

TEST REPORT

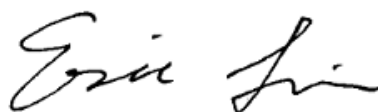
Application No.: KSEM2108001478CR
FCC ID: ZW4R5OUTDOOR800
Applicant: Hytera Mobilfunk GmbH
Address of Applicant: Fritz-Hahne-Str. 7, D-31848 Bad Muender, Germany
Manufacturer: Hytera Mobilfunk GmbH
Address of Manufacturer: Fritz-Hahne-Str. 7, D-31848 Bad Muender, Germany
Factory: Hytera Communications Corporation Limited Baolong Branch
Address of Factory: Plant No.3, Hytera Hi-Tech Park, Baolong Industrial Area, Longgang District, Shenzhen, People's Republic of China.

Equipment Under Test (EUT):

EUT Name: Digital Integrated Base Station DIB-R5 outdoor
Model No.: DIB-R5OUTDOOR800
Trade mark: Hytera
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2021-08-26
Date of Test: 2021-08-26 to 2021-09-10
Date of Issue: 2021-09-10

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin

Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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Revision Record			
Version	Description	Date	Remark
00	Original	2021-09-10	/

Authorized for issue by:			
		Damon Zhou	
		Damon Zhou / Project Engineer	
		Eric Lin	
		Eric Lin / Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower



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4 General Information

4.1 Details of E.U.T.

Power supply: DC 48V
 Cable: DC cable: less than 300cm unshielded
 Internal source: More than 108MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Coaxial Attenuator	Provided by client	TS4	HYT168793
DC power supply	Provided by SGS	PAN60-20A	HH000269
Network cable	Provided by client	N/A	N/A
Load	Provided by SGS	N/A	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radiated Emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888

Fax: +86 512 5737 0818

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

- **ISED (CAB Identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development (ISED) Canada as an accredited testing laboratory.

CAB Identifier: CN0072.

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, C-11707, T-11499, G-10216 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	R&S	ESCI	101378	10/19/2020	10/18/2021
Antenna	TESEQ	CBL 6112D	35403	06/22/2021	06/21/2023

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Spectrum Analyzer	R&S	FSU26	200789	04/22/2021	04/21/2022
Amplifier	COM-POWER	PAM-840A	461332	10/23/2020	10/22/2021
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-515	02/22/2021	02/21/2022
Amplifier	COM-POWER	PAM-118A	551044	12/19/2020	12/18/2021
Horn-antenna	SCHWARZBECK	BBHA9120D	266	02/22/2021	02/21/2022

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2021-01-22	2024-01-21
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2020-09-11	2021-09-10
Digital Multimeter	FLUKE	17B	SHEM043-3	2021-09-09	2022-09-08
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2020-12-20	2021-12-19



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6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dBμV/m) quasi-peak
88MHz-216MHz	43.5(dBμV/m) quasi-peak
216MHz-960MHz	46.0(dBμV/m) quasi-peak
960MHz-1000MHz	54.0(dBμV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

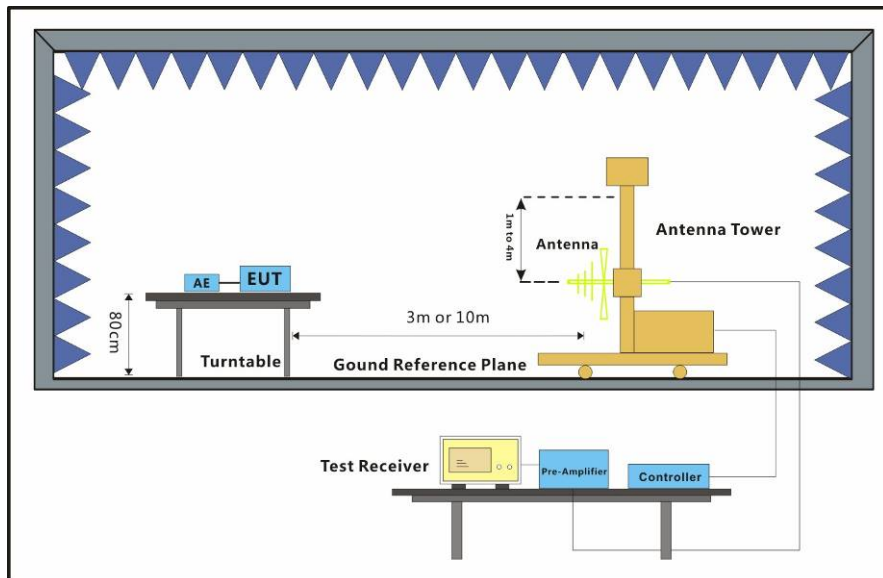
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Normal working _ Keep EUT working normally

