

CERTIFICATION TEST REPORT

Report Number. : 11836945-E1V2

- Applicant : Google LLC. 1600 Amphitheatre Parkway Mountain View, CA 94043 U.S.A.
 - Model : H0B
 - FCC ID : A4R-H0B
 - **IC** : 10395A-H0B
- EUT Description : Multimedia Device
- Test Standard(s) : FCC 47 CFR PART 15 SUBPART C ISED RSS - 247 ISSUE 2

Date Of Issue: October 25, 2017

Prepared by: UL Verification Services Inc. 47173 Benicia Street Fremont, CA 94538, U.S.A. TEL: (510) 771-1000 FAX: (510) 661-0888



REPORT REVISION HISTORY

Rev.	lssue Date	Revisions	Revised By
V1	10/13/17	Initial Release	
V2	10/25/17	Updated sections 1 and 5.5	C. Susa

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Google LLC. 1600 Amphitheatre Parkway Mountain View, CA 94043 U.S.A.
EUT DESCRIPTION:	Multimedia Device
MODEL:	НОВ
SERIAL NUMBER:	7904M2Z2N6(radiated), 7904M2Z154(conducted)
DATE TESTED:	September 11 th , 2017 - October 10 th , 2017

APPLICABLE STANDARDS					
STANDARD	TEST RESULTS				
CFR 47 Part 15 Subpart C	Pass				
ISED RSS-247 Issue 2	Pass				
ISED RSS-GEN Issue 4	Pass				

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For UL Verification Services Inc. By:

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Prepared By:

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
Chamber A	🛛 Chamber D
Chamber B	Chamber E
Chamber C	Chamber F
	Chamber G
	Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0 except for ISED RSS-247 Issue 2. The full scope of accreditation can be viewed at <u>http://ts.nist.gov/standards/scopes/2000650.htm</u>.

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.84 dB
Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Radiated Disturbance,1000 to 18000 MHz	4.32 dB
Radiated Disturbance,18000 to 26000 MHz	4.45 dB
Radiated Disturbance,26000 to 40000 MHz	5.24 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a multimedia device

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum output power as follows:

		Average		Peak	
Frequency	Mode	Output Power	Output Power	Output Power	Output Power
Range		(dBm)	(mW)	(dBm)	(mW)
(MHz)					
2402 - 2480	GFSK	9.17	8.26	9.37	8.65
2402 - 2480	QPSK	5.58	3.61	8.47	7.03
2402 - 2480	8PSK	5.80	3.80	8.63	7.29

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes antenna, with a maximum gain of 4.7dBi

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was v1.29.99992

The test utility software used during testing was QRCT v3.0.264.0.

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5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in two orientations Y and Z, it was determined that Y orientation was worst-case orientation. X orientation was not investigated due to the AC and I/O ports in the back of the EUT. Therefore, all final radiated testing was performed with the EUT in Y orientation.

All measurements were performed with the AC plugged into a power source.

Worst-case data rates as provided by the client were:

GFSK mode: DH5 8PSK mode: 3-DH5

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List					
Description	Manufacturer	Model	Serial Number		
AC Adapter	HP	HSTNN-LA40	WDUV0B3U8HK1Y		
Laptop	HP	11-d001ax	5CD51643JG		
USB Ethernet Adapter	Linksys	USB3GIG	15710S05701719		
USB Hub	CGC	27402	NSN		

I/O CABLES

I/O Cable List						
Cable	Port	# of identical	Connector	Cable Type	Cable	Remarks
No		ports	Туре		Length (m)	
1	AC	1	2-Prong	unshielded	2	
2	USB	1	USB	unshielded	2.5	USB serial cable
3	Ethernet	1	RJ45	unshielded	1	

TEST SETUP

The EUT is connected to a test laptop. Test software exercises the radio.

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SETUP DIAGRAM FOR ANTENNA PORT CONDUCTED TESTS



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SETUP DIAGRAM FOR RADIATED TESTS



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SETUP DIAGRAM FOR LINE CONDUCTED TEST



