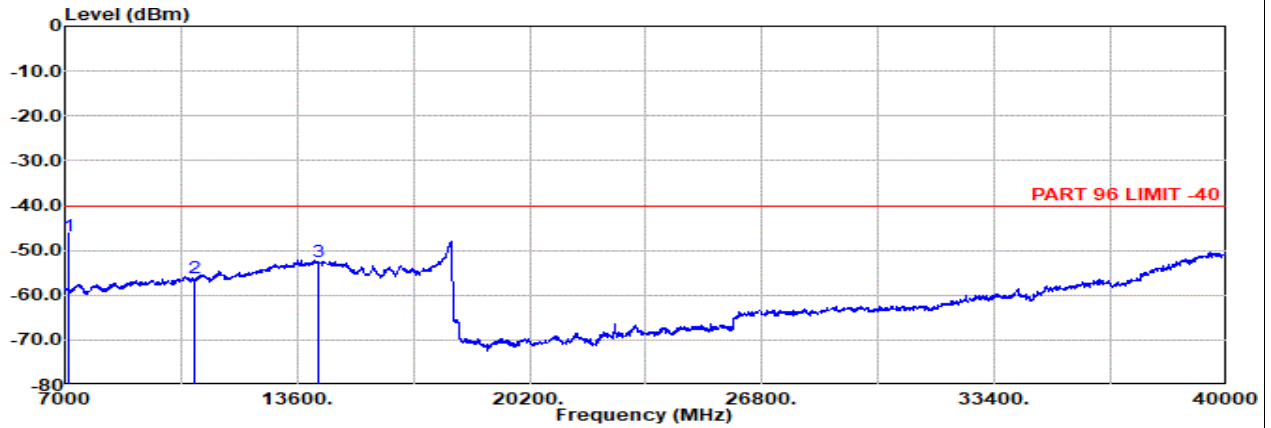
Mode	Part	Band	Ch	Freq (MHz)	Level (dBm)	Det	Ant Factor (dB)	AmplCbl (dB)	Filter (dB)	EIRPCF (dB)	Reading (dBuV)	Limit (dBm)	Margin (dB)	Pol	Ant
58	Part 96	NR SA n48	L	7104	-46.66	RMS	36.62	-53.58	0.90	-95.23	64.63	-40.00	-6.66	H	Ant MIMO2
59	Part 96	EN-DC B2+n48	L	14209	-52.48	RMS	40.98	-48.01	0.45	-95.23	49.33	-40.00	-12.48	H	Ant MIMO2+ Ant Main

Ant MIMO2

Part 96 Mode 58

NR SA n48 40M Ch638000 1RB1 BPSK

L

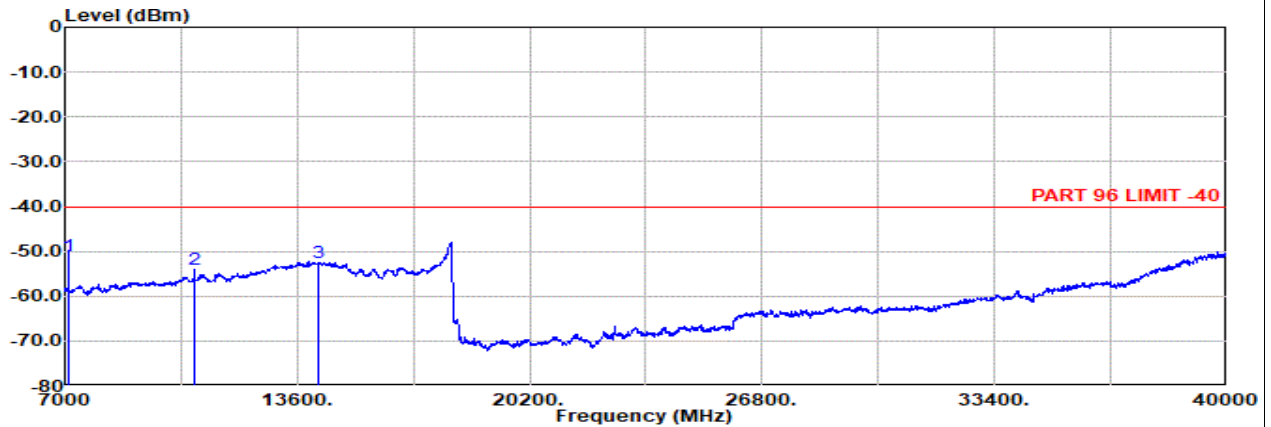


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: SA n48 40M Ch638000 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7104.00	-46.66	RMS	36.62	-53.58	0.90	-95.23	64.63	-40.00	-6.66	Horizontal
2	10656.00	-56.28	RMS	39.20	-51.98	0.26	-95.23	51.47	-40.00	-16.28	Horizontal
3	14209.00	-52.45	RMS	40.98	-48.01	0.45	-95.23	49.36	-40.00	-12.45	Horizontal