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

1. Result (dBuV/m) = Reading(dBuV/m) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB).



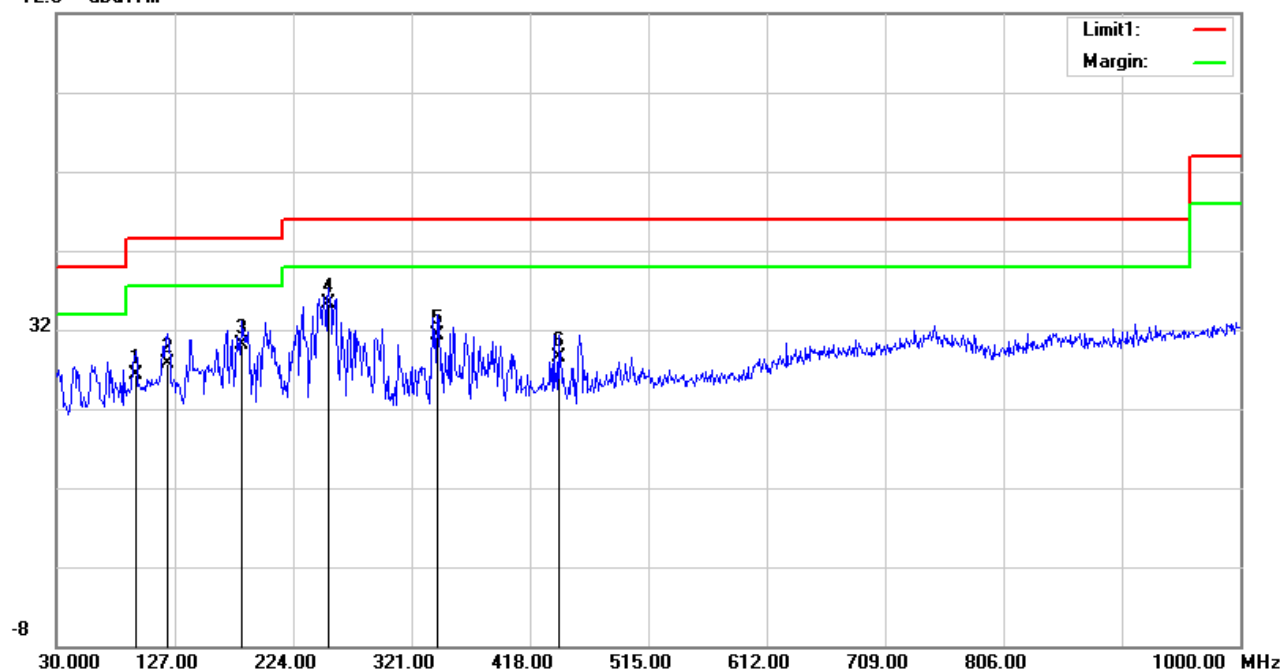
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Mode: a; Polarization: Horizontal

72.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	94.9900	16.28	10.03	26.31	43.50	-17.19	101	317	QP
2	121.1800	15.23	12.43	27.66	43.50	-15.84	109	102	QP
3	181.3200	14.85	15.34	30.19	43.50	-13.31	201	169	QP
4	253.1000	20.29	15.11	35.40	46.00	-10.60	237	217	QP
5	342.3400	14.31	16.96	31.27	46.00	-14.73	189	139	QP
6	441.2800	7.76	20.73	28.49	46.00	-17.51	200	176	QP