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T711	01/30/18	01/30/17
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	T740	11/29/17	11/29/16
High Pass Filter 3GHz	Micro-Tronics	HPM17543	T428	11/29/17	11/29/18
Spectrum Analyzer	Keysight	N9030A	T1210	07/17/18	07/17/17
Power Meter	Keysight	N1911A	T229	08/14/18	08/14/17
Power Sensor	Keysight	N1921A	T1225	03/29/18	03/29/17
EMI Receiver	Rohde & Schwarz	ESR	T1436	01/06/18	01/06/17
LISN	Fischer Custom Communications	FCC-LISN-50/250-25-2-01	T1310	06/15/18	06/15/17
Antenna Horn, 18-26GHz	ARA	MWH-1826	T89	01/04/18	01/04/17
RF Preamplifier, 1-26GHz	Agilent	8449B	T404	07/23/18	07/23/17
Spectrum Analyzer	Keysight	N9030A	T1454	12/15/18	12/15/17
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	10/11/17	10/11/16
Rf Preamplifier, 10kHz – 1GHz	Sonoma	310N	T286	06/02/18	06/02/17
Spectrum Analyzer	Keysight	N9030A	T340	12/14/18	12/14/17

Test Software List					
Description	Manufacturer	Model	Version		
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016		
Conducted Emissions Software	UL	UL EMC	Ver 9.5, May 26, 2015		

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7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

<u>LIMITS</u>

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time	Period	Duty Cycle	Duty	Duty Cycle	1/T
	В		x	Cycle	Correction Factor	Minimum VBW
	(msec)	(msec)	(linear)	(%)	(dB)	(kHz)
Bluetooth GFSK	9.880	9.880	1.000	100.0%	0.00	0.010
Bluetooth 8PSK	9.900	9.900	1.000	100.0%	0.00	0.010



7.2. 20 dB AND 99% BANDWIDTH

<u>LIMIT</u>

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to \geq 1% of the 20 dB bandwidth. The VBW is set to \geq RBW. The sweep time is coupled.

RESULTS

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7.2.1. BASIC DATA RATE GFSK MODULATION

20dB and 99% BANDWIDTH

Channel	Frequency	20 dB Bandwidth	99% Bandwidth
	(MHz)	(KHz)	(KHz)
Low	2402	913.0	888.56
Mid	2441	939.0	932.31
High	2480	927.6	914.79



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7.2.2. ENHANCED DATA RATE 8PSK MODULATION

20dB and 99% BANDWIDTH

Channel	Frequency	20 dB Bandwidth	99% Bandwidth
	(MHz)	(MHz)	(MHz)
Low	2402	1.299	1.217
Mid	2441	1.317	1.2169
High	2480	1.328	1.189



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7.3. HOPPING FREQUENCY SEPARATION

LIMIT

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 910 kHz. The sweep time is coupled.

RESULTS

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7.3.1. BASIC DATA RATE GFSK MODULATION



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7.3.2. ENHANCED DATA RATE 8PSK MODULATION

Frequency	M Oct 10, 2017	01:38:01 P	ALIGNAUTO	#Δνα Τν	SENSE:INT		2 DC	RF 50	L Deter F
		TY	:>100/100	Avg Hole	Trig: Free Run #Atten: 40 dB	PNO: Wide 😱 1 IFGain:Low #	00000	eq 2.44 it	Filer F
Auto Tu	000 MHz 0.195 dB	1kr1 1.0 -0	ΔN				0.5 dB dBm	Ref Offset 1 Ref 30.00	dB/div
Center Fr 2.441500000 G									.0
Start Fr 2.439000000 G		a Burner of the second	h	1Δ2		****		Mu marine	.0
Stop Fr 2.444000000 G									.0
CF St 500.000 k <u>Auto</u> M									.0
Freq Offs 0									.0
	5.000 MHz (1001 pts)	Span 5 .533 ms i	Sweep 2		10 kHz	#VBW 9		41500 GH: 300 kHz	nter 2.4
			STATUS						

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7.4. NUMBER OF HOPPING CHANNELS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

Normal Mode: 79 Channels observed.

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7.4.1. BASIC DATA RATE GFSK MODULATION

NUMBER OF HOPPING CHANNELS



100MHz SPAN



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30MHz SPAN, SEGMENT 2 OF 3



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7.4.2. ENHANCED DATA RATE 8PSK MODULATION

NUMBER OF HOPPING CHANNELS







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7.5. AVERAGE TIME OF OCCUPANCY

<u>LIMIT</u>

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to 10 * (# of pulses in 0.8 s) * pulse width.

RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.3839	32	0.1228	0.4	-0.2772
DH3	1.641	17	0.2790	0.4	-0.1210
DH5	2.889	8	0.2311	0.4	-0.1689
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.3839	8	0.03071	0.4	-0.3693
DH3	1.641	4.25	0.06974	0.4	-0.3303
DH5	2.889	2	0.05778	0.4	-0.3422

7.5.1. BASIC DATA RATE GFSK MODULATION

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PULSE WIDTH - DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1









NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5



7.5.2. ENHANCED DATA RATE 8PSK MODULATION

DH Packet	Pulse	Number of	Average Time	Limit	Margin
	Width (msec)	Pulses in 3.16 seconds	of Occupancy (sec)	(sec)	(sec)
8PSK Normal	8PSK Normal Mode				
DH1	0.3895	32	0.12464	0.4	-0.27536
DH3	1.641	16	0.26256	0.4	-0.13744
DH5	2.893	11	0.31823	0.4	-0.08177

<u>Note:</u> for AFH (8PSK) mode, please refer to the results of AFH (GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate in section 7.5.1 demonstrates compliance with channel occupancy when AFH is employed.

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PULSE WIDTH - DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND



PULSE WIDTH – DH3

OBSERVATION PERIOD – DH3 OB

#VBW 1.0 MHz





Span 0 Hz Sweep 3.160 s (1001 pts) CF Step 1.000000 ML

Freg Offse

Ma

0 H

enter 2.441000000 GHz s BW 1.0 MHz

7.6. OUTPUT POWER

<u>LIMITS</u>

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated peak reading of power.

<u>RESULTS</u>

7.6.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency	Output Power	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2402	9.16	30	-20.84
Middle	2441	9.36	30	-20.64
High	2480	9.37	30	-20.63

7.6.2. ENHANCED DATA RATE DQPSK MODULATION

Channel	Frequency	Output Power	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2402	8.32	30	-21.68
Middle	2441	8.47	30	-21.53
High	2480	8.43	30	-21.57

7.6.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	8.63	30	-21.37
Middle	2441	8.41	30	-21.59
High	2480	8.51	30	-21.49

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7.7. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

7.7.1. BASIC DATA RATE GFSK MODULATION

Channel	Frequency	Average Power
	(MHz)	(dBm)
Low	2402	8.95
Middle	2441	9.17
High	2480	9.17

7.7.2. ENHANCED DATA RATE DQPSK MODULATION

Channel	Frequency	Average Power
	(MHz)	(dBm)
Low	2402	5.58
Middle	2441	5.38
High	2480	5.45

7.7.3. ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency	Average Power
	(MHz)	(dBm)
Low	2402	5.6
Middle	2441	5.8
High	2480	5.62

7.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 5.5

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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7.8.1. BASIC DATA RATE GFSK MODULATION

SPURIOUS EMISSIONS, NON HOPPING



LOW CHANNEL BANDEDGE



IN-BAND REFERENCE LEVEL



OUT-OF-BAND LOW CHANNEL



Trig: Free Run PN0: Fast → #Atten: 30 dB #Avg Type: RMS Frequency TYPE DET Auto Tu Mkr4 25.748 1 GHz -35.54 dBm Ref Offset 13.08 dB Ref 20.00 dBm Center Fre Start Fre 30 00000 Stop Fre Stop 26.00 GHz Sweep 957.3 ms (40001 pts) tart 30 MHz Res BW 100 kHz CF Step #VBW 300 kH: 2.597 2.480 0 GHz 4.960 0 GHz 7.440 0 GHz 25 748 1 GHz 9.52 dBm -45.49 dBm -45.06 dBm -35.54 dBm NN Freq Offs 0 F 9 10

OUT-OF-BAND MID CHANNEL

OUT-OF-BAND HIGH CHANNEL

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SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

