

EMC TEST REPORT

No. 808401-2

EQUIPMENT UNDER TEST

Equipment: Conference Telephone
Type / model: Konftel 300IP
Manufacturer: Konftel AB
Tested by request of: Konftel AB

SUMMARY

The equipment complies with the requirements of the following standards:
FCC, Part 15, Subpart B (2008) Class B.

Date of issue: 2009-03-27

Tested by:



Niklas Boström

Approved by:



Stefan Andersson

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1. CLIENT INFORMATION

The EUT has been tested by request of

Company: Konftel AB
Name of contact: Tommy Edlund
Box 268
SE-901 06 UMEÅ
Phone: +46 (0)90 70 64 70
Email: tommmy.edlund@konftel.com

2. EQUIPMENT UNDER TEST (EUT)

2.1 Identification of the EUT according to the manufacturer/client declaration

Equipment: Conference IP Telephone
Type/Model: Konftel 300IP
Brand name: Konftel 300IP
Serial number: No visible serial number on product
Manufacturer: Konftel AB
Rating/Supplying voltage: 100-240VAC, 50/60 Hz or
Power over Ethernet (PoE)
Operating temperature range: +5 to +40 °C
Receiver frequency range: 433.92 MHz +-250 kHz



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2.2 Additional hardware information about the EUT

The EUT consists of the following units:

Equipment	Manufacturer / Type	Type	Serial number
Conference phone	Konftel AB	Konftel 300IP	-
External Microphone	Konftel AB	Expansion Microphones	-
External Microphone	Konftel AB	Expansion Microphones	-
Interface Box	Konftel AB	Interface Box for PA systems	-
AC ADAPTOR	Ktec	KSAE1400150W1UV	-

2.3 Peripheral equipment

Peripheral equipment is defined as equipment needed for correct operation of the EUT during the tests, but not included as a part of the testing and evaluation of the EUT.

Equipment	Manufacturer / Type	Type	Serial number
ProSafe POE SWITCH	Netgear	FS108P	1DL18235009E2
Switching Adapter Multimedia router	Netgear interteX	DSA-0421S-50 1 SurfinBird IX78 ADSL AIR	- IX78-e4dhw-081310069
I .T.E. POWER SUPPLY	AMIGO	AM-1201000V	-
Conference phone	KONFTEL AB	Konftel 300IP	-
AC ADAPTOR	Ktec	KSAE1400150W1UV	-
Laptop	DELL	LATITUDE D830	CN-0HN341-48643-76E-0762
AC ADAPTER	DELL	LA90PS1-00	CN-0DF315-71615-75A-17F2



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3. TEST SPECIFICATIONS

3.1 Standards

FCC 47 CFR part 15 (2008) Subpart B – Unintentional radiators, Class B.

Measurements methods according to ANSI C63.4-2003

3.2 Additions, deviations and exclusions from standards

No deviations or exclusions have been made from standards.

3.3 Test set-up

Measurement set-ups for the test of conducted disturbance voltage in the frequency range 0,15-30 MHz and out-of-band spurious emissions test are described in corresponding sections.

3.4 Operating environment

If not additionally specified, the tests were performed under the following environmental conditions:

Air temperature: 20-25 °C

Relative humidity: 15-25 %



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4. TEST SUMMARY

The results in this report apply only to the sample tested.

FCC reference	Test	Result	Note
15B	Out of band spurious emissions, radiated Class B	PASS	1
15B	Conducted emission at AC port	PASS	

Notes:

1. The measured result is below the upper limit, but by a margin less than half of the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance.



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5. RADIATED SPURIOUS EMISSIONS

5.1 Measurement uncertainty

Radiated disturbance electric field intensity, 30 – 1000 MHz: ± 4,6 dB

Radiated disturbance electric field intensity, 1000 – 18000 MHz: ± 6,0 dB

The measurement uncertainty describes the overall uncertainty of the given measured value during operation of the EUT.

Measurement uncertainty is calculated in accordance with EA-4/02-1997. The measurement uncertainty is given with a confidence of 95%.