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: SA n48 40M Ch638000 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7104.00	-50.96	RMS	36.62	-53.58	0.90	-95.23	60.33	-40.00	-10.96	Vertical
2	10656.00	-53.97	RMS	39.20	-51.98	0.26	-95.23	53.78	-40.00	-13.97	Vertical
3	14209.00	-52.43	RMS	40.98	-48.01	0.45	-95.23	49.38	-40.00	-12.43	Vertical

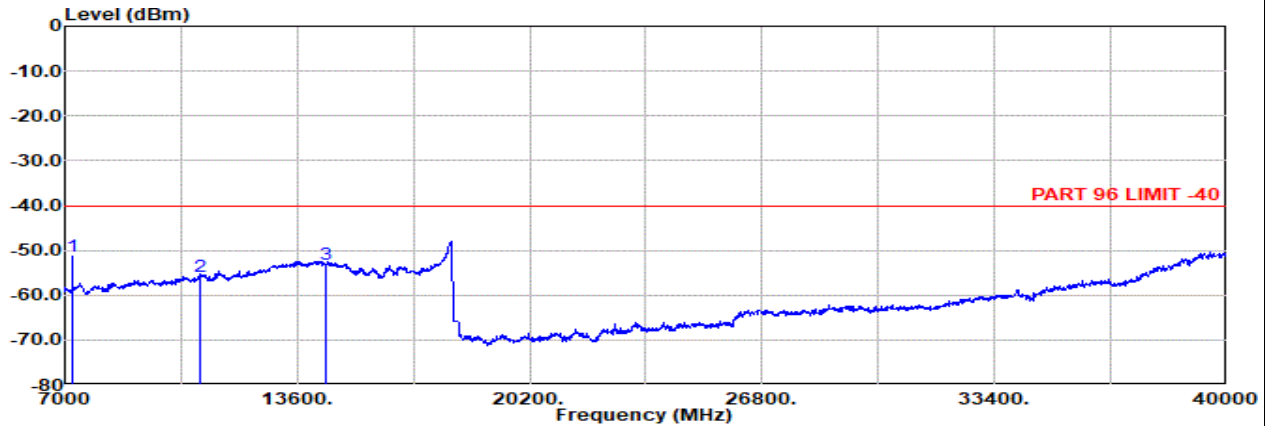


Ant MIMO2

Part 96 Mode 58

NR SA n48 40M Ch641666 1RB1 BPSK

M

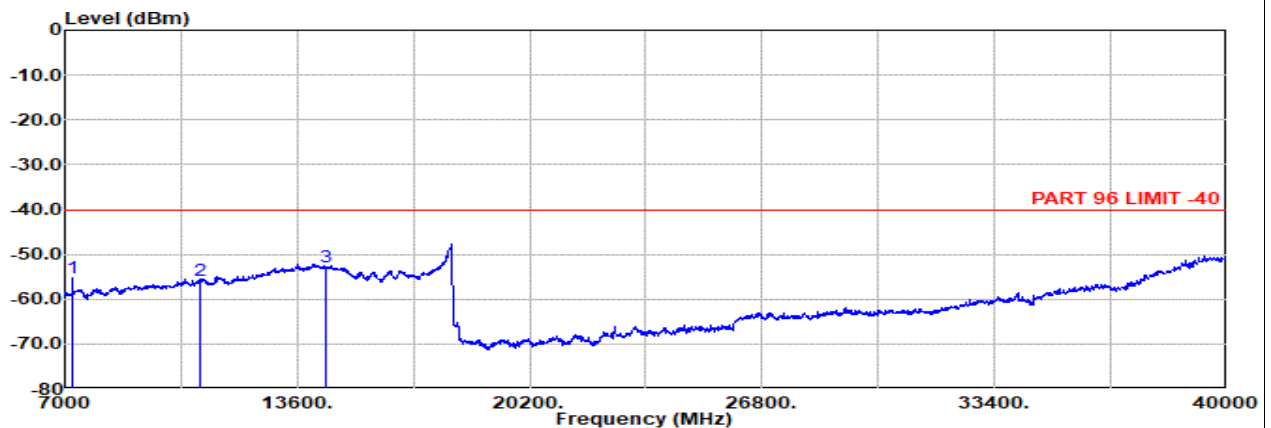


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: SA n48 40M Ch641666 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm						dBuV	dBm	dB	
1	7214.00	-51.21	RMS	37.06	-53.50	0.89	-95.23	59.57	-40.00	-11.21	Horizontal
2	10821.00	-55.89	RMS	39.20	-51.81	0.27	-95.23	51.68	-40.00	-15.89	Horizontal
3	14429.00	-52.98	RMS	40.64	-47.63	0.44	-95.23	48.80	-40.00	-12.98	Horizontal



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: SA n48 40M Ch641666 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm						dBuV	dBm	dB	
1	7214.00	-55.13	RMS	37.06	-53.50	0.89	-95.23	55.65	-40.00	-15.13	Vertical
2	10821.00	-55.97	RMS	39.20	-51.81	0.27	-95.23	51.60	-40.00	-15.97	Vertical
3	14429.00	-52.80	RMS	40.64	-47.63	0.44	-95.23	48.98	-40.00	-12.80	Vertical