Agilent Spectrum Analyzer - APv7.2.4(092217),37699	CS, Conducted A				Agilent Spi			.2.4(09221)							
Center Freq 2.400000000 GHz	SENSE:INT	ALIGNAUTO #Avg Type: RMS AvgiHeid: 100/100	11:30:58 AMOct 10, 2017 TRACE 1 2 3 4 5 6 TYPE M WWWWWW	Frequency	Center	Freq	2.483500	DOOD GH	z	SE Trig: Fre	Bun	#Avg Type: RMS AvgHold: 100/100	11:34:15 A TRAI	4Oct 10, 2017 E 1 2 3 4 5 6	Frequency
IFGain:Low	#Atten: 40 dB		DET P N N N N	Auto Tupe				IFG	o: wide 🕶 iain:Low	#Atten: 4	∂dB		D	ET P N N N N N	Auto Tupe
Ref Offset 10.5 dB 10 dB/div Ref 30.00 dBm		Mkr1	2.403 870 GHz 10.641 dBm		10 dB/di	Rei Rei	f Offset 10.5 ef 30.00 di	dB Brn				Mk	1 2.478 8 10.4	65 GHz 38 dBm	
			ЛЛЛ	Center Freq 2.40000000 GHz	20.0	Л									Center Freq 2.483500000 GHz
-10.0	Q ³ Q ² V		✓ ¥9.36 dBri	Start Freq 2.392500000 GHz	-10.0				h) ³ ⊘ ²			-9.58 dBm	Start Freq 2.476000000 GHz
-40.0				Stop Freq 2.407500000 GHz	-40.0										Stop Freq 2.491000000 GHz
Center 2.400000 GHz #Res BW 100 kHz #VE	300 kHz	Sweep 1.	Span 15.00 MHz 000 ms (1001 pts)	CF Step 1.500000 MHz Auto Man	Center #Res B	2.483 W 100	500 GHz kHz		#VBW	/ 300 kHz		Sweep	Span 1 1.000 ms (5.00 MHz 1001 pts)	CF Step 1.500000 MHz Auto Man
I I f 2.403 870 GHz 2 N 1 f 2.400 000 GHz 3 N 1 f 2.399 055 GHz 4 5 6 6	10.641 dBm -41.652 dBm -39.317 dBm		1	Freq Offset 0 Hz	1 N 2 N 3 N 4 5 6	1 f 1 f 1 f		2.478 865 2.484 550 2.483 500	6 GHz) GHz) GHz	10.438 d -38.749 di -40.266 di	Bm Bm Bm				Freq Offset 0 Hz
7 8 9 10 11 € •	J.	STATUS	×		7 8 9 10 11 <					Ť.		STA	rus	×	
L	OW BAN	IDEDGE							HI	GH	BAN	IDEDG	E		

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7.8.2. ENHANCED DATA RATE 8PSK MODULATION

SPURIOUS EMISSIONS, NON HOPPING



LOW CHANNEL BANDEDGE



IN-BAND REFERENCE LEVEL



OUT-OF-BAND LOW CHANNEL



ter Freq 13.015000000 GHz PN0:Fast →→ #Atten:30 dB #Avg Type: RMS Frequency TYPE Auto Tu Mkr4 25.872 1 GHz -36.12 dBm Ref Offset 13.08 dB Ref 20.00 dBm Center Fre 13 01500 Start Fre 30 00000 Stop Fre Stop 26.00 GHz Sweep 957.3 ms (40001 pts) tart 30 MHz Res BW 100 kHz CF Step #VBW 300 kH: 2.597 2.480 0 GHz 4.960 0 GHz 7.440 0 GHz 25.872 1 GHz 1.73 dBm -45.24 dBm -43.77 dBm -36 12 dBm NN Freq Offs 0 F 9 10

OUT-OF-BAND MID CHANNEL

OUT-OF-BAND HIGH CHANNEL

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SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

Agilent Spectrum Analyze	r - APv7.2.4(092217),37699 CS					Agilen			.4(092217),37699 C	S, Conducted A			
Center Freq 2.40	50 Q DC 00000000 GHz PNO: Wide et	SENSE:INT	#Avg Type: RMS Avg Hold: 100/100	01:41:26 PM Oct 10, 2017 TRACE 1 2 3 4 5 6 TYPE M WWWWWW	Frequency	Cen	ter Free	RF 50 Ω 0 q 2.4835000	C DOD GHz RNO: Wildo F	SENSE:INT	#Avg Type: RMS Avg[Hold: 100/100	01:45:34 PM Oct 10, 2017 TRACE 1 2 3 4 5 6 TYPE MWWWWWW	Frequency
Ref Offs	IFGain:Low eet 10.5 dB	#Atten: 40 dB		2.403 165 GHz 8.302 dBm	Auto Tune	10 di	F Ndiv F	tef Offset 10.5 o	IFGain:Low	#Atten: 40 dB	Mkr	2.479 870 GHz 8.093 dBm	Auto Tune
20.0 10.0			1 martine	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Center Freq 2.40000000 GHz	20.0 10.0	mm	mmm					Center Freq 2.483500000 GHz
-10.0				-11.70.486	Start Freq 2.392500000 GHz	-10.0 -20.0 -30.0						-11.31.450	Start Freq 2.476000000 GHz
-40.0	×	Q2744V			Stop Freq 2.407500000 GHz	-40.0 -50.0 -60.0				\$*			Stop Freq 2.491000000 GHz
Center 2.400000 #Res BW 100 kHz	GHz : #VBN	N 300 kHz	Sweep 1	Span 15.00 MHz .000 ms (1001 pts)	CF Step 1.500000 MHz <u>Auto</u> Man	Cen #Re	ter 2.48 s BW 10	3500 GHz 10 kHz	#VB	W 300 kHz	Sweep	Span 15.00 MHz 1.000 ms (1001 pts)	CF Step 1.500000 MHz Auto Man
1 N 1 f 2 N 1 f 3 N 1 f 4 5	2.403 165 GHz 2.400 000 GHz 2.395 170 GHz	8.302 dBm -40.995 dBm -39.329 dBm			Freq Offset 0 Hz	1 2 3 4 5	N 1 N 1 N	f f	2.479 870 GHz 2.488 465 GHz 2.483 500 GHz	8.093 dBm -39.074 dBm -40.532 dBm			Freq Offset 0 Hz
6 7 8 9 10						6 7 8 9 10							
< MBG		3	STATUS			MSG				3	STAT	75	
	L	OW BAN	IDEDGE						н	IGH BA	NDEDGE	E	