5.2 Test equipment

Equipment	Manufacturer	Type	SEMKO No.
<i>Test site: "Big chamber"</i> <i>Semi-anechoic shielded chamber, 10 x 20 x 8 m (W x L x H)</i>			30300
Software:	Rohde & Schwarz	ES-K1, V1.71	
Measurement receiver:	Rohde & Schwarz	ESU 8	12866
Measurement receiver:	Rohde & Schwarz	ESAI	2973/2974
Antenna amplifier:	SEMKO		7992/7993
Antenna, bilog:	Chase	CBL6111A	971
<i>Test site: "Radiohallen"</i> <i>Anechoic shielded chamber, 3,7 x 7,0 x 2,4 m (W x L x H)</i>			12285
Software:	Rohde & Schwarz	ES-K1, V1.70	
Signal analyser:	Rohde & Schwarz	FSIQ 40	40023
Preamplifier:	MITEQ	AFS6/AFS44	12335
Antennas:			
Double Ridge Guide Horn:	EMCO	3115	4936
Transformer	Tufvassons	AFM-1500	375



5.3 Measurement set-up

Test site: Semi-anechoic shielded chamber (30 – 1000 MHz)

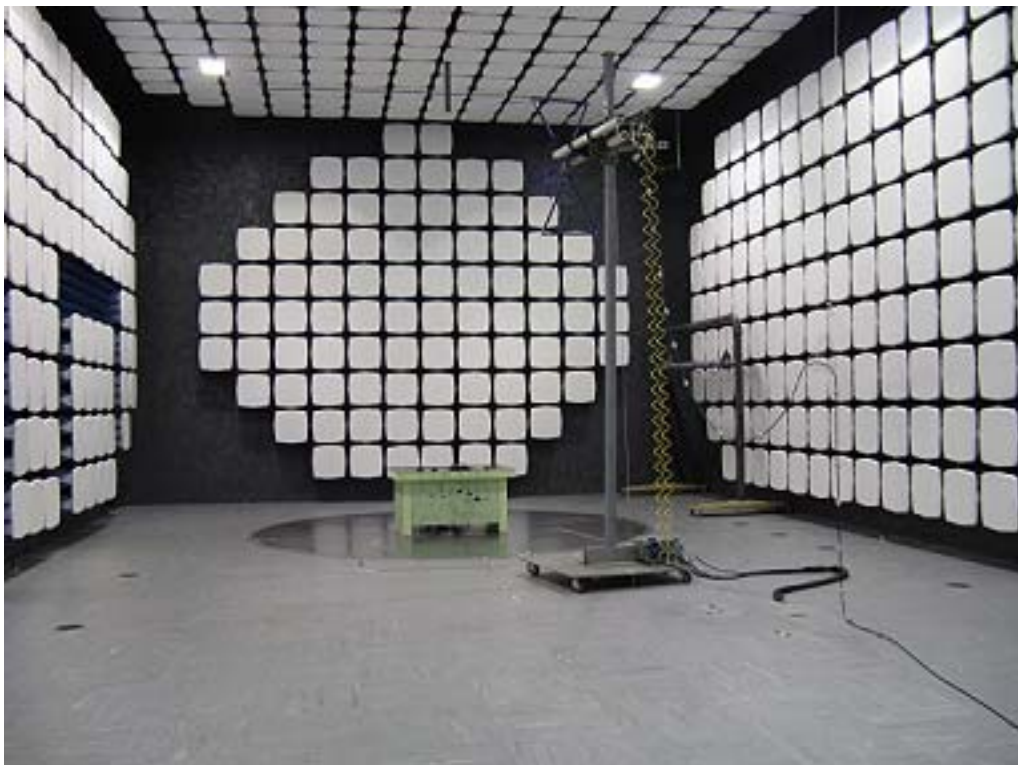
The radiated disturbance electric field intensity was measured in a semi-anechoic chamber at a distance of 3 m and the EUT was placed on a non-metallic table, 0,8 m above the reference ground plane. The specified test mode was enabled. Test set-up photos are given below.

An overview sweep with peak detection of the electric field intensity was performed with the measurement receiver in max-hold and with the antenna placed 1,5 m, 2,5 m and 3,5 m above the floor. The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps.

At the frequencies where high disturbance levels were found a search for max disturbance level was performed. With the EUT and antenna in the worst-case configuration new measurements with quasi-peak detector were carried out.