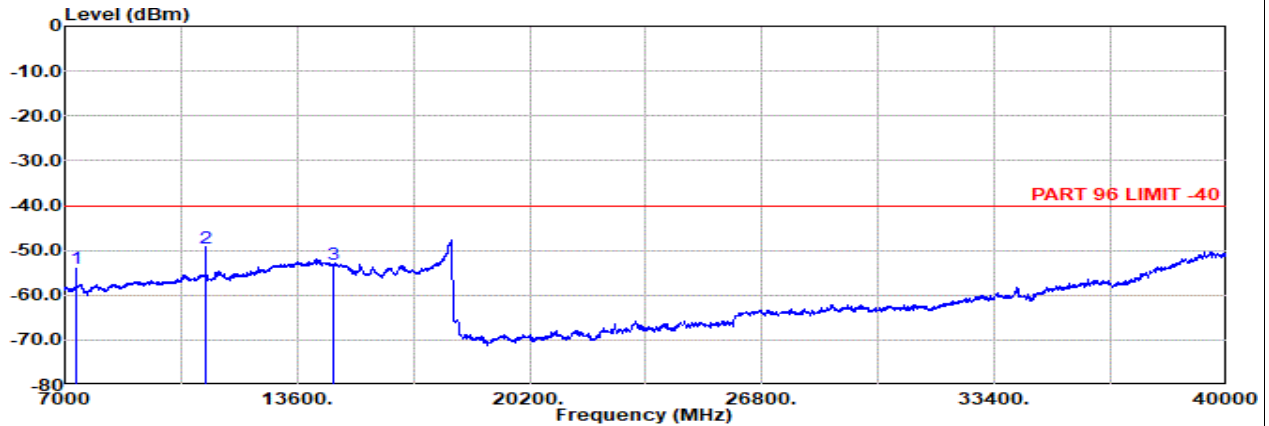


Ant MIMO2

Part 96 Mode 58

NR SA n48 40M Ch645332 1RB1 BPSK

H

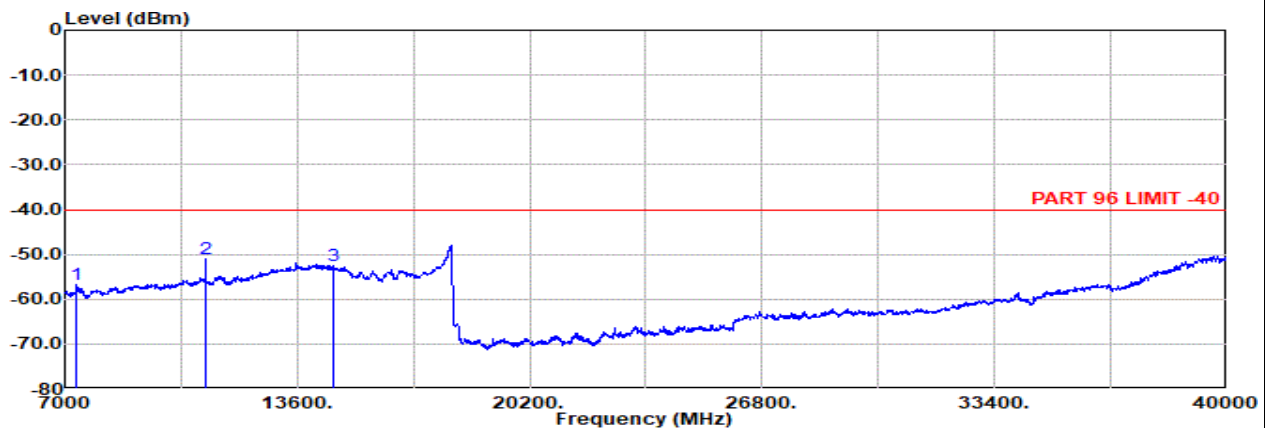


Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal

: SA n48 40M Ch645332 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm			dB	dB	dB	dBuV	dBm	dB	
1	7324.00	-53.91	RMS	37.06	-53.46	0.85	-95.23	56.87	-40.00	-13.91	Horizontal
2	10986.00	-49.50	RMS	38.93	-51.63	0.27	-95.23	58.16	-40.00	-9.50	Horizontal