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8. RADIATED TEST RESULTS

<u>LIMITS</u>

FCC §15.205 and §15.209

IC RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 Hz) video bandwidth with peak detector for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

8.1. TRANSMITTER ABOVE 1 GHz

8.1.1. BASIC DATA RATE GFSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)



HORIZONTAL RESULTS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.09	Pk	32.1	-20.7	52.49	-	-	74	-21.51	21	185	Н
2	* 2.386	41.55	Pk	32.1	-20.8	52.85	-	-	74	-21.15	21	185	Н
3	* 2.39	29.12	VA1T	32.1	-20.7	40.52	54	-13.48	-	-	21	185	H
4	* 2.39	29.25	VA1T	32.1	-20.8	40.55	54	-13.45	-	-	21	185	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULTS



arker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.66	Pk	32.1	-20.7	52.06		-	74	-21.94	63	295	V
2	* 2.377	42.11	Pk	32.1	-20.8	53.41	•	-	74	-20.59	63	295	V
3	* 2.39	28.81	VA1T	32.1	-20.7	40.21	54	-13.79	-	-	63	295	V
4	* 2.389	28.99	VA1T	32.1	-20.8	40.29	54	-13.71	-	-	63	295	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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AUTHORIZED BANDEDGE (HIGH CHANNEL)



HORIZONTAL RESULTS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	43.22	Pk	32.5	-20.8	54.92	-	-	74	-19.08	356	337	Н
2	* 2.485	44.58	Pk	32.6	-20.8	56.38	-	-	74	-17.62	356	337	Н
3	* 2.484	31.89	VA1T	32.5	-20.8	43.59	54	-10.41	-	-	356	337	Н
4	* 2.484	31.86	VA1T	32.5	-20.8	43.56	54	-10.44	-	-	356	337	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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VERTICAL RESULTS



Marker	Frequency	Meter	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/Pad	Corrected	Average Limit	Margin	Peak Limit (dBuV/m)	PK	Azimuth	Height	Polarity
	(GHz)	Reading			(dB)	Reading	(dBuV/m)	(dB)		Margin	(Degs)	(cm)	
		(dBuV)				(dBuV/m)				(dB)			
1	* 2.484	42.09	Pk	32.5	-20.8	53.79	-	-	74	-20.21	44	343	V
3	* 2.484	30.91	VA1T	32.5	-20.8	42.61	54	-11.39	-	-	44	343	V
4	* 2.484	31.22	VA1T	32.5	-20.8	42.92	54	-11.08	-	-	44	343	V
2	2.557	42.03	Pk	32.6	-20.6	54.03		-	74	-19.97	44	343	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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HARMONICS AND SPURIOUS EMISSIONS