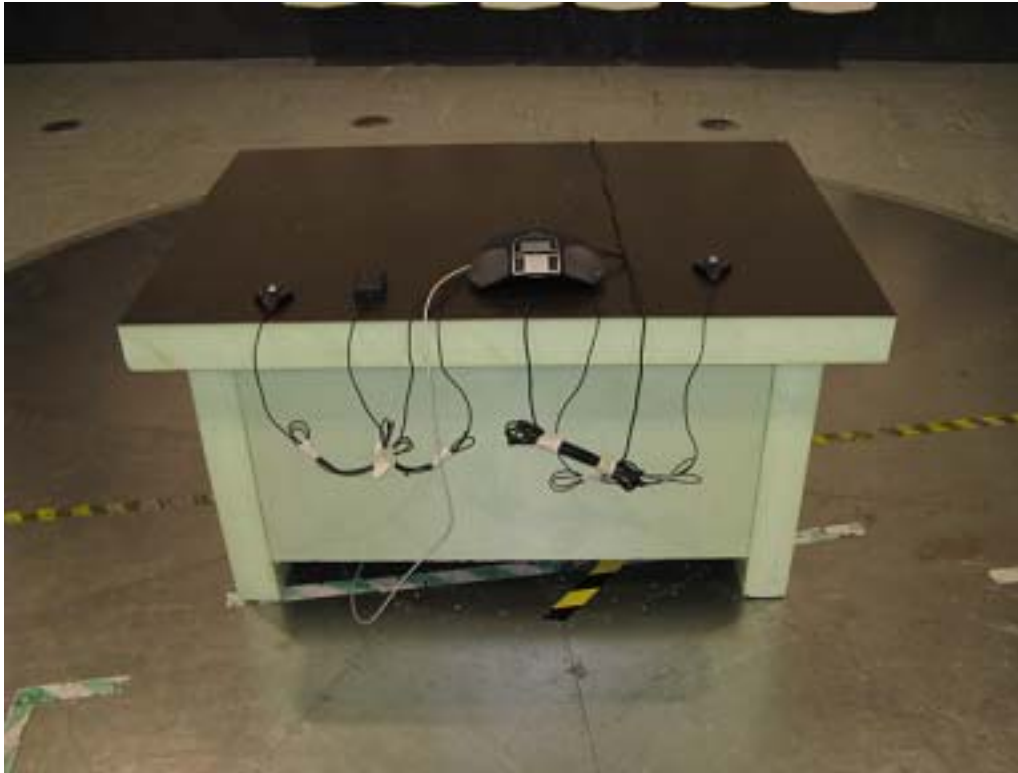
The EUT was supplied with 120 V AC (60 Hz) or Power over Ethernet (PoE) during the tests.

Test set-up photos:



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Test site: Radio anechoic shielded chamber (1 – 13 GHz)

In the Radio anechoic chamber the EUT was placed on a non-metallic table, 1,4 m above the floor. The radiated disturbance electric field intensity was measured at a distance of 3 m. The specified test mode was enabled.

An overview sweep with peak detection of the electric field intensity was performed with the spectrum analyser in max-hold and with the antenna height adjusted at the level of the EUT center (placed 1,5 m above the floor). The polarisation was horizontal and vertical. The measurements were repeated with the EUT rotated in 90-degree steps.

At the frequencies where high disturbance levels were found a search for max disturbance level was performed. With the EUT and antenna in the worst-case configuration new measurements with peak and average detectors were carried out.

The EUT was supplied by 120 V AC (50 Hz) and Power over Ethernet during the tests.



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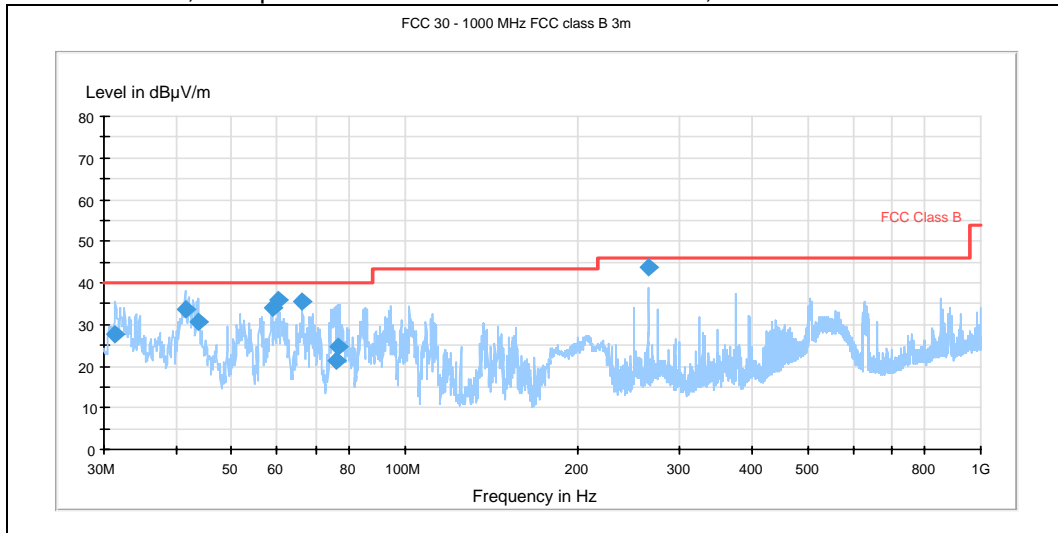
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5.4 Test protocol