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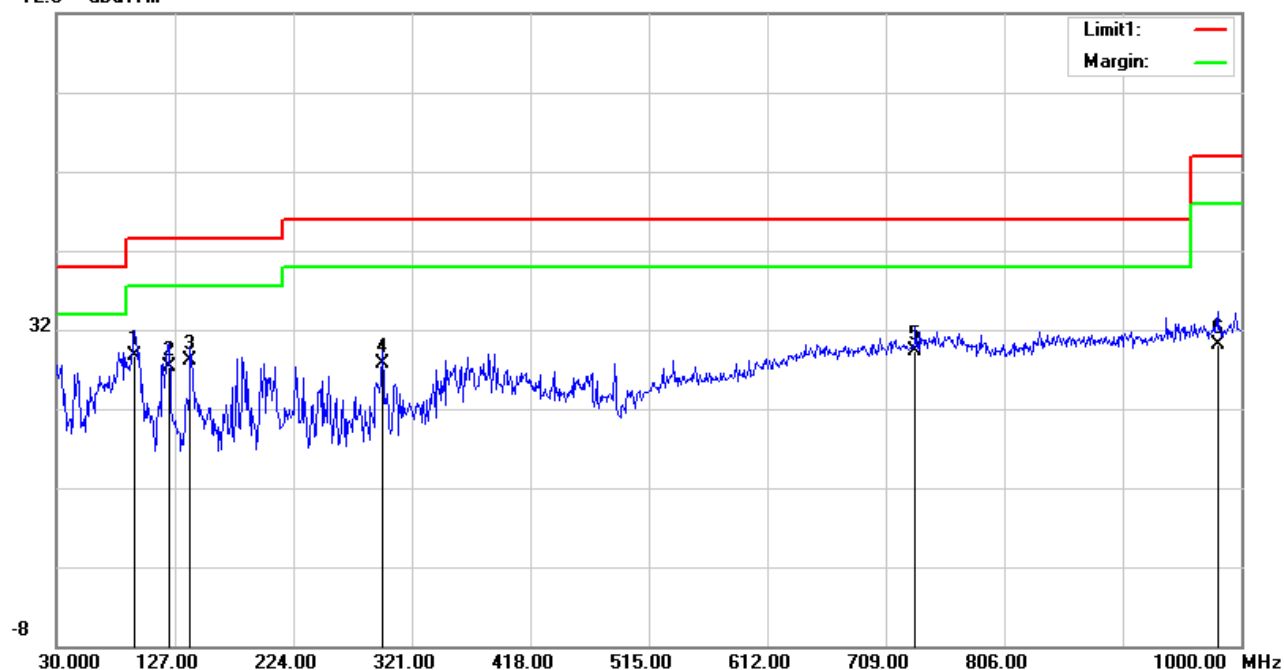
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Mode: a; Polarization: Vertical

72.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	94.0200	18.87	9.88	28.75	43.50	-14.75	120	216	QP
2	122.1500	14.89	12.50	27.39	43.50	-16.11	175	188	QP
3	139.6100	14.33	13.83	28.16	43.50	-15.34	129	200	QP
4	296.7500	11.87	15.77	27.64	46.00	-18.36	155	162	QP
5	733.2500	3.45	25.92	29.37	46.00	-16.63	149	258	QP
6	980.6000	2.91	27.27	30.18	54.00	-23.82	129	140	QP



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6.2 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B
 Test Method: ANSI C63.4:2014
 Frequency Range: Above 1GHz
 Measurement Distance: 3m
 Limit:
 Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average
 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