3	14649.00	-53.07	RMS	40.90	-47.81	0.43	-95.23	48.64	-40.00	-13.07	Horizontal



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical

: SA n48 40M Ch645332 1RB1 BPSK

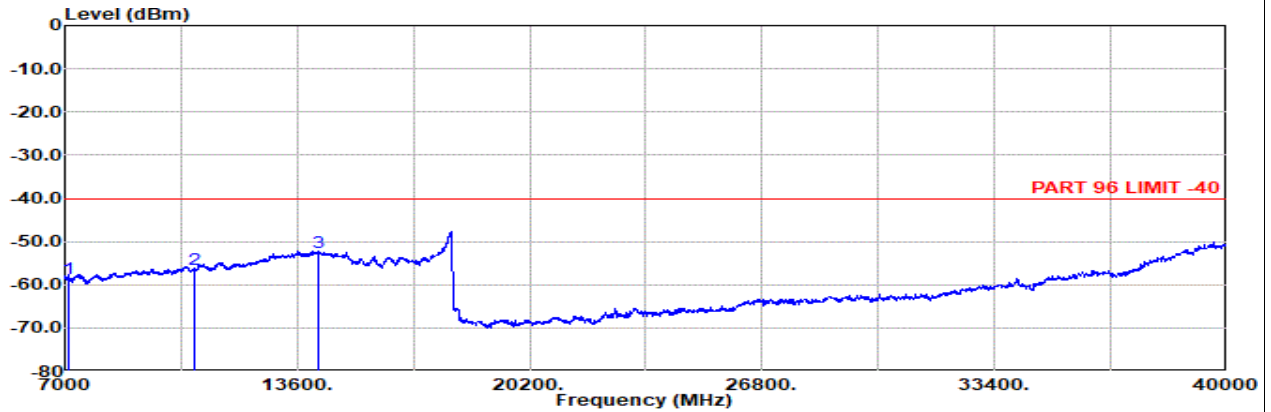
	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm			dB	dB	dB	dBuV	dBm	dB	
1	7324.00	-56.82	RMS	37.06	-53.46	0.85	-95.23	53.96	-40.00	-16.82	Vertical
2	10986.00	-50.98	RMS	38.93	-51.63	0.27	-95.23	56.68	-40.00	-10.98	Vertical
3	14649.00	-52.68	RMS	40.90	-47.81	0.43	-95.23	49.03	-40.00	-12.68	Vertical