LOW CHANNEL RESULTS

HORIZONTAL



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LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin	Azimuth (Degs)	Height (cm)	Polarity
		(dBuV)				(dBuV/m)				(dB)			
4	* 1.198	42.69	PKFH	28.6	-22.4	48.89	-	-	74	-25.11	114	211	V
	* 1.198	28.2	VA1T	28.6	-22.4	34.4	54	-19.6	-	-	114	211	V
2	* 3.84	38.68	PKFH	33.2	-28.6	43.28	-	-	74	-30.72	305	266	Н
	* 3.84	29.32	VA1T	33.2	-28.6	33.92	54	-20.08	-	-	305	266	Н
5	* 3.839	37.22	PKFH	33.2	-28.6	41.82	-	-	74	-32.18	358	250	V
	* 3.84	27.59	VA1T	33.2	-28.6	32.19	54	-21.81	-	-	358	250	V
6	* 5.101	35.34	PKFH	34.1	-27	42.44	-	-	74	-31.56	275	381	V
	* 5.099	23.55	VA1T	34.1	-27	30.65	54	-23.35	-	-	275	381	V
1	1.92	41.25	PKFH	31.3	-21.4	51.15	-	-	74	-22.85	350	241	Н
3	10.176	31.78	PKFH	37.1	-19.9	48.98	-	-	74	-25.02	14	355	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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MID CHANNEL RESULTS





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MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	44.35	PKFH	28.6	-22.4	50.55	-	-	74	-23.45	281	104	Н
	* 1.2	36.81	VA1T	28.6	-22.4	43.01	54	-10.99	74	-23.99	282	105	Н
3	* 3.84	38.01	PKFH	33.2	-28.7	42.51	-	-	74	-31.49	67	199	Н
	* 3.84	30.69	VA1T	33.2	-28.6	35.29	54	-18.71	-	-	67	199	Н
2	1.92	40.1	PKFH	31.3	-21.4	50	-	-	74	-24	350	205	Н
5	1.92	40.65	PKFH	31.3	-21.4	50.55	-	-	74	-23.45	83	105	V
4	2.132	38.75	PKFH	31.3	-21	49.05	-	-	74	-24.95	55	271	Н
6	5.76	36.75	PKFH	34.7	-27.1	44.35	-	-	74	-29.65	113	165	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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HIGH CHANNEL RESULTS



HORIZONTAL



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HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.198	43.52	PKFH	28.6	-22.4	0	49.72	-	-	74	-24.28	322	259	Н
	* 1.198	28.58	VA1T	28.6	-22.4	0	34.78	54	-19.22	-	-	322	259	Н
2	* 1.44	40.04	PKFH	28.8	-22	0	46.84	-	-	74	-27.16	341	117	Н
	* 1.44	30.49	VA1T	28.8	-22	0	37.29	54	-16.71	-	-	341	117	Н
5	* 3.84	38.15	PKFH	33.2	-28.6	0	42.75	-	-	74	-31.25	272	239	Н
	* 3.84	30.09	VA1T	33.2	-28.6	0	34.69	54	-19.31	-	-	272	239	Н
6	* 3.333	36.24	PKFH	32.8	-28.4	0	40.64	-	-	74	-33.36	277	109	V
	* 3.333	25.46	VA1T	32.8	-28.4	0	29.86	54	-24.14	-	-	277	109	V
3	1.92	40.43	PKFH	31.3	-21.4	0	50.33	-	-	74	-23.67	350	246	Н
4	2.575	40.02	PKFH	32.6	-20.6	0	52.02	-	-	74	-21.98	181	109	Н
7	5.761	36.45	PKFH	34.7	-27.1	0	44.05	-	-	74	-29.95	98	168	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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8.1.2. ENHANCED DATA RATE 8PSK MODULATION

RESTRICTED BANDEDGE (LOW CHANNEL)



HORIZONTAL RESULTS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.92	Pk	32.1	-20.7	51.32	-	-	74	-22.68	18	194	Н
2	* 2.337	41.9	Pk	32	-20.9	53	-	-	74	-21	18	194	Н
3	* 2.39	29.35	VA1T	32.1	-20.7	40.75	54	-13.25	-	-	18	194	Н
4	* 2.39	29.34	VA1T	32.1	-20.7	40.74	54	-13.26	-	-	18	194	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULTS



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.28	Pk	32.1	-20.7	50.68	-	-	74	-23.32	72	294	V
2	* 2.318	41.84	Pk	32	-20.9	52.94	-	-	74	-21.06	72	294	V
3	* 2.39	28.84	VA1T	32.1	-20.7	40.24	54	-13.76	-	-	72	294	V
4	* 2.39	28.9	VA1T	32.1	-20.7	40.3	54	-13.7	-	-	72	294	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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AUTHORIZED BANDEDGE (HIGH CHANNEL)