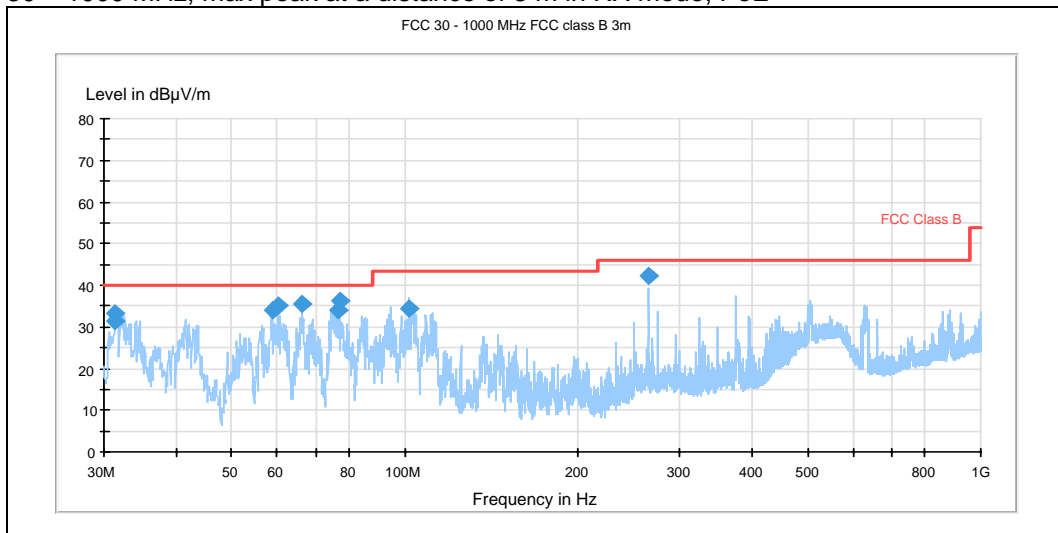
Semi-anechoic shielded chamber

Date of test: 2008-10-08

30 – 1000 MHz, max peak at a distance of 3 m in RX mode, 120VAC



30 – 1000 MHz, max peak at a distance of 3 m in RX mode, PoE



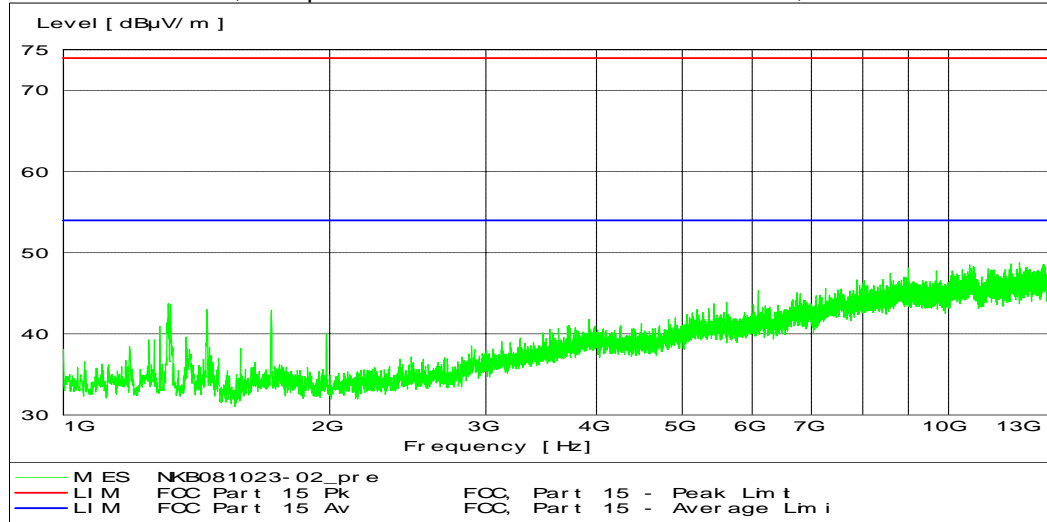
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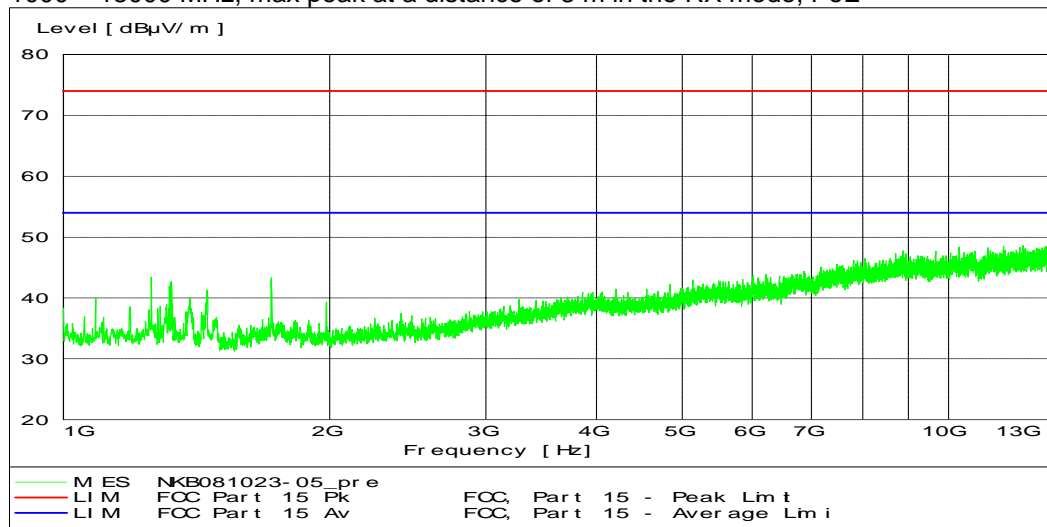
Radio anechoic shielded chamber

Date of test: 2008-10-23

1000 – 13000 MHz, max peak at a distance of 3 m in the RX mode, 120VAC



1000 – 13000 MHz, max peak at a distance of 3 m in the RX mode, PoE



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Data summary

Field strength of spurious emissions, 120VAC						
Frequency [MHz]	RBW [kHz]	Measured level		Limit		Note
		Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	
31,437	120	-	27,8	-	40	
41,619	120	-	33,8	-	40	
43,800	120	-	30,7	-	40	
58,722	120	-	34,1	-	40	
60,208	120	-	35,9	-	40	
66,281	120	-	35,6	-	40	
264,185	120	-	43,9	-	46	1
1000 - 13000	1000	< 49		74	54	

NOTE:

1. The measured result is below the upper limit, but by a margin less than half of the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance.

Field strength of spurious emissions, PoE						