LTE : Ant MIMO2 + 5GNR : Ant Main

Part 96 Mode 59

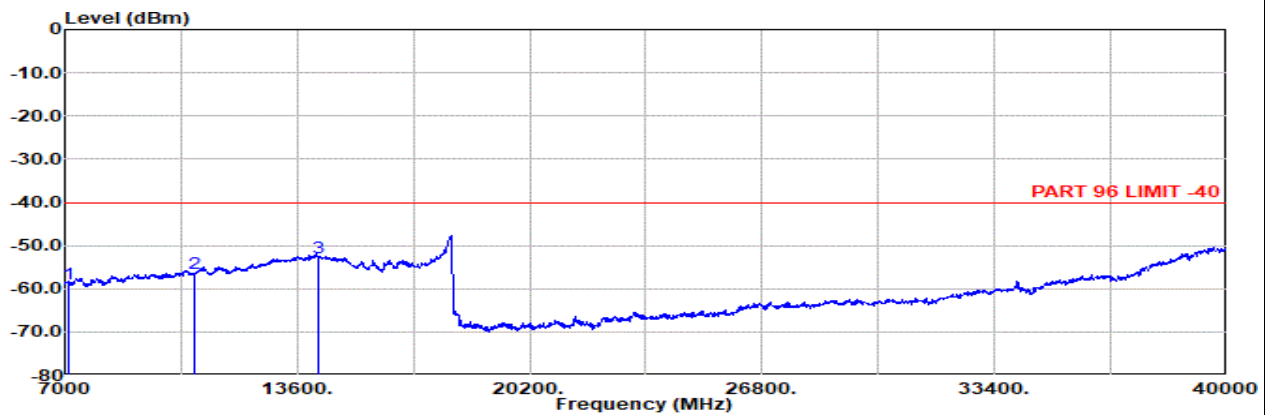
EN-DC B2+n48 20M + 40M Ch18900 1RB0 QPSK + Ch638000 1RB1 BPSK

L



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal
: LTE Band 2 10M Ch18900 1RB0 QPSK
: SA n48 40M Ch638000 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7104.00	-58.63	RMS	36.62	-53.58	0.90	-95.23	52.66	-40.00	-18.63	Horizontal
2	10656.00	-56.33	RMS	39.20	-51.98	0.26	-95.23	51.42	-40.00	-16.33	Horizontal
3	14209.00	-52.48	RMS	40.98	-48.01	0.45	-95.23	49.33	-40.00	-12.48	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical
: LTE Band 2 10M Ch18900 1RB0 QPSK
: SA n48 40M Ch638000 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7104.00	-58.75	RMS	36.62	-53.58	0.90	-95.23	52.54	-40.00	-18.75	Vertical
2	10656.00	-56.46	RMS	39.20	-51.98	0.26	-95.23	51.29	-40.00	-16.46	Vertical
3	14209.00	-52.76	RMS	40.98	-48.01	0.45	-95.23	49.05	-40.00	-12.76	Vertical