HORIZONTAL RESULTS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.12	Pk	32.5	-20.8	52.82	-	-	74	-21.18	355	337	Н
2	* 2.484	43.37	Pk	32.5	-20.8	55.07	-	-	74	-18.93	355	337	Н
3	* 2.484	31.74	VA1T	32.5	-20.8	43.44	54	-10.56	-	-	355	337	H
4	* 2.484	31.69	VA1T	32.5	-20.8	43.39	54	-10.61	-	-	355	337	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULTS



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/P ad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	41.46	Pk	32.5	-20.8	53.16	-	-	74	-20.84	44	343	V
2	* 2.489	42.54	Pk	32.6	-20.8	54.34	-	-	74	-19.66	44	343	V
3	* 2.484	30.68	VA1T	32.5	-20.8	42.38	54	-11.62	-	-	44	343	V
4	* 2.484	30.68	VA1T	32.5	-20.8	42.38	54	-11.62	-	-	44	343	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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HARMONICS AND SPURIOUS EMISSIONS



LOW CHANNEL RESULTS



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LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin	Azimuth (Degs)	Height (cm)	Polarity
		(dBuV)				(dBuV/m)				(dB)			
1	* 1.197	43.35	PKFH	28.6	-22.4	49.55	-	-	74	-24.45	324	200	Н
	* 1.198	28.33	VA1T	28.6	-22.4	34.53	54	-19.47	-	-	324	200	Н
4	* 2.28	38.11	PKFH	31.8	-20.9	49.01	-	-	74	-24.99	319	244	V
	* 2.28	26.89	VA1T	31.8	-20.9	37.79	54	-16.21	-	-	319	244	V
3	* 3.601	35.35	PKFH	33.1	-28.2	40.25	-	-	74	-33.75	142	376	Н
	* 3.601	23.66	VA1T	33.1	-28.2	28.56	54	-25.44	-	-	142	376	Н
5	* 3.84	37.75	PKFH	33.2	-28.6	42.35	-	-	74	-31.65	356	146	V
	* 3.84	29.12	VA1T	33.2	-28.6	33.72	54	-20.28	-	-	356	146	V
6	* 11.65	33.86	PKFH	38.2	-20.5	51.56	-	-	74	-22.44	137	377	V
	* 11.65	22.44	VA1T	38.2	-20.5	40.14	54	-13.86	-	-	137	377	V
2	1.921	40.17	PKFH	31.3	-21.4	50.07	-	-	74	-23.93	349	106	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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MID CHANNEL RESULTS





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MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected	Avg Limit	Margin (dB)	Peak Limit	PK Margin	Azimuth (Decis)	Height (cm)	Polarity
	(0112)	(dBuV)		(dD/m)	i ad (db)	(dBuV/m)	(abaviii)	(00)	(abaviii)	(dB)	(Degs)	(cili)	
1	* 1.2	42.59	PKFH	28.6	-22.4	48.79	-	•	74	-25.21	320	132	Н
	* 1.2	28.35	VA1T	28.6	-22.4	34.55	54	-19.45	-	-	320	132	Н
2	* 1.267	39.21	PKFH	29.3	-22.3	46.21	-	-	74	-27.79	185	251	Н
	* 1.267	27.32	VA1T	29.2	-22.3	34.22	54	-19.78	-	-	185	251	Н
3	* 3.84	38.58	PKFH	33.2	-28.6	43.18	-	-	74	-30.82	83	162	Н
	* 3.84	30.41	VA1T	33.2	-28.6	35.01	54	-18.99	-	-	83	162	Н
4	* 4.292	35.68	PKFH	33.4	-28.3	40.78	-	-	74	-33.22	52	270	V
	* 4.291	23.49	VA1T	33.4	-28.3	28.59	54	-25.41	-	-	52	270	V
5	6.348	33.82	PKFH	35.4	-26.1	43.12	-	-	74	-30.88	59	285	V
6	13.639	33.64	PKFH	38.7	-22.1	50.24	-	-	74	-23.76	122	378	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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HIGH CHANNEL RESULTS





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HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.44	40.11	PKFH	28.8	-22	46.91	-	•	74	-27.09	1	110	Н
	* 1.44	29.82	VA1T	28.8	-22	36.62	54	-17.38	-	-	1	110	Н
4	* 1.227	38.46	PKFH	28.9	-22.3	45.06	-		74	-28.94	162	307	V
	* 1.225	27.18	VA1T	28.9	-22.4	33.68	54	-20.32	-	-	162	307	V
3	* 3.84	39.13	PKFH	33.2	-28.6	43.73	-		74	-30.27	85	170	Н
	* 3.84	30.45	VA1T	33.2	-28.6	35.05	54	-18.95	-	-	85	170	Н
2	1.92	42.02	PKFH	31.3	-21.4	51.92	-	-	74	-22.08	349	101	Н
5	3.15	36.11	PKFH	33	-29.3	39.81	-	•	74	-34.19	320	224	V
6	10.212	30.37	PKFH	37.1	-20	47.47	-	-	74	-26.53	208	328	V

 * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH - FHSS: RB=1MHz VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

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8.2. WORST-CASE BELOW 1 GHz



HORIZONTAL



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Below 1GHz DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	500.0007	53.72	Pk	21.7	-29.6	45.82	46.02	2	293	102	V
1	* 125.9898	50.41	Pk	18.1	-31.2	37.31	43.52	-6.21	0-360	199	Н
4	* 125.9473	48.79	Pk	18.1	-31.2	35.69	43.52	-7.83	0-360	100	V
2	200	47.28	Pk	16.7	-30.8	33.18	43.52	-10.34	0-360	99	Н
5	200	45.34	Pk	16.7	-30.8	31.24	43.52	-12.28	0-360	100	V
3	500.039	47.8	Qp	21.7	-29.6	39.9	46.02	-6.12	0-360	199	Н

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Qp - Quasi-Peak detector

Pk - Peak detector

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8.3. WORST-CASE 18-26GHz



HORIZONTAL



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18-26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	21.672	38.6	Pk	33.2	-25.1	-9.5	37.2	54	-16.8	74	-36.8
2	21.816	38.31	Pk	33.3	-24.5	-9.5	37.61	54	-16.39	74	-36.39
3	23.491	38.22	Pk	33.2	-24.4	-9.5	37.52	54	-16.48	74	-36.48
4	19.07	36.73	Pk	32.2	-24.9	-9.5	34.53	54	-19.47	74	-39.47
5	21.213	35.79	Pk	33.1	-24.7	-9.5	34.69	54	-19.31	74	-39.31
6	23.316	36.35	Pk	33.4	-24.6	-9.5	35.65	54	-18.35	74	-38.35

Pk - Peak detector

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9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Fraguency of Emission (MHz)	Conducted	Limit (dBµV)
Frequency of Emission (MHZ)	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

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LINE 1 RESULTS



Rang	e 1: Line-L	1 .15 - 30)MHz								
Marker	Frequenc	Meter	Det	LISN L1	LC Cables	Limiter	Corrected	CFR 47 Port 15	QP Morgin	CFR 47 Port 15	Av(CISPR
	(MHz)	(dBuV)			C1&C3	(ub)	dBuV	Class B QP	(dB)	Class B Avg	(dB)
1	.78225	28.24	Qp	0	0	10.1	38.34	56	-17.66	-	-
2	.79687	11.03	Ca	0	0	10.1	21.13	-	-	46	-24.87
3	.4335	24.67	Qp	0	0	10.1	34.77	57.19	-22.42	-	-
4	.43125	11.82	Ca	0	0	10.1	21.92	-	-	47.23	-25.31
5	19.6665	25.8	Qp	.1	.3	10.3	36.5	60	-23.5	-	-
6	19.6665	13.2	Ca	.1	.3	10.3	23.9	-	-	50	-26.1

Qp - Quasi-Peak detector

Ca - CISPR average detection

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LINE 2 RESULTS



Range	e 2: Line-L2	.15 - 30	MHz								
Marker	Frequency	Meter	Det	LISN L2	LC	Limiter	Corrected	CFR 47	QP	CFR 47	Av(CISPR
	(MHz)	Reading			Cables	(dB)	Reading	Part 15	Margin	Part 15)Margin
		(aBuv)			02&03		dBuv	Class B	(ab)	Class B	(dB)
7	1005	20.06	05	0	0	10.1	20.06	E7 10	10.00	Avg	
1	.4335	20.00	Qp	0	0	10.1	30.90	57.19	-10.23	-	-
8	.43125	15.62	Ca	0	0	10.1	25.72	-	-	47.23	-21.51
9	.78	29.19	Qp	0	0	10.1	39.29	56	-16.71	-	-
10	.76875	20.81	Ca	0	0	10.1	30.91	-	-	46	-15.09
11	19.47975	26.44	Qp	0	.3	10.3	37.04	60	-22.96	-	-
12	19.4775	13.93	Ca	0	.3	10.3	24.53	-	-	50	-25.47

Qp - Quasi-Peak detector

Ca - CISPR average detection

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