Frequency [MHz]	RBW [kHz]	Measured level		Limit		Note
		Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	Peak [dB(μV/m)]	QP/AV [dB(μV/m)]	
31,397	120	-	33,1	-	40	
31,403	120	-	31,4	-	40	
58,722	120	-	34,0	-	40	
60,233	120	-	35,1	-	40	
66,281	120	-	35,4	-	40	
76,552	120	-	34,1	-	40	
77,198	120	-	36,4	-	40	
101,900	120	-	34,4	-	43,5	
264,160	120	-	42,1	-	46	1
1000 - 13000	1000	< 49		74	54	

NOTE:

1. The measured result is below the upper limit, but by a margin less than half of the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance.

Example calculation:

Measured level [dBμV/m] = Analyser reading [dBμV] + cable loss [dB] – preamplifier gain [dB] + antenna factor [1/m]



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6. CONDUCTED DISTURBANCE VOLTAGE IN THE FREQUENCY RANGE 0,15 - 30 MHZ**6.1 Measurement uncertainty**

Conducted disturbance voltage, quasi-peak detection: $\pm 3,6$ dB

The measurement uncertainty describes the overall uncertainty of the given measured value during operation of the EUT.

Measurement uncertainty is calculated in accordance with EA-4/02-1997.
The measurement uncertainty is given with a confidence of 95%.