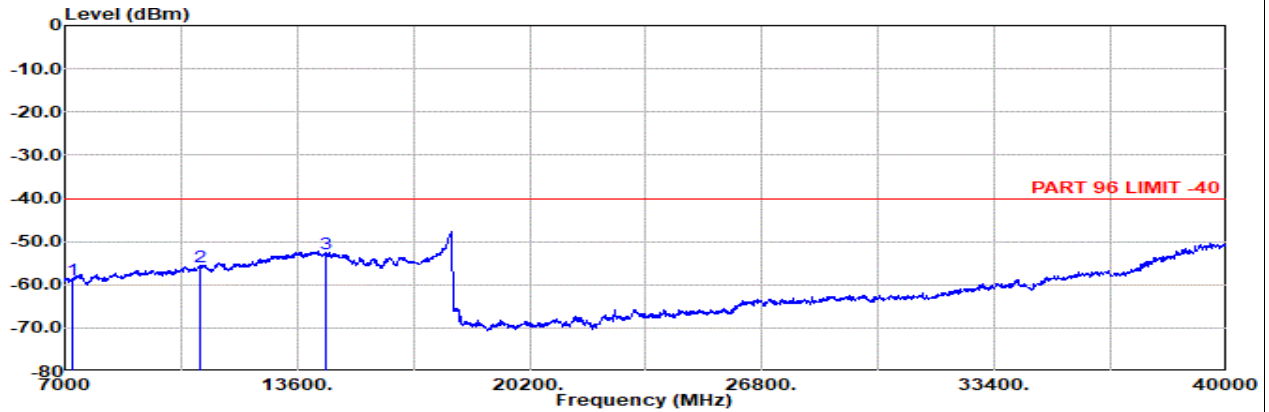


LTE : Ant MIMO2 + 5GNR : Ant Main

Part 96 Mode 59

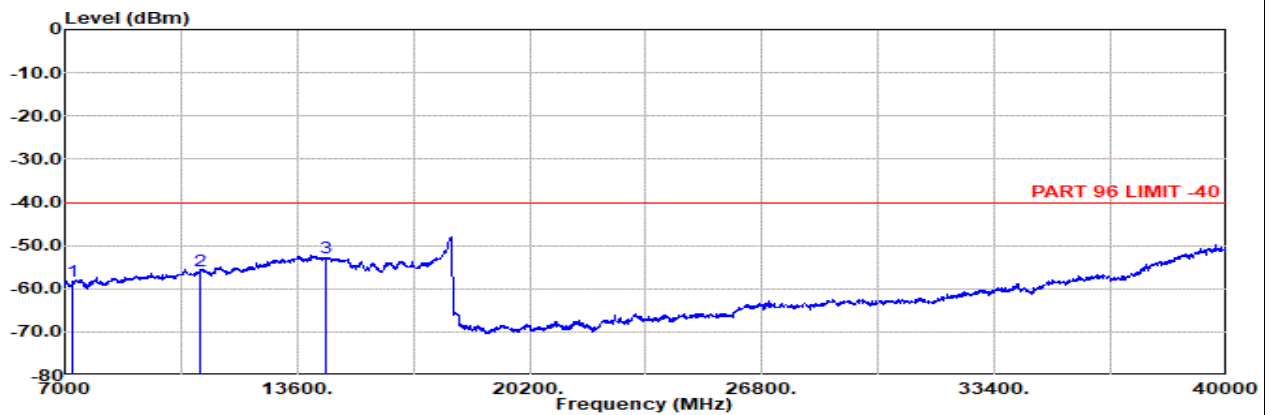
EN-DC B2+n48 20M + 40M Ch18900 1RB0 QPSK + Ch641666 1RB1 BPSK

M



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal
: LTE Band 2 10M Ch18900 1RB0 QPSK
: SA n48 40M Ch641666 1RB1 BPSK

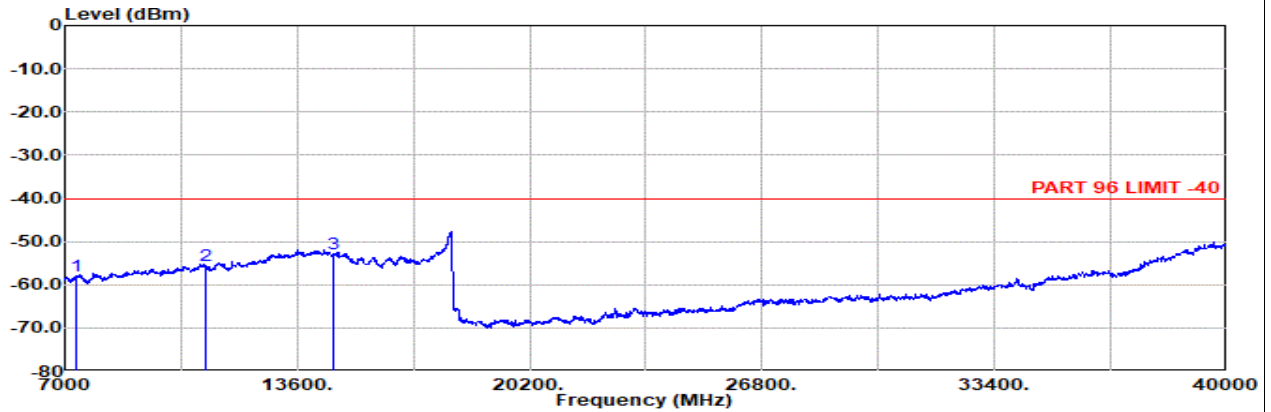
	Freq MHz	Level dBm	Detector	Ant Amp\Cb		Filter 1	EIRPCF	Readin g	Limit dBm	Margin dB	Pol
				Factor	dB/m						
1	7214.00	-58.75	RMS	37.06	-53.50	0.89	-95.23	52.03	-40.00	-18.75	Horizontal
2	10821.00	-55.75	RMS	39.20	-51.81	0.27	-95.23	51.82	-40.00	-15.75	Horizontal
3	14429.00	-52.69	RMS	40.64	-47.63	0.44	-95.23	49.09	-40.00	-12.69	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical
: LTE Band 2 10M Ch18900 1RB0 QPSK
: SA n48 40M Ch641666 1RB1 BPSK