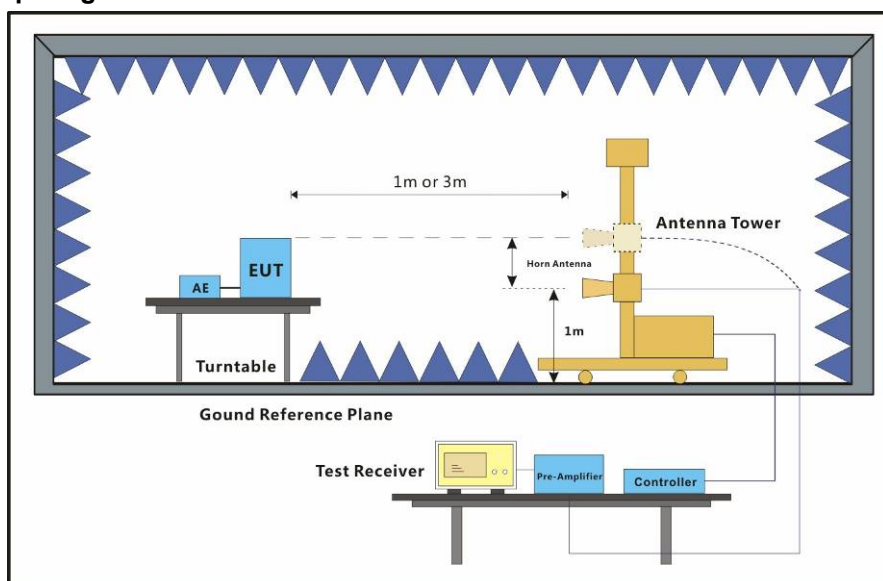
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Normal working _ Keep EUT working normally

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

1. Result (dBuV/m) = Reading(dBuV/m) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier (dB).



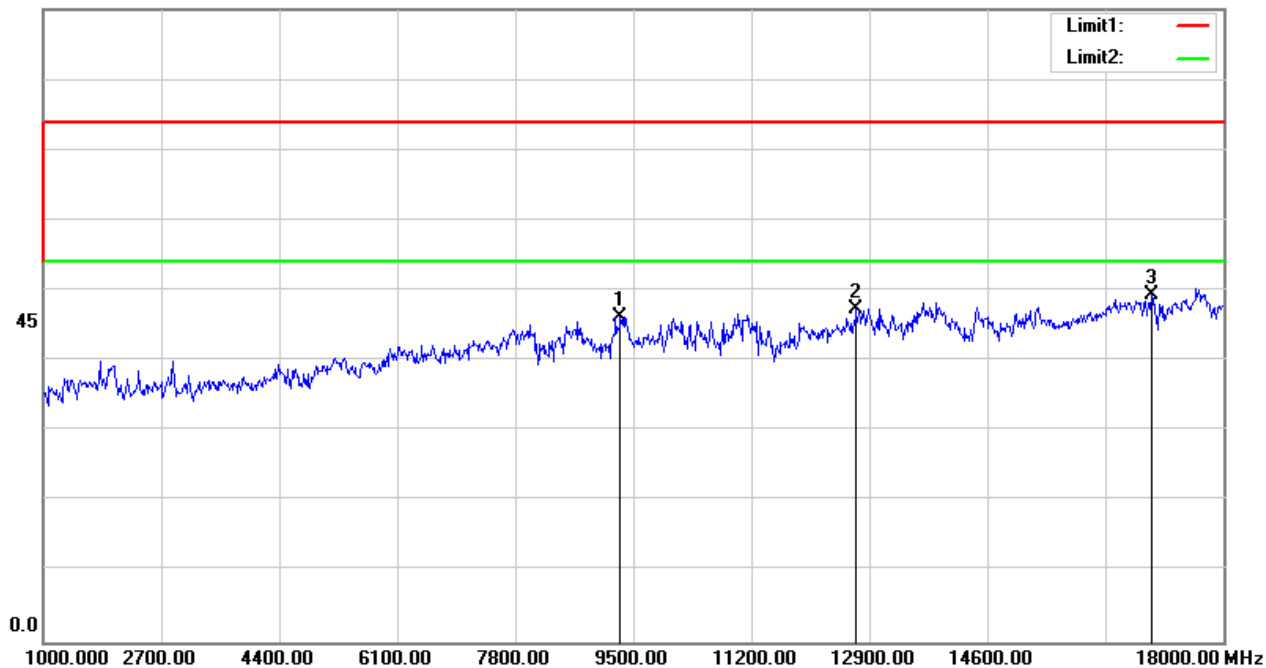
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Mode: a; Polarization: Horizontal