6.2 Test equipment

Test site:	FCC		
Equipment	Manufacturer	Type	SEMKO No.
Software:	Rohde & Schwarz	ES-K1 V1.60	
Measurement receiver:	Rohde & Schwarz	ESHS 30	4946
Artificial mains network:	Rohde & Schwarz	ESH3-Z5	2727
Transformer	Tufvassons	AFM-1500	375



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6.3 Measurement set-up

The mains terminal disturbance voltage was measured with the EUT located 0,8 m above the ground plane and 0,4 m from the vertical ground plane. The EUT was connected to an artificial mains network (AMN). The AMN was placed on the ground plane. Amplitude measurements were performed with a quasi-peak detector. The EUT was supplied by 120 VAC (60 Hz) during the test.

6.4 Test protocol

Date of test: 2008-10-24

Frequency /MHz	Quasi-Peak	
	Disturbance Level /dB(μV)	Permitted limit /dB(μV)
0.275	45.0	61
0.350	43.6	59
0.465	50.3	57
0.470	52.8	57
0.550	47.3	56
0.635	44.2	56
0.825	47.1	56
1.755	44.8	56
3.515	48.9	56
3.605	43.5	56

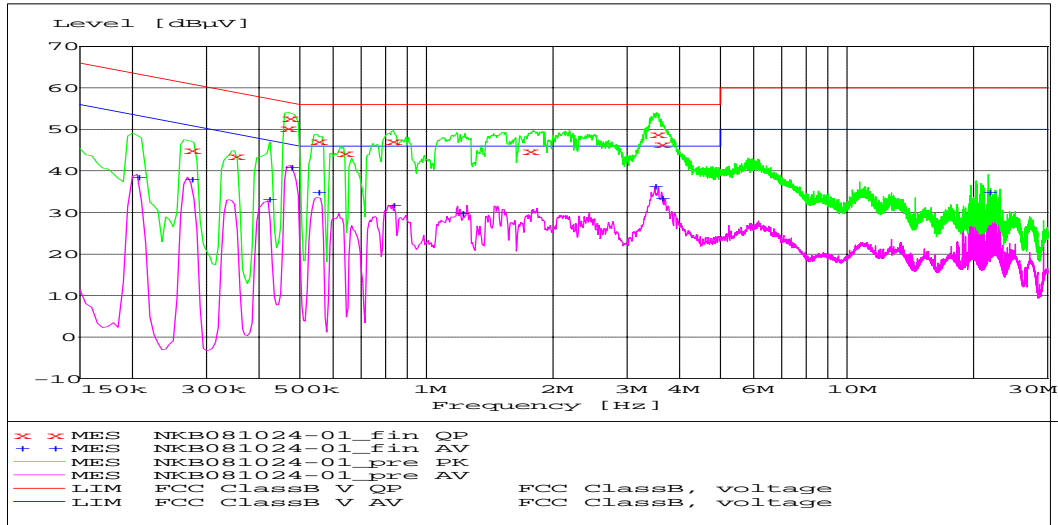
Frequency /MHz	Average	
	Disturbance Level /dB(μV)	Permitted limit /dB(μV)
0.205	38.5	53
0.275	38.1	51
0.420	33.3	47
0.475	41.0	46
0.550	34.9	46
0.830	31.9	46
1.210	30.0	46
3.475	36.4	46
3.615	33.6	46
21.665	35.0	50



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Overview sweeps performed with peak and average detectors



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APPENDIX I – PHOTOS OF THE EUT

KT300IP



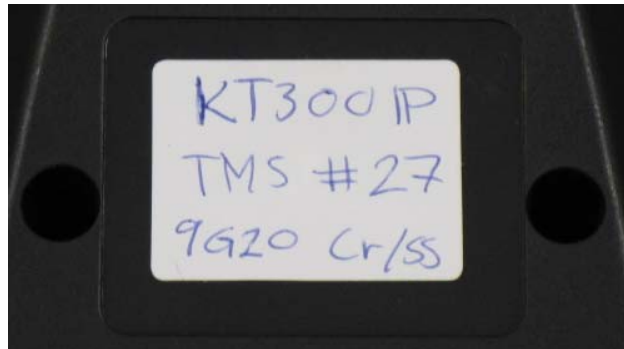
Back side



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Identification label



External microphone



AC adaptor



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Label on AC adaptor



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