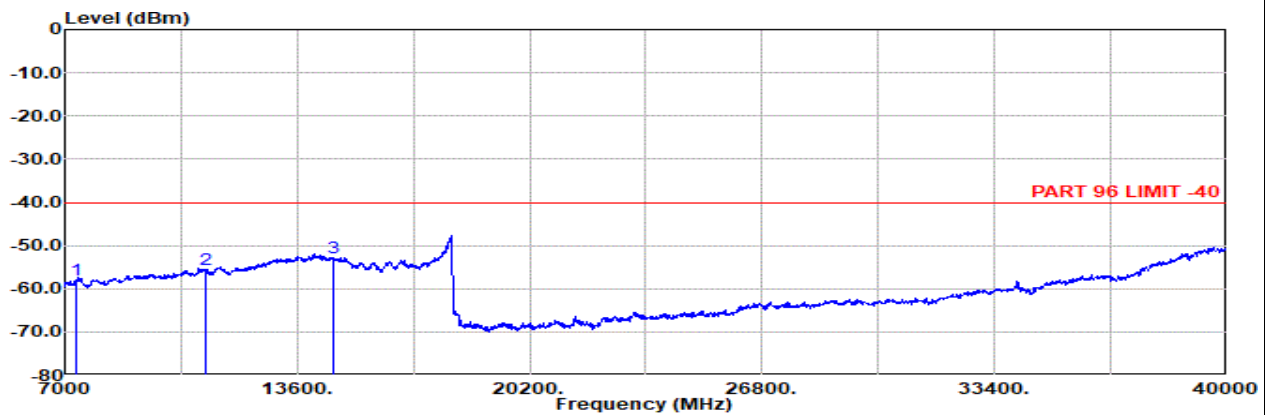
	Freq MHz	Level dBm	Detector	Ant Amp\Cb		Filter 1	EIRPCF	Readin g	Limit dBm	Margin dB	Pol
				Factor	dB/m						
1	7214.00	-58.35	RMS	37.06	-53.50	0.89	-95.23	52.43	-40.00	-18.35	Vertical
2	10821.00	-55.79	RMS	39.20	-51.81	0.27	-95.23	51.78	-40.00	-15.79	Vertical
3	14429.00	-52.96	RMS	40.64	-47.63	0.44	-95.23	48.82	-40.00	-12.96	Vertical

LTE : Ant MIMO2 + 5GNR : Ant Main

Part 96 Mode 59
EN-DC B2+n48 20M + 40M Ch18900 1RB0 QPSK + Ch645332 1RB1 BPSK
H


Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Horizontal
: LTE Band 2 20M Ch18900 1RB0 QPSK
: SA n48 40M Ch645332 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7324.00	-57.82	RMS	37.06	-53.46	0.85	-95.23	52.96	-40.00	-17.82	Horizontal
2	10986.00	-55.45	RMS	38.93	-51.63	0.27	-95.23	52.21	-40.00	-15.45	Horizontal
3	14649.00	-52.97	RMS	40.90	-47.81	0.43	-95.23	48.74	-40.00	-12.97	Horizontal



Site : 03CH12-HY
Condition: PART 96 LIMIT -40 3m 9120D-02114-240711 Vertical
: LTE Band 2 20M Ch18900 1RB0 QPSK
: SA n48 40M Ch645332 1RB1 BPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb	Filter 1	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm									
1	7324.00	-57.94	RMS	37.06	-53.46	0.85	-95.23	52.84	-40.00	-17.94	Vertical
2	10986.00	-55.70	RMS	38.93	-51.63	0.27	-95.23	51.96	-40.00	-15.70	Vertical
3	14649.00	-52.84	RMS	40.90	-47.81	0.43	-95.23	48.87	-40.00	-12.84	Vertical

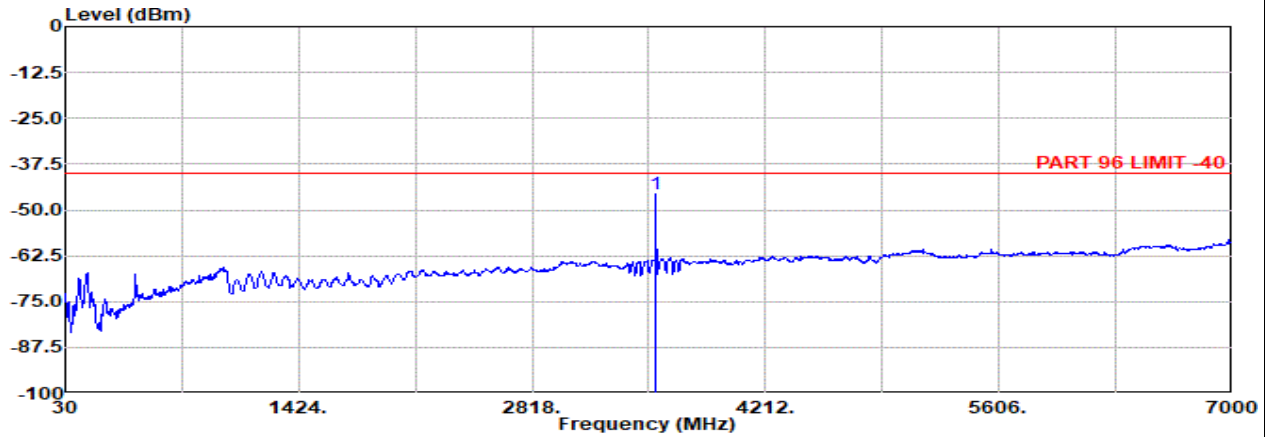


Ant MIMO2

Part 96 Mode 58

NR SA n48 40M Ch638000 1RB1 BPSK

L



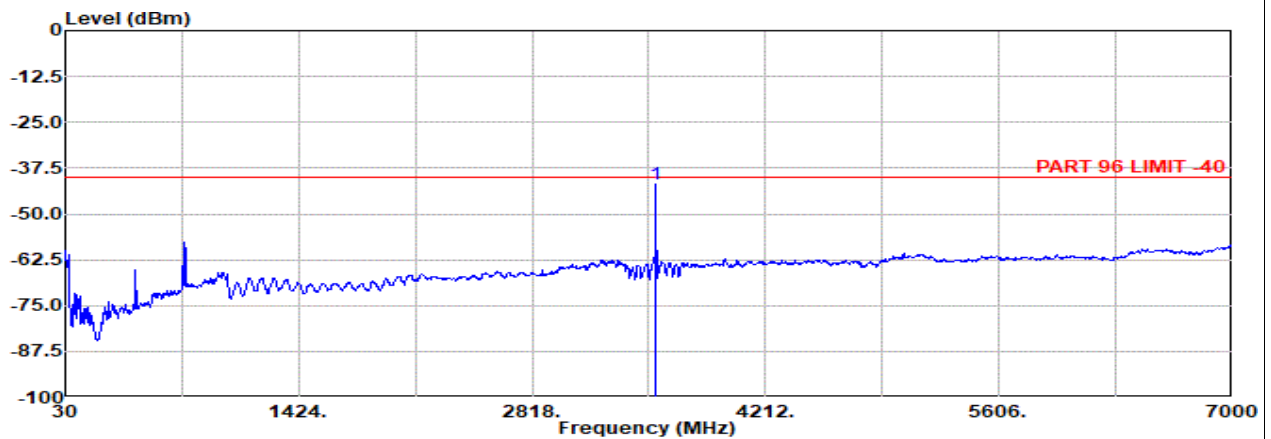
Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m Bilog_37059_20241127 Horizontal

: SA n48 40M Ch638000 1RB1 BPSK

: #1 is fundamental signal which can be ignored.

	Freq	Level	Detector	Ant Amp\Cb		Filter	EIRPCF	Readin	Limit	Margin	Pol
				Factor	1						
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	3552.00	-45.50	RMS	29.60	-57.90	0.54	-95.23	77.49	-40.00	-5.50	Horizontal



Site : 03CH12-HY

Condition: PART 96 LIMIT -40 3m Bilog_37059_20241127 Vertical

: SA n48 40M Ch638000 1RB1 BPSK

: #1 is fundamental signal which can be ignored.

	Freq	Level	Detector	Ant Amp\Cb		Filter	EIRPCF	Readin	Limit	Margin	Pol
				Factor	1						
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	3552.00	-41.85	RMS	29.60	-57.90	0.54	-95.23	81.14	-40.00	-1.85	Vertical

Remark: #1 is fundamental signal which can be ignored.