90.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	9313.000	54.60	-8.38	46.22	74.00	-27.78	189	175	peak
2	12713.000	49.67	-2.35	47.32	74.00	-26.68	210	180	peak
3	16963.000	48.12	1.33	49.45	74.00	-24.55	177	215	peak



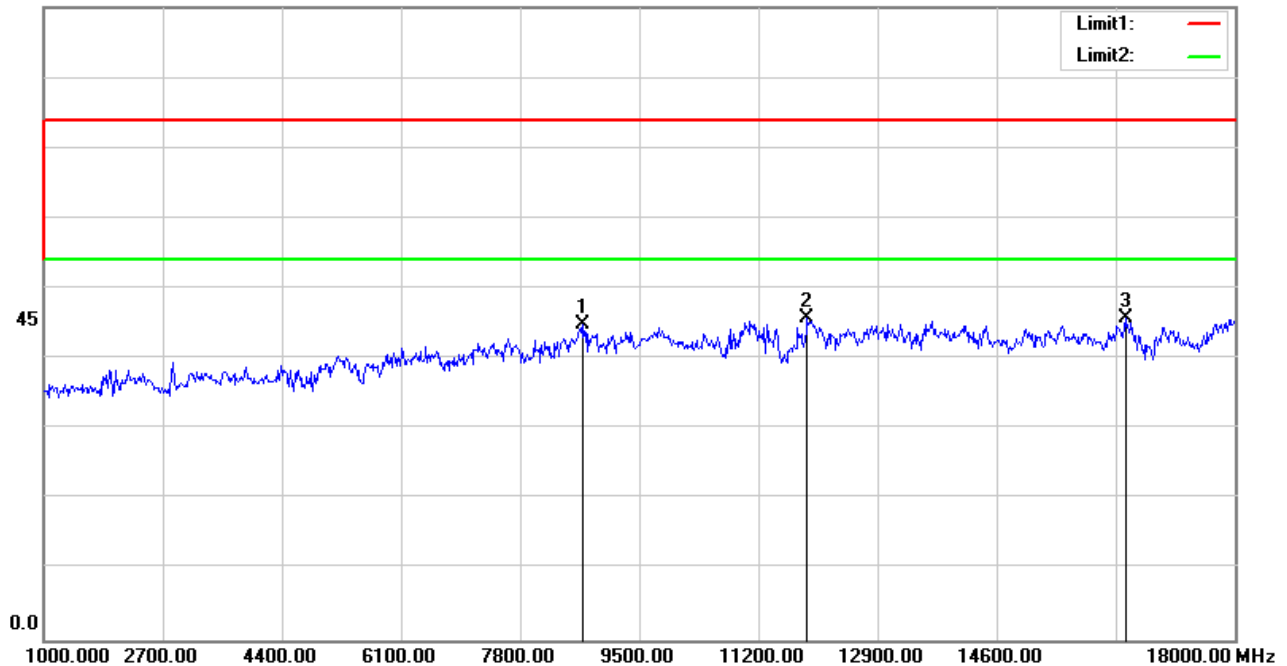
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Mode: a; Polarization: Vertical

90.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	8701.000	54.34	-9.38	44.96	74.00	-29.04	165	210	peak
2	11897.000	50.17	-4.43	45.74	74.00	-28.26	200	185	peak
3	16436.000	47.68	-1.92	45.76	74.00	-28.24	185	150	peak



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7 Test Setup Photo

Refer to the < Test Setup photos >

8 EUT Constructional Details (EUT Photos)

Refer to the < External Photos & Internal Photos >

- End of the Report